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The Construction of Enterprise Tacit Knowledge Sharing Stimulation System Oriented to Employee Individual

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Abstract

Tacit knowledge is the core value element for enterprises to obtain the competitive advantages in knowledge economy era. Starting from the inner enterprise employees, taking the technology class of tacit knowledge such as practical skills and know-how, and the cognitive class of tacit knowledge such as experience and gnosis as the object, it constructs the inner tacit knowledge management framework which includes Knowledge subjects, Information technology and Knowledge community based on the conversion process of enterprise implicit knowledge as well as the related incentive mechanism and control mechanism. Such a system makes the enterprise inner individual employee tacit knowledge shared, makes shared knowledge explicit, makes explicit knowledge into assets, and makes asset knowledge into incomes, so as to provide ideas for enterprise tacit knowledge management.

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1. Introduction

With the arrival of knowledge economy era, the acquisition, transfer, sharing and management of knowledge have become the necessary conditions for modern enterprises to realize technological innovation and gain competitive advantage. But above all, tacit knowledge has become one of the important sources of the enterprises' core competitiveness, on account of its imperfectly replicable and imitable attribute. By the present situation of our country's enterprise's technology and market development, it can be found that there exists a large number of unprofessional tacit knowledge within the enterprise which is always unknown, non-shared and discrepant due to different individual perceptions. To wit, the tacit knowledge comes from the gradual enlightenment and insight during the working process of individual employees, so as to store as the implicit knowledge with the form of

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experiences in the minds of employees. This kind of tacit knowledge is difficult to obtain, transfer, share and manage. Besides, tacit knowledge is always been ignored as an important part of the enterprise internal knowledge management, because it is easy to loss heavily accompanied by the corporate activities of employees' leave, retirement and scale reduction etc. Aiming to solve the problem of tacit knowledge management based on employee individual, this paper constructs a framework of tacit knowledge management and sharing incentive system for employees to realize the internal knowledge inheritance, improve the efficiency of knowledge management and the capability of knowledge innovation.

The problem of tacit knowledge management activities in enterprise and related issues increasingly concerned by experts and scholars, such as the process and mechanism, influence factors, applications and relationship between knowledge and innovation.

Tacit knowledge management. Meister M and M Masella R^[1] defined a theoretical frame of Knowledge Management System in which eight constructs were detailed by dimensions and variables: goals, business environment, budget, organizational results, organizational design of KMS use, organizational culture, knowledge management systems and organizational memory content. Mohammad P. A et al^[2] examined the relationship of organizational wisdom and the components of strategic intelligence (including knowledge management, competitive intelligence and business intelligence), The findings showed that organizational wisdom and strategic intelligence are significantly related, and the components of knowledge management explains 43%. Barry Andrew Piorkowski et al^[3] described a Dynamic Knowledge Management framework that would have most benefit at the start of the product lifecycle before key decisions were made. Tianyushan^[4] discusses the framework and key technology in tacit knowledge management in Web 3.0 environment in tire industry.

Researches about the influence factors of tacit knowledge management include ICT Support and Reverse Logistics^[5], weak ties and trust^[6], the style of KM^[7], personality traits^[8], level of teams^[9] ect. J. Scott Holste and Fields Dail^[10] divided trust into two categories: affect-based and cognition-based trust of co-workers, the former has a significantly greater effect on the willingness to share tacit knowledge, and the latter affect on the willingness to use tacit knowledge. Allameh S M et al^[11] proposed that the critical success factors (CSFs) of KM has a direct effect on organizational innovation (OI) and indirect effects

through organizational learning (OL). Sajjad M et al^[12] addressed two different strategies based on the tacitness of knowledge, and optimal knowledge management strategies can cultivate the organizational cultural fit and maximize the organizational profit. Anna Rogozińska-Pawelczyk^[13] analyzed the relationship between the psychological contract and the propensity to create, share, and use organizational knowledge.

