

The Relations between Knowledge Sharing among Technology Centers within a Conglomerate, its R & D Synergy and Performance: A Case Study of Dongfeng Motor Corporate

Jun Ye

School of Business, Jiangnan University, Wuhan 430000, China

ddong11221@sina.com

Keywords: knowledge sharing, R & D synergy, R & D performance

Abstract: From the perspective of Synergetics and the dimension of knowledge sharing, this study adopts the theories and methods of empirical research to build a theoretical model of the relations between the factors influencing the knowledge sharing level within a conglomerate, its synergistic level, and its R & D performance, with the aim of improving the overall R & D performance of a conglomerate. Through the investigation into the R & D activities of the technology centers in the 8 sub-companies of Dongfeng Motor Corporation, the design of a measurement scale, and the application of the factor analysis method and the structural equation model, this study has verified the significant positive influences of strategic consensus, cultural integration, incentive mechanism, communication mechanism and knowledge-sharing platforms on the knowledge-sharing level within a conglomerate, the significant negative influence of confidentiality rules and regulations on the knowledge-sharing level within a conglomerate, the significant positive influences of knowledge-sharing level respectively on the R & D synergy and on the overall R & D performance of a conglomerate, and the significant positive influence of R & D synergy on the overall R & D performance of a conglomerate.

1. Introduction

The automobile industry is a technology-intensive industry that requires a great deal of explicit and tacit knowledge, which also results in the systematicness and complexity of an automobile R & D system. Thus, the R & D department of an automobile mono-enterprise alone is unable to complete the R & D for finished vehicles that needs the coordination and distribution of responsibilities among various technology centers within an automobile conglomerate. The coordination and distribution of responsibilities among various technology centers on a macro level include horizontal knowledge synergy and vertical knowledge synergy; on a micro level, the coordination and distribution of responsibilities refer to the knowledge synergy among the technology centers of the parent and subsidiary companies, among those of the sub-companies and among the various business units of the technology centers. The process of knowledge synergy is the process of knowledge sharing, that is, knowledge exchanges and sharing among various technology centers within a conglomerate and among different business units during the R & D process of finished vehicles, which is of great importance to the reduction of R & D costs, the shortening of R & D cycle, and the enhancement of R & D efficiency.

Furthermore, since most R & D projects are carried out simultaneously during the R & D process of finished vehicles, technology and knowledge are interdependent of each other. As a result, knowledge sharing within a conglomerate has been considered as an important pillar of knowledge management, and its essential role in improving the overall innovation level and organizational performance of an automobile conglomerate has been widely recognized. However, knowledge sharing still remains a difficult task in practice, and to a large extent, it becomes the bottleneck restricting the knowledge management of an automobile enterprise. For instance, in the synergistic R & D of a certain vehicle model, not all technology centers are willing to contribute their valuable and

core knowledge unconditionally. When participating in knowledge sharing, they tend to make rational choices in line with the principle of “benefits exceeding costs”, and such behavior restricts knowledge-sharing activities, thus causing the so-called “Prisoner’s Dilemma”. How to break down the barriers to knowledge sharing so that knowledge can be effectively circulated within a conglomerate and fully shared among its members has become a major challenge for managers.

2. Theoretical Basis

R & D serves as a key link in the innovation and knowledge accumulation of a conglomerate as well as an important source of its added value. As a complex and colossal project, the R & D system of a conglomerate is different from that of a mono-enterprise because the former has more complicated components involving multiple R & D bodies such as the parent company, its subsidiaries, the R & D departments of each business unit, etc. The R & D and innovation competence of a conglomerate is reflected by each R & D body that owns the autonomy of strategic decision-making. Thus, the construction of an innovative, shared and synergistic R & D system within a conglomerate is of direct significance to its innovation capability and even determines its overall developing ability.

Previous academic studies taking knowledge sharing as the dimension mainly focus on three aspects, (Du et al.2007 [1]; Morten T. Hansen.2002 [2] Choi et al., 2012 [3]; Wang Juanru, Yang jin, 2014 [4]) which are the knowledge-sharing mode, the technological means for knowledge-sharing and the management mechanism of knowledge sharing. The importance of knowledge sharing to organizational performance, product R & D performance and innovation performance has already been demonstrated.

As for academic studies on R & D synergy, scholars at home and abroad have discussed mostly from a macro perspective the vertical technological cooperation of mono-enterprises with suppliers(Wolfgang Becker & Jiirgen Dietz,2004 [5]; Luis Miott & Frederique Sachwalda.Co, 2003 [6]), manufacturers and distributors as well as the R & D cooperation between mono-enterprises and external stakeholders (including government agencies, universities, etc.).On a micro level, Christopher J. Clarke and Kieron Brennan (2000) [7] have adopted the analytic method of four portfolios (which are product and market portfolio, resource portfolio, customer portfolio, and technology portfolio) to examine the synergy within a company from a number of perspectives. Chen Zhijun and Liu Xiao (2010) [8] have divided the evaluation of the synergy between the parent company and its subsidiaries within a conglomerate into a total of 124 indicators including 5 first-level indicators so as to conduct a systematic study on the synergistic R & D activities, pointing out the importance of R & D synergy to both business practice and theoretical research. However, there is a dearth of studies on the relationship between knowledge sharing and R & D synergistic performance in various technology centers of a motor conglomerate from the R & D perspective, and a complete frame system has not been established yet.

Given the above analysis and on the basis of the characteristics of the R & D system of a motor enterprise, this study, which takes knowledge sharing in R & D activities of various technology centers within a conglomerate as the research object and the existence of knowledge sharing in their R & D activities as the starting point, probes into the relations between knowledge sharing, R & D, and synergistic performance.

3. Research Hypothesis

3.1 The Main Factors Affecting the Level of Knowledge Sharing Between Parent and Subsidiary Companies

Based on the results of the investigation that asked open questions to the senior executives of the 8 subsidiary companies as well as all the business sectors of Dongfeng Motor Corporation and the leaders of its technological departments, combined with the 15 influencing factors proposed by Lester (1998) [9] that are considered as the key to success for an innovative enterprise, including senior

management support, good organizational culture, cross-functional team building, effective strategies and basic guidelines, effective managerial communications, etc., as well as the 124 indicators for the evaluation of the synergy of parent and subsidiary companies put forward by Chen Zhijun and Liu Xiao (2010) [10], this article proposes 6 factors that affect knowledge sharing among technology centers in light of the practical R & D of finished vehicles: strategic consensus, cultural integration, incentive mechanism, communication mechanism, confidentiality rules and regulations, and knowledge-sharing platforms.

3.2 Building A Theoretical Model

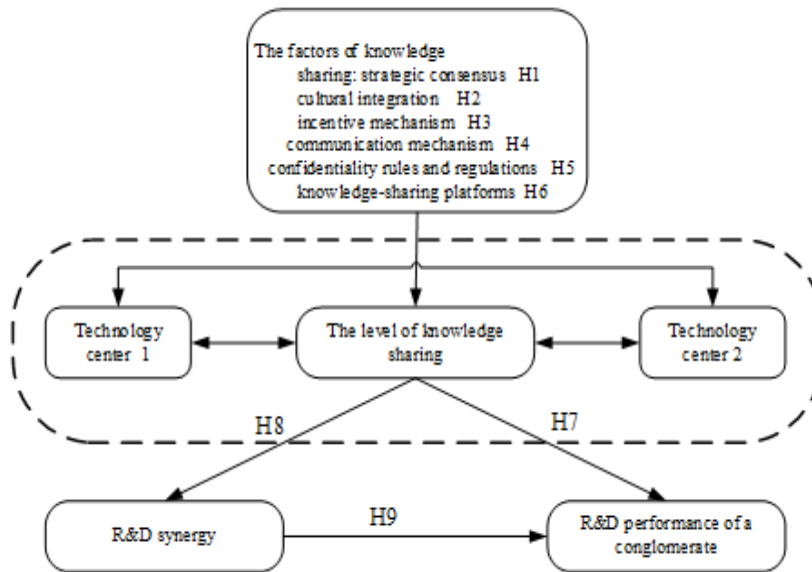


Fig. 1 The model of relations between knowledge sharing and R & D synergistic performance during the R & D process