At present, the strategy of tacit knowledge sharing and management has been used in product lifecycle design and support^[14], Supply chain planning and scheduling integration^[15], renewable energy industry^[16, 17], and the commonly used research methods of tacit KM related to case-based reasoning^[18], Social Network Analysis^[19]. Shaofeng Liu et al^[20] applied knowledge management to the management of lean supply chain decisions, and proposed a decision-focused knowledge framework including a multi-layer knowledge model, a knowledge matrix for knowledge elicitation, and a decision tree for the design of the knowledge base. Michel Mitri^[21] describes tacit performance assessment in the context of knowledge management and presents a prototype decision support system for managing tacit assessment knowledge using knowledge management techniques. Iuliana Dorobat^[22] assessed the role of tacit knowledge management on the success of Enterprise Resource Planning (ERP) systems implementation. AM Dima, S Vasilache^[23] assessed Master students' collaboration in a common research project in university by using social networks modeling.

Furthermore, tacit knowledge has a crucial influence on the success of innovation processes in companies and plays a vital role as a company resource and success factor^[24]. Cristina Martinez-Fernandez et al^[25] presented an innovative initiative of a regional university stimulating the development of a knowledge hub around nanotechnology applications to businesses, exploring the influence of knowledge management on industrial innovation.

From the analysis of scholars' research above, it plays an important role during the process of technological innovation and competitive advantage in enterprise to realize the management activities of internal tacit knowledge transferring, flowing, interacting, sharing etc. Either, tacit knowledge is influenced by the sharing willingness of employees and the organizational environment of enterprise, because of its characteristics of occult, personality, difficultly coded and expressed. Therefore, it is necessary for enterprise to establish a perfect incentive system to

realize the flow, transfer and sharing of tacit knowledge belonging to the employee individual. On the basis of analyzing the internal tacit knowledge conversion and the goal of tacit knowledge management, the paper takes the skills and cognitive implicit knowledge which belonging to the employee individual, is unknown, non-sharing and informal as the research object. In addition, an incentive system of tacit knowledge sharing is constructed based on the employee individual, in order to promote the value of enterprise employees' tacit knowledge and improve the competitive advantage of enterprise.

The remainder of this paper is organized as follows. Section 2 provides a definition of tacit knowledge in Enterprises. Section 3 elaborate enterprise internal staff tacit knowledge management process. A framework of tacit knowledge management and sharing incentive system for employees are constructed in Section 4. Conclusion is provided in the last section.

2. The definition of tacit knowledge in Enterprises

2.1. Source and classification of knowledge

Enterprise knowledge management includes the process of knowledge recognition and acquisition, flow and transfer, sharing and conversion. To solve the problem of enterprise knowledge management, we need to clarify the source and classification of enterprise internal knowledge firstly. Polanyi divided the knowledge into explicit knowledge and tacit knowledge for the first time. According to the two dimensions of knowledge, explicit knowledge can be elaborated, encoded and exchanged in the form of symbols or natural language, tacit knowledge is rooted in personal behavior, experience, values and specific situation which is hard to express, form and code relatively to explicit knowledge. From the perspective of the knowledge structure system, explicit knowledge in the enterprise refers to the knowledge which is published into literature, patent, datum and is expressed and communicated in official language in forms of written records, technical documents, manual reports etc. Tacit knowledge is a kind of empirical endogenous knowledge based on individual or organization team. From the perspective of knowledge sharing subjects, the activity of knowledge management includes individual, team, organization and other aspects. Individual knowledge is about experience, skills, know-how, inspiration, mental model and other knowledge that employees individual possess. Team knowledge is the skill, operation process, management institution and cooperation of the staff. Organizational knowledge is the property rights, proprietary technology, culture, system etc that the enterprise owns. The essence of knowledge sharing is the process of sending and receiving the explicit knowledge and tacit knowledge between individuals, individual and organization, and the organizations^[26].

The sharing and management of enterprise tacit knowledge should be based on employee individual, and mainly to research on the empirical hidden knowledge belonging to employees during the activities of enterprise technology, operation, and management which is unknown, non sharing and unprofessional. Employee individual is the basic unit of production and management activities in enterprises. The process of knowledge creation, team sharing, and organization internalization based on individual promotes the generation and development of internal knowledge. Therefore the individual is the basic unit to achieve the operation of enterprise's tacit knowledge sharing system, and it is the main content of enterprise knowledge management to motivate employees' knowledge creation and innovation, promote employee' knowledge sharing and exchange, knowledge transformation and utilization etc. And in the process of enterprises' organizational learning and knowledge management practices, a necessary prerequisite for the realization of enterprise knowledge management is to fully tap and share the experience cognitive implicit knowledge of individual employees due to the understanding and insight during communication, sharing and collision.

2.2. The definition of tacit knowledge based on employees individual

During the participation in the process of daily management and production activities, tacit knowledge is constantly produced and created from the experience and perception of employee individual, and internalized in their own minds. Tacit knowledge the staff owns includes two parts, namely professional technology knowledge and

cognitive experience knowledge. Professional knowledge includes skills and techniques the employees own, a part of which is easy to express into literature, patent, technical manuals and other kinds of enterprises explicit property knowledge, the other part of which is the informal practical skills and tips difficultly to describe and express. The cognitive experience knowledge consists in employee's mind and is influenced by employees' personal mental, psychological, belief and cognition.

Enterprise knowledge management activities tend to focus only on tacit knowledge of property right introduction, transformation and externalization process which contains technical documents, patent and etc in the aspects of production R&D, manufacture and service, ignoring the practical skills in activities of employees individual design, creative and production, and the endogeneity tacit knowledge management like empirical log, comprehension, and category of cognitive during the process of marketing, services, producing and daily management. The behavior will not only increase the transaction cost of external knowledge introduction, and knowledge sharing, but also leads to the practical problems of tacit knowledge loss which caused by the activities of staff turnover and relieve guard, scale reduction etc during enterprises operation and management.

Tacit knowledge belonging to employees is a part of self-worth and identity, and the knowledge can help employees to win competitive advantage and respected prestige in the enterprise. The employees therefore will form a psychological sense of possession for tacit knowledge, namely tacit knowledge psychological ownership^[27]. Under the influence of knowledge psychological ownership, employees often don't take an initiative to share their own tacit knowledge because of the factors of cost, psychological, willingness and others, and hide their tacit knowledge to ensure the personal advantage in the enterprise competition. Therefore, on the premise of individual tacit knowledge as the matrix of enterprise knowledge management, enterprises need to design an external incentive mechanism to eliminate the negative psychological factors according to the problems, such as the factor of employee transactional psychological contract, the low degree of psychological safety^[28] longer psychological distance^[29] etc in the process of tacit knowledge sharing. Through the design of positive incentive system, On the one hand, it can promote a positive psychology of employees' tacit knowledge sharing willingness, and help employees to achieve the material and psychological goals, such as better winning respect, prestige, reputation in the enterprise and realizing self value; On the other hand, it can promote continuous transformation and benign value-added between tacit knowledge and explicit knowledge of enterprise organization, and achieve the driving process of enterprises knowledge innovation and creation, making employee individual tacit knowledge shared, making shared knowledge explicit, making explicit knowledge into assets, and making asset knowledge into incomes.

Based on the issues above, the paper argues that tacit knowledge includes technology knowledge like practice skills, technical tips and cognitive implicit knowledge like experience, perception. and it discusses how to construct an incentive system in order to promote happening of the tacit knowledge sharing behavior belonging to individual employees.

3. Enterprise internal staff tacit knowledge management process

Tacit knowledge management is to intervene and manage the process of tacit knowledge acquisition, transfer, sharing and etc. The process can promote tacit knowledge communion and sharing between individuals, the conversion and endogeneity of tacit knowledge between individual and organization, So as to realize the ultimate goal of enterprise internal employee individual tacit knowledge sharing, sharing knowledge explicit, explicit knowledge assets, and the return of assets knowledge, and promote the development and promotion of enterprise knowledge inheritance, management and innovation ability.

3.1. Enterprise internal staff tacit knowledge conversion

For the problem how tacit knowledge transform between employee individuals, individual and organizational, From the angle of knowledge creation, Nonaka proposed a dynamic model of knowledge innovation and transformation called SECI, namely the four transformation patterns of Socialization, Externalization, Combination and Internalization. The model reveals the spiral process of the conversion and expansion between tacit knowledge and explicit knowledge, the mutual conversion and transformation between individual knowledge and organization knowledge. This paper redefined the process of enterprise tacit knowledge transformation on the basis of the SECI

model, as shown in Figure 1 — enterprise employee tacit knowledge conversion process of socialization, externalization, organization and internalization.