3.3 Research Hypothesis

(1) Strategic consensus and the level of knowledge sharing

Peter Drucker, a management guru, believes that a strategy that leads to success must involve exchanges and interactions with external information and environment; the competitiveness of an enterprise stems from its ability to innovate, share and utilize the knowledge related to itself. As a carrier that represents the value of common knowledge shared by the technology centers of a conglomerate, strategic consensus provides the conditions for sharing knowledge within the conglomerate by establishing stable and continuous relations. In addition, strategic consensus can reduce the divergence of opinions of technology centers about the overall strategy of the conglomerate, contribute to the enhancement of the depth, breadth and efficiency of knowledge exchanges within the conglomerate, and further promote knowledge sharing among the technology centers. Based on the above analysis, this study puts forward the hypothesis:

H1: There is a significant positive correlation between strategic consensus and the level of knowledge sharing.

(2) Cultural integration and the level of knowledge sharing

Organizational culture is the values and basic beliefs that are jointly shaped by all the members of a conglomerate. Different growth and development paths of different organizations lead to varied organizational cultures. That of Dongfeng Motor Corporation incorporates French, Japanese and Chinese cultures. To embrace a diversified organizational culture is the premise of establishing cooperation and carrying out collaborative innovation. Based on the above-said analysis, this study proposes the hypothesis:

H2: There is a significant positive correlation between cultural integration and the level of knowledge sharing.

(3) Incentive mechanism and the level of knowledge sharing

Incentives can prompt knowledge providers to actively share what they own. Dixon (2000) [11] has pointed out that only when an enterprise sets reasonable incentives to ensure that its R & D personnel get reasonable returns will the R & D personnel transfer knowledge. According to Molly McLure Wasko & Samer Faraj (2005) [12], the technological guidance given by an enterprise and its incentive level, task dependency etc. all affect its R & D personnel's attitude toward and achievements in knowledge sharing. He Jin (2005) [13] has conducted empirical research on the impact of incentive mechanism on knowledge-sharing activities, which shows that internal incentives have a positive influence on knowledge-sharing activities. Nelson & Sabatier (2006) [14] believe that incentives such as salary, bonus plans, equity, promotion, etc. are the major methods to promote and better achieve knowledge sharing among organizations, but a lack of incentive mechanism is the main obstacle to knowledge sharing across organizations. Based on the above analysis, this study puts forward the hypothesis:

H3: There is a significant positive correlation between incentive mechanism and the level of knowledge sharing.

(4) Communication mechanism and the level of knowledge sharing

Communication and knowledge sharing are closely related. In knowledge-based enterprise theories, a conglomerate can be regarded as a social situation of knowledge creation and dissemination. It is believed by most scholars that communication is an important antecedent that influences knowledge sharing, for good communication among employees will enhance their willingness and achievements in knowledge sharing. Hendriks (1999) [15] and Brian (2001) [16] believe that communication helps members to share knowledge and accomplish the goal of an organization as well as possible. The empirical research done by Hooff & Ridder (2004) [17] indicates that constructive communication atmosphere has a positive impact on both knowledge output and knowledge assimilation; they have also verified part of the intermediary role played by organizational affective commitment, which is to say that constructive communication atmosphere has not only a direct impact on knowledge sharing but also an indirect influence on it through organizational commitment. Based on the above analysis, this study proposes the hypothesis:

H4: There is a significant positive correlation between communication mechanism and the level of knowledge sharing.

(5) Confidentiality rules and regulations and the level of knowledge sharing

Confidentiality rules and regulations are part of the national secrecy management. In the process of automobile research and development, knowledge sharing involving core technologies must comply with confidentiality rules and regulations, according to the requirements of which, secrecy-involved core technological knowledge shall only be shared through prescribed channels among prescribed subjects who have signed a confidentiality agreement. The exchanges of confidential knowledge are only allowed to be done in classified places, and it is never allowed in general public places. Therefore, confidentiality rules and regulations obviously restrict knowledge sharing to a certain extent. Based on the above analysis, this study proposes the hypothesis:

H5: There is a significant negative correlation between confidentiality rules and regulations and the level of knowledge sharing.

(6) Building knowledge-sharing platforms and the level of knowledge sharing

A knowledge-sharing platform is a carrier, medium and channel of knowledge transfer. As a means of knowledge sharing, information technology expands the time and space of knowledge sharing and improves its efficiency. As Hendriks (1999) [18] has pointed out, information and communication technologies produce both direct and indirect influences on the willingness of sharing knowledge, which would be reduced by the absence of a good information technology system in an organization. However, the limitations of information technology lie in its difficulty in and limited effect on encoding or clarifying tacit knowledge. Therefore, different knowledge-sharing platforms are required to circulate knowledge with various characteristics and types. A more perfect knowledge-sharing platform leads to more abundant information, greater knowledge flow and more

significant knowledge-sharing effect. Based on the above analysis, this study puts forward the hypothesis:

H6: There is a significant positive correlation between building knowledge sharing platforms and the level of knowledge sharing.

(7) The level of knowledge sharing and that of R & D synergy

Knowledge sharing among major R & D bodies in a conglomerate is conducive to the complementation, optimization and reorganization of knowledge in them so as to promote the systematization of knowledge in the whole organization and create new knowledge and new technologies, thus enabling the organization to gain quick access to the relevant knowledge and resources required for research and development and improving its overall innovation ability. To some extent, knowledge sharing among R & D bodies in a conglomerate plays a decisive role in its synergistic and innovation process of R & D, and sufficient knowledge sharing is a necessary requirement for effective synergistic innovation. Based on the above analysis, this study proposes the hypothesis:

H7: There is a significant positive correlation between the level of knowledge sharing and that of R & D synergy.

(8) The level of knowledge sharing and R & D performance

Knowledge sharing within a conglomerate can solve a series of crucial technological problems it encounters due to the adoption of new technologies, new materials and new methods, spurring the output of innovative ideas and thus improving R & D performance (Allen, 1977 [19]; Hansen, 2002[2]; Zarraga & Bonache, 2003 [20]; Wijk,2008[23] et al). Research shows that knowledge-sharing behaviors both within an organization and among organizations have a positive impact on organizational performance and R & D performance. Thus, in automobile R & D, the realization of knowledge sharing is crucial for concertedly solving technological problems and difficulties in this process, thus developing a unique ability that is impossible to be imitated by competitors and meanwhile improving R & D performance. Based on the above analysis, this study proposes the hypothesis:

H8: There is a significant positive correlation between the level of knowledge sharing and R & D performance.

(9) The level of R & D synergy and the R & D performance of a conglomerate

R & D is the source of innovation for a conglomerate. The synergistic R & D activities among the technology centers within a conglomerate involve a number of R & D bodies and business units, which, together with business processes, constitute different R & D environments. In the overall R & D synergistic system of a conglomerate, each R & D body plays an important role and serves as part of the R & D capability of the conglomerate. To integrate technologies of different technology centers within a conglomerate will lead to the sharing of interfaces during the process of product R & D, which greatly reduces the costs of synergy and improves R & D efficiency. Based on the above analysis, this study puts forward the hypothesis:

H9: There is a significant positive correlation between the level of R & D synergy and the R & D performance of a conglomerate.

4. Research Design and Data Collection

4.1 Indicator Measurement

The questionnaire consists of four parts, the first one of which is about the basic information of the participants and of their conglomerate; the second part is made up by the measurement items about the status quo of knowledge sharing among the technology centers within the conglomerate; the third part is made up by the measurement items about the influence of knowledge sharing among the technology centers within the conglomerate on the level of R & D synergy; the fourth part is made up by the measurement items about the influence of knowledge sharing among the technology centers within the conglomerate on R & D performance. The variables are all measured by a 5-point Likert

scale ranging from “never true” to “always true”. The specific measurement indicators of all the variable are as follows:

(1) The measurement indicators of the knowledge sharing status quo among the technology centers in the conglomerate, including: ① 4 measurement items about strategic consensus; ② 5 measurement items about cultural integration; ③ 8 measurement items about incentive mechanism; ④ 5 measurement items about communication mechanism; ⑤ 5 measurement items about confidentiality rules and regulations; ⑥ 8 measurement items about knowledge-sharing platforms.

(2) There is a total of 20 items about the measurement indicators of the influence of the knowledge sharing among the technology centers within the conglomerate on the level of R & D synergy.