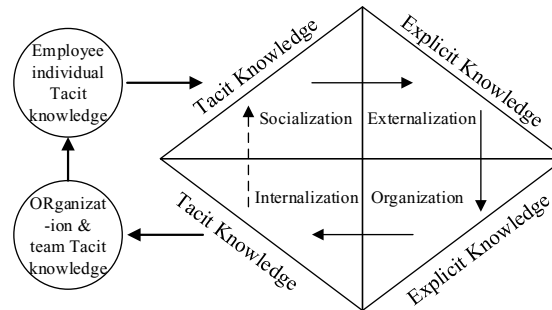


Fig. 1. The process of Tacit Knowledge Transfer in Enterprises.

Socialization is to realize the sharing and transformation from tacit knowledge to tacit knowledge. It is the process that enterprise employees accumulate, share experience and skills and thus stimulate and create new tacit knowledge. The key to obtain the tacit knowledge is to increase the individual common experience opportunities. Enterprise organizations should create a common experience platform and sharing incentive mechanism to promote the exchange and sharing among employees who is as the tacit knowledge carrier, and to achieve the conversion, sharing and creation of tacit knowledge among individuals.

Externalization is to realize the transformation from tacit knowledge to explicit knowledge, which is the process of employees' tacit knowledge represented to explicit knowledge and knowledge expressed. On the basis of the formation of tacit knowledge management framework and the construction of knowledge management classified module, individual employees can clearly, accurately and timely realize the expression of tacit knowledge conceptualization, modelization and encoding through the forms of encyclopedia, entries, interaction etc, and achieve knowledge's upload and share further.

Organization is to realize the systemic transformation from explicit knowledge to explicit knowledge, which is the process to form a more complicated and systematic explicit knowledge system. The information technique of computer, mobile and database can be used to construct an internal knowledge management information platform for enterprise. The platform helps employee to achieve the functions of individual explicit knowledge storage, arrangement, classification, search and etc. And it makes the conceptualization, formalized knowledge enterprise internal knowledge system through the gradual combination and reconstruction.

Internalization is to realize the internal transformation from explicit knowledge to tacit knowledge, which is the process to transform explicit knowledge into tacit knowledge, and further strengthen the practical capacity of individual and group in enterprise. The further strengthening of the organization and combination knowledge is the process of knowledge internalization by subject of individual or organization. The internalization of explicit knowledge which the organizations or individuals experience can promote and stimulate a new round of knowledge creation and sharing spiral.

3.2. Enterprise tacit knowledge management goals

The activity of individual tacit knowledge management has two aspects of goals. On the one hand, the management helps to realize the sharing of individual tacit knowledge, reduce the loss of core employees' tacit knowledge and improve the overall efficiency of enterprise knowledge creation and technological innovation. On the other hand, it is a process of knowledge value-added which makes individual tacit knowledge shared, makes shared knowledge explicit, makes explicit knowledge into assets, and makes the asset knowledge into incomes.

On the basis of enterprise knowledge resources transitivity and diffusion property, knowledge sharing is realized through the exchange of experience, thinking collision and common experience among individual employees, and further stimulate process of new insights, new ideas, new creation, which is the basic objective of knowledge management activities. As an extension of knowledge sharing, knowledge explicit is the externalization process of the kind of professional skills and informal cognitive tacit knowledge within employees, such as the property right

of technical knowledge, the institutionalization of knowledge. It is conducive for the transfer and sharing of knowledge and the systematic management of tacit knowledge of employees within the organization to realize the formalization and externalization of the tacit knowledge within employees. Making knowledge capitalization refers to the explicit knowledge resource objectification and accounting as corporate assets. Objectification is to make explicit knowledge object to a specific individual or team organization; Accounting is to incorporate knowledge, which is the intangible resources of enterprises, into the scope of accounting elements to be measured. The sharing and externalization of knowledge resources provide a guarantee for the continuous accumulation of knowledge assets, and also improve the flow efficiency of knowledge resources entering into the enterprise management system, such as human resources, system, technology, culture, finance and so on. Through the assets of knowledge resources and knowledge assets continually accumulating and flowing, it promotes the absorption and transformation of internal staff knowledge, and the construction of barriers of core technology imitation and substitution, so as to promote enterprises to develop more valuable products and services^[30]. Knowledge income includes the innovation benefit and economic benefit of enterprise knowledge asset, that is knowledge assets can bring the individual or organization in enterprise the core technology and the economic performance. Core technology is benefit of property rights of patent and proprietary technology with the right of tenure and use; economic benefit is the profit improvement and cost saving which are brought from products, services dominated by the core technology or other institutional innovation. In addition, under the system of knowledge resources management, the knowledge income also includes the psychological, reputation and other spiritual benefits, which are brought by the incentive mechanism.