(3) There is a total of 11 items about the measurement indicators of the influence of the knowledge sharing among the technology centers within the conglomerate on its R & D performance

4.2 Data Acquisition

The data acquisition of this study falls into two phases: In the first phase, in order to ensure the validity of the research results, first of all, 56 small samples were adopted to conduct a questionnaire pre-investigation, and then, through the analysis of the reliability and the validity of the scale, the items were refined by using the coefficient of Corrected Item-Total Correlation (CITC) and those which obviously affect the quality of the questionnaire were deleted so as to form the formal questionnaire. The second phase is the formal investigation. The participants mainly include the technicians and senior managers who work for the technology centers in the 8 subsidiaries of Dongfeng Motor Corporation and fully understand the research and development status quo of the conglomerate, thus ensuring the validity of the sample data. A total of 325 questionnaires were distributed, and 302 of them were reclaimed, of which 264 were valid. The reclamation rate of valid questionnaires is 81.23%.

5. The Simulation of Knowledge Sharing and R & D Synergy Among the Technology Centers of the Conglomerate

In this study, the scores of strategic consensus, cultural integration, incentive mechanism, communication mechanism, confidentiality rules and regulations, R & D synergy, and the overall R & D performance of the conglomerate are weighted and averaged respectively. The data of the questionnaire are read by MATLAB, and the simulation figures are drawn so as to get the correlation coefficient matrices. If the correlation coefficient is between $[0.00-\pm 0.30]$, the variables will be considered lowly correlated; if the correlation coefficient is between $[\pm 0.30-\pm 0.50]$, the variables will be considered substantially correlated; if the correlation coefficient is between $[\pm 0.50-\pm 0.80]$, the variables will be considered significantly correlated; if the correlation coefficient is between $[\pm 0.80-\pm 1.00]$, the variables will be considered highly correlated. The simulation results are as shown in Figure 2 (a), 2 (b), 2 (c), 2 (d), 2 (e), 2 (f), and 2 (g).

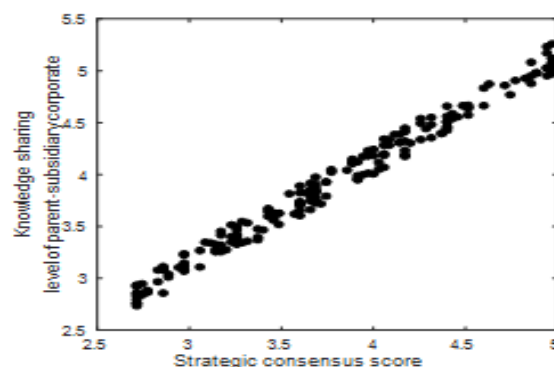


Fig. 2 (a) An analysis of the correlation between strategic consensus and the level of knowledge sharing

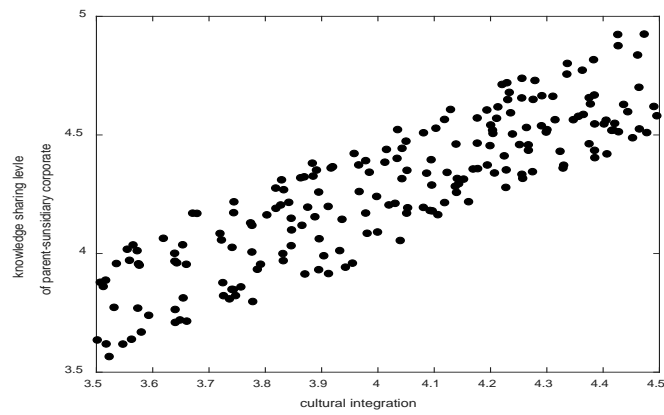


Fig. 2 (b) An analysis of the correlation between cultural integration and the level of knowledge sharing

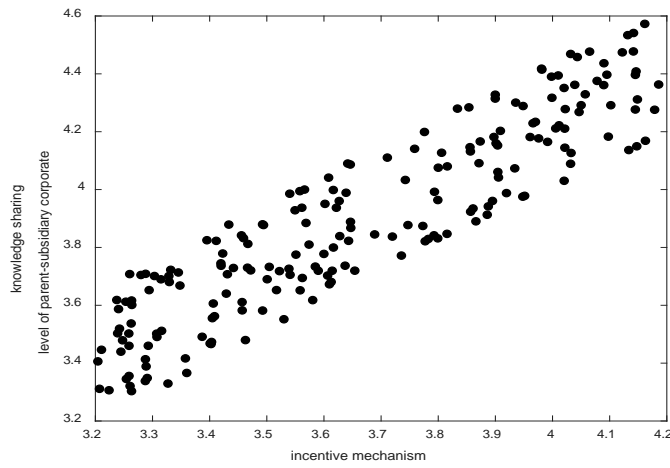


Fig. 2 (c) An analysis of the correlation between incentive Mechanism and the level of knowledge sharing

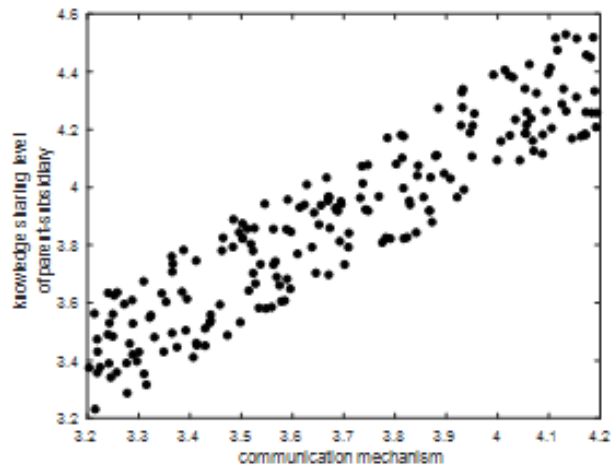


Fig.2 (d) An analysis of the correlation between communication and the level of knowledge sharing

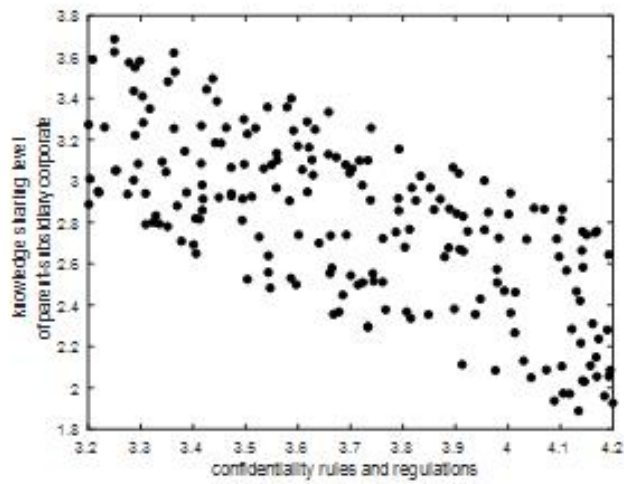


Fig. 2 (e) An analysis of the correlation between confidentiality Rules regulations and the level of knowledge sharing

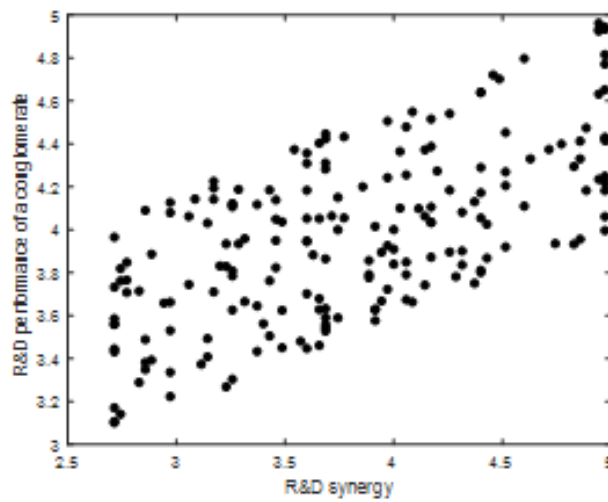


Fig .2 (f) An analysis of the correlation between synergistic R & D and the overall R & D performance of the conglom