Compared the process of tacit knowledge conversion in enterprise with the goal of knowledge management in enterprise, it can be found that the two are mapping to each other: The four stages of tacit knowledge transformation correspond to the goal of enterprise knowledge management, which is the goal of sharing, dominance, asset and profit. And it realizes the process of value added during knowledge factors flow in enterprises at the same time, as shown in Fig. 2. Socialization of tacit knowledge communion, interaction, collision and learning among individual employees can promote the sharing of knowledge; Furtherly, Externalization of knowledge encoding and expressing is the process of tacit knowledge into explicit knowledge; The reconstruction process of organized and systematic explicit knowledge on the information platform is the embodiment of knowledge precipitating to enterprise assets; The internalization and the process of re-creation of knowledge will also promote the development of core technology capabilities and economic performance of enterprises.

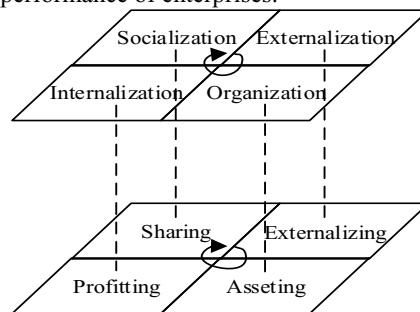


Fig. 2. The Relationship Between Process of Tacit Knowledge Transfer and Goal of Knowledge Management.

4. The framework of tacit knowledge management and sharing incentive system for employees

During the process of internal daily production and management, employees accumulate a large number of implicit knowledge refer to technique and management experience. Taking scientific and systematic management of the tacit knowledge can improve the utilization ratios of core staff's tacit knowledge, enhance the efficiency of knowledge resources flowing and creating. The knowledge management activities of enterprises take the individual tacit knowledge sharing as the primary goal. The systematic management of enterprise knowledge and its creation, collection, organization, dissemination, utilize and evaluation can transform personal knowledge into group knowledge that the organization can widely shared and used. And further the management of the process of

knowledge transformation, flow, internalization, and re-creation with the help of information platform can achieve the goal of knowledge value added of making business knowledge explicit, asset and income. However, activities of knowledge sharing are affected by tacit knowledge ownership, psychological contract and etc, which requires enterprises to implement a certain incentive measures to promote the transformation process of knowledge sharing, flow and so on. Therefore, a tacit knowledge management system should include a framework of tacit knowledge management relying on information technology and the an effective internal incentive mechanism.

4.1. Framework of enterprise tacit knowledge management

Tacit knowledge management framework in enterprises takes individual employees as the object who is the carrier of tacit knowledge. And based on the conversion process between explicit knowledge and tacit knowledge, the building of tacit knowledge sharing platform can realize the knowledge value-added process that of making enterprise's tacit knowledge explicit, making explicit knowledge into assets, and making the asset knowledge into incomes via the behaviors of upload, edit, share and interaction between the enterprise employee's individual, employees and organization in enterprises. Inner enterprises tacit knowledge management framework encourages employees to use the information technology to carry out activities of knowledge sharing, forwardly searching and providing knowledge rather than individual knowledge hoarding in virtual enterprise knowledge community, so as to form a kind of enterprise knowledge interpersonal relationship network which is established in a given space, time and conditions taking knowledge as the center, as well as promotes the development of knowledge intensive enterprise culture.

(1) Knowledge subjects

The knowledge subject of enterprise refer to the individuals and the organization of the project or department unit. The transformation between tacit knowledge and explicit knowledge in enterprise is a process that the individual knowledge evolves to organizational knowledge and organizational knowledge regurgitation-feeds individual knowledge. Employees and the individuals in organization is the carrier of knowledge, and also is the knowledge source of knowledge transformation and management.

(2) Information technology

Information technology, which includes the Internet, intranet, extranet, mobile network, browser, data storage, data mining technology, software agents, network community, cloud platform and etc, is the technology foundation for enterprise to achieve the creative conversion and sharing of individual knowledge. In the process of tacit knowledge management of the enterprise, information technology can achieve knowledge sources acquiring and tacit knowledge mining, and it can realize the process of enterprise tacit knowledge collection, storage and transfer, flow on the basis of database functions, search and indexing mechanism to support the behavior of enterprise internal knowledge management. Besides, with the support of the information technology, enterprise can form a virtual knowledge sharing space, which strengthen a “weak ties” between tacit and explicit knowledge among enterprise employee, employee and organization, or between organizations, and strengthen the width and depth of knowledge sharing.

(3) Knowledge community

Knowledge community is the core of tacit knowledge management in the enterprise, which is used to realize knowledge collection and storage, sharing and exchange, transfer and flow among employees, employee and organization, organizations. The knowledge in enterprise involved multiple activities such as product R&D, manufacturing, engineering services and enterprise system, organization culture, daily management and etc. Tacit knowledge belonging to individual employees is more about the accumulation of experience, knack and sentiment during individual learning and work, which is a kind of personalized information about experience, idea, observation and judgment. The knowledge is not only non-separated from the owners with the character of latent, non coding and exclusivity, but the cognitive and skilled tacit knowledge like viewpoint, experience and comprehension attached to employees tend to lose value and bring loss to enterprises by losses of key employees. With the support of database, intranet, mobile network and other modern information technology or search mechanism, a virtual knowledge sharing space can be embedded in the enterprise knowledge management framework, which forms enterprise internal knowledge sharing community.

In recent years, many enterprises are developing an Open Source Knowledge Production mode on basis of information technology taking knowledge as the center, such as the open platform of Baidu, Wikipedia, Zhihu and etc. Wikipedia: a kind of network collaborative tools based on Web2.0, which emphasizes group cooperation model oriented to knowledge community, allows users to constantly update by means of coproduce, achieves the organic integration of knowledge innovation and service activities such as knowledge distribution, knowledge sharing, knowledge integration, knowledge feedback. Baidu open platform community content: a kind of Chinese search engine, which launches open platforms including Baidu know, Baidu Encyclopedia and Baidu library, allows users to upload, edit and share knowledge on the three platforms at the same time, and promotes users to constantly and forwardly contribute, communicate, update and improve their tacit knowledge according to different incentives. Open source knowledge production^[31, 32] takes text content opening and accessing, content editing and sharing as the core. Learning from the experience of developing such a content open platform, enterprise can embed internal knowledge sharing open space in the tacit knowledge management framework to form enterprise internal knowledge sharing community. Employees of the enterprise register as users to achieve their own hidden knowledge open and sharing, and others' tacit knowledge learning, interaction, conversion and endogenous.

Enterprise internal knowledge sharing community can realize the knowledge data storage, classification, combination and integration of community database based on information technology. Internal staffs' tacit knowledge includes not only sporadic points of view, thinking, originality, also contains experience of technique and skills and ability of specific application. Based on this, enterprise internal knowledge community can be divided into several modules of Enterprise knowledge library, Enterprise Encyclopedia, Enterprise Interaction Bar. "Knowledge library" will help employee to upload and release the tacit knowledge, which is encoded and expressed into the forms of documents, PPT presentations, video and etc, also files are classified according to the label type for enterprise employees to download. "Enterprise encyclopedia" occurs on the construction of enterprise internal encyclopedia. The contents collected cover knowledge of enterprise internal organization, culture, system, finance, daily management and product design, R&D and manufacture, engineering services and other aspects. Internal staff or department can achieve the contribution and sharing of knowledge through the entries creation, edit, maintain and improvement. At the same time, this module can carry out the recruitment activities of entries creation, the review of entries is controlled by the maintainers of enterprise knowledge community platform to ensure the quality of the published entries. "Enterprise interaction bar" is a knowledge sharing platform about interactive, Q&A based on search. Search engine is combined with the process of users' creation, utilize, interactive, and Q&A, the knowledge can be accumulated, classified and searched. In the process of interaction, the users of knowledge demand could ask questions from the community platform, then knowledge owners express their views, experience, knowledge and other content freely, and while knowledge providers can get acquainted with other users who have the same interest. Knowledge communication and discussion between demanders and providers can deepen and strengthen knowledge, and promote a new round of tacit knowledge innovation, creation, flow and transformation. Through different knowledge community platforms, enterprise employees achieve tacit knowledge flow, transformation, internalize and strengthen from individual to the organization or other individual, on the other hand achieve the process of sporadic, broken and disordered knowledge belonging individuals systemicly recorded, classified, integrated, cleared and ordered, enhance the frequency of transfer and value of transformation of individual tacit knowledge.

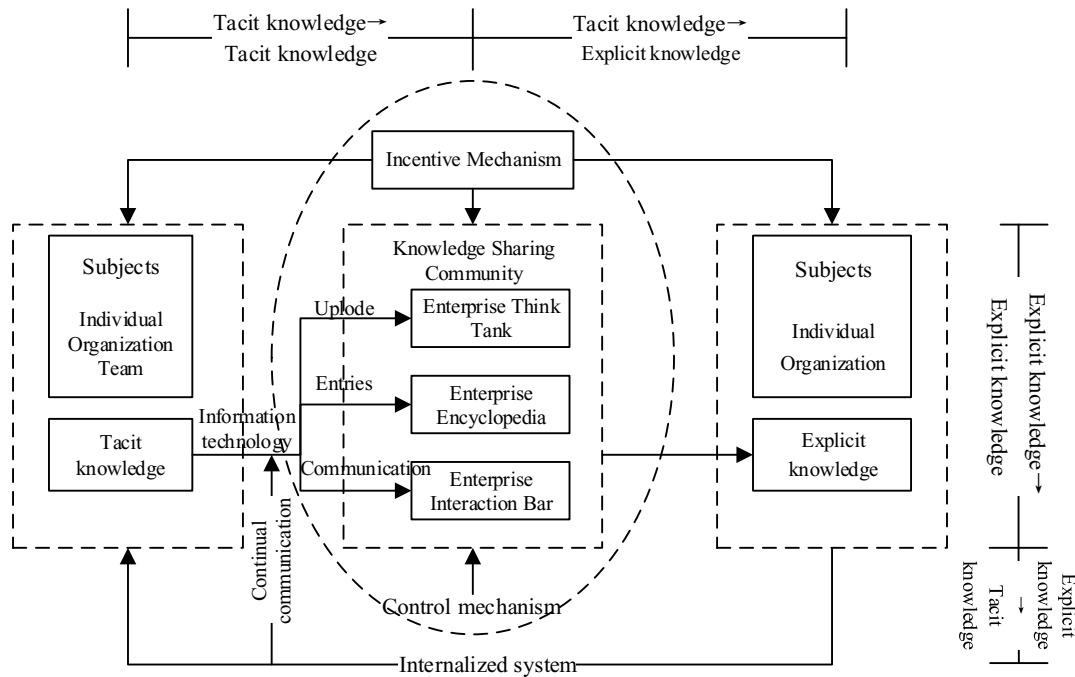


Fig. 3. Enterprise Tacit Knowledge Management Framework.

4.2. Tacit knowledge sharing incentive mechanism

The enterprise knowledge sharing community should also include a certain incentive mechanism. Incentive has a positive effect for internal employees to contribute and share knowledge, and it can better overcome the obstacle that staff are not willing to exchange or teach because of knowledge exclusive and knowledge control. From employees' motives of achievement, affiliation, power and sharing principle of reciprocity, fame, trust, altruism, the design of enterprise knowledge community incentives can promote and guide staff to take actions consistently with corporate goals, which is the strength goal of knowledge spiral creation of socialization, externalization, organization and internalization taking knowledge as the center, and the progressive knowledge value revenue targets of tacit knowledge externalization, explicit knowledge assets, knowledge assets yield. Enterprise internal knowledge community incentive mechanism take knowledge contributors, knowledge users as the object, and is designed according to the content and property of different modules of "Knowledge library", "Encyclopedia" and "Interaction bar".

For knowledge contributors, community modules provide users with authentication, virtual currency, accumulation of experience value and other projects. Incentive design of "Knowledge library" carry out around the upload and download of documents and files. User certification take reference to the quality of documents uploaded, rate of audit and release, professional level and rate of knowledge document downloaded, so as to achieve the labelled management including user promotion, expert certification, "Knowledge library" reputation; Virtual currency take consideration of documents uploaded, downloaded and sold, award of task, promotion certification and etc, so as to achieve the individual users' wealth accumulation in "Knowledge library" module; Experical value is based on to user registration, login and sign-in, document uploading, positivity of task and etc, so as to achieve the increasing of user's experience value. Incentive design of "Encyclopedia" carry out from aspects of entry