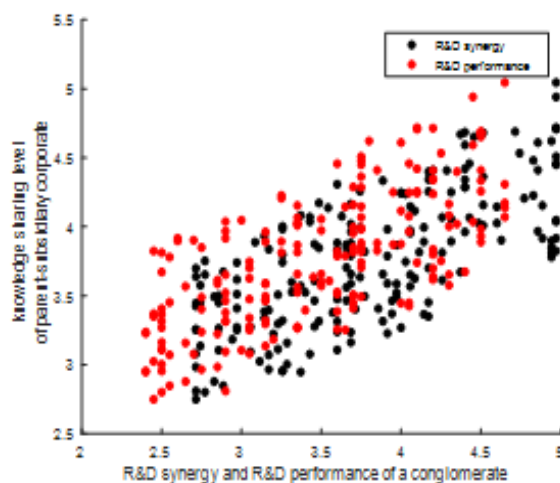


Fig .2 (g) An analysis of the correlations between the knowledge sharing among the parent and subsidiary companies, the

overall R & D performance of the conglomerate and synergistic R & D

The correlation coefficient matrices obtained respectively from the figures drawn above are as follows:

(1) The coefficient matrix of the correlation between strategic consensus and the level of knowledge sharing is:

$$T_1 = \begin{bmatrix} 1.0000 & 0.9915 \\ 0.9915 & 1.0000 \end{bmatrix} \quad (1)$$

Its correlation coefficient is 0.9915, indicating a high-positive correlation;

(2) The coefficient matrix of the correlation between cultural integration and the level of knowledge sharing is:

$$T_2 = \begin{bmatrix} 1.0000 & 0.8928 \\ 0.8928 & 1.0000 \end{bmatrix} \quad (2)$$

Its correlation coefficient is 0.8928, indicating a high-positive correlation;

(3) The coefficient matrix of the correlation between incentive mechanism and the level of the knowledge sharing in the parent and subsidiary companies is:

$$T_3 = \begin{bmatrix} 1.0000 & 0.8424 \\ 0.8424 & 1.0000 \end{bmatrix} \quad (3)$$

Its correlation coefficient is 0.8424, indicating a high-positive correlation;

(4) The coefficient matrix of the correlation between communication mechanism and the level of the knowledge sharing in the parent and subsidiary companies is:

$$T_4 = \begin{bmatrix} 1.0000 & 0.9229 \\ 0.9229 & 1.0000 \end{bmatrix} \quad (4)$$

Its correlation coefficient is 0.9229, indicating a high-positive correlation;

(5) The coefficient matrix of the correlation between confidentiality rules and regulations and the level of the knowledge sharing in the parent and subsidiary companies is:

$$T_5 = \begin{bmatrix} 1.0000 & -0.6563 \\ -0.6563 & 1.0000 \end{bmatrix} \quad (5)$$

Its correlation coefficient is -0.6563, indicating a significant-negative correlation;

(6) The coefficient matrix of the correlation between R & D synergy and the overall R & D performance of the conglomerate is:

$$T_6 = \begin{bmatrix} 1.0000 & 0.7171 \\ 0.7171 & 1.0000 \end{bmatrix} \quad (6)$$

Its correlation coefficient is 0.7171, indicating a significant-positive correlation;

(7) The coefficient matrices of the correlations of the level of the knowledge sharing in the parent and subsidiary companies with R & D synergy and with the overall R & D performance of the conglomerate are respectively:

$$T_7 = \begin{bmatrix} 1.0000 & 0.7267 \\ 0.7267 & 1.0000 \end{bmatrix} \text{ and } T_8 = \begin{bmatrix} 1.0000 & 0.6854 \\ 0.6854 & 1.0000 \end{bmatrix} \quad (7)$$

The correlation coefficients of T7 and T8 are 0.7267 and 0.6854 respectively, indicating significant-positive correlations.

6. Conclusions

This research takes the R & D synergy among the technology centers of Dongfeng Motor Corporation as the research object. Through literature search and open-question field survey, it analyzes the level of the knowledge sharing among the technology centers of the conglomerate with six influencing factors, namely strategic consensus, cultural integration, incentive mechanism,

communication mechanism, confidentiality rules and regulations, and knowledge sharing platforms. By using the method of factor analysis and the structural equation model, the research has verified the relations between the factors affecting the level of knowledge sharing, R & D synergy, and the overall R & D performance of the conglomerate. The major conclusions are as follows:

(1) In the automobile R & D process, the strategic consensus, cultural integration, incentive mechanism, communication mechanism and knowledge-sharing platforms among the technology centers have a significant positive impact on the level of knowledge sharing, while the confidentiality rules and regulations have a negative impact on it;

(2) Knowledge sharing among the technology centers has a significant positive impact on R & D synergy, indicating the direct influence of knowledge sharing on the R & D synergy among technology centers and its indirect influence on the overall R & D performance of the conglomerate. The level of knowledge sharing not only relates to the costs, efficiency and success or failure of automobile R & D, but also can eliminate the uncertainties arising in the R & D process and help all technology centers to acquire and utilize various knowledge resources in this process, thus constantly systematizing their own knowledge, inspiring innovative ideas and thinking modes, and thereby enhancing R & D efficiency.

(3) The level of R & D synergy among technology centers has a significant positive impact on the overall R & D performance of the conglomerate. In other words, the higher the level of R & D synergy among technology centers, the better the overall R & D performance of the conglomerate. Through knowledge sharing and technological synergy among its technology centers, a conglomerate can expand its R & D scale, reduce its R & D costs, improve the innovation of its products and enhance its R & D efficiency, thus achieving R & D performance far exceeding that of a mono-enterprise.

References

- [1] Du, R., Ai, S., and Ren, Y. 2007. Relationship between knowledge sharing and performance: a survey in Xi'an, China. *Expert Systems with Applications*. Vol.32, No.1.
- [2] Morten T. 2002. Hansen. Knowledge networks: Explaining effective knowledge sharing in multiunit companies. *Organization Science*. Vol.13.
- [3] Choi, S.G., & Johanson, J. 2012. Knowledge translation through expatriates in international knowledge transfer. *International Business Review*. Vol.21, No.6.
- [4] Ernst, Young. 2000. Research on the Degree of Knowledge Sharing. *Computer World*.
- [5] Wolfgang Becker, Jiirgen Dietz. 2004. R&D cooperation and innovation activities of firms-evidence for the German manufacturing industry. *Research Policy*. Vol.33, No.2.
- [6] Luis Miotti, Frederique Sachwalda. 2003. Co-operative R&D: why and with whom? An integrated framework of analysis. *Research Policy*, Vol. 32, No. 8.
- [7] Andrew Campbell, Kathleen Sommers Luchs. 2000. Strategic Synergy. Translated by REN Tong-hai. *Beijing: China Machine Press*.
- [8] CHEN Zhi-jun, LIU Xiao. 2010. Establish Evaluation Model for Parent-Subsidiary Companies Synergy Effects. *Business Management Journal*.
- [9] Lester D.H. 1998. Critical Success factors for New Product Development. *Research Technology Management*. Vol. 41, No. 1.
- [10] Dixon N M. 2000. Common Knowledge: How Companies Thrive by Sharing What They Know. *Boston: Harvard Business School Press*. Vol. 12, No. 7.
- [11] Molly McLure Wasko, Samer Faraj. 2005. Why should I share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice. *Management Information Systems*

Quarterly. Vol. 29, No. 1.

- [12] HE Jin. 2005. Study on the Motivation Factors and Model of Knowledge Sharing. *Chongqing University*.
- [13] Nelson A, Sabatier R. 2006. Toward an Understanding of Global Entrepreneurial Knowledge Management Practices. *Academy of Management Journal*.
- [14] Hendriks P. 1999. Why share knowledge? The motivation for knowledge sharing. *Knowledge and Process Manage*. Vol. 6, No. 2.
- [15] Brian P H. 2001. Value development and learning organizations. *Journal of Knowledge Management*. Vol.5, No.1.
- [16] Bvd hoof, JAD Ridder. 2004. Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management*. Vol.8, No.6.
- [17] Allen,T. 1977. Managing the Flow of Technology. Cambridge. MA: *The MIT Press*.
- [18] Zarraga,C. Bonache,J. 2003. Assessing the team environment for knowledge sharing: an empirical analysis. *International Journal of Human Resource Management*. Vol.14, No.7.
- [19] Van Wijk, R., J. Jansen, M. A. 2008. Lyles. Inter-and intra-organizational knowledge transfer: A meta-analytic review and assessment of its antecedents and consequences. *Journal of Management Studies*. Vol.45, No.4.
- [20] Asakawa, K. 2001. Evolving headquarters-subsidiary dynamics in international R&D: the case of Japanese Multinational Corporations. *R&D Management*. Vol.31, No.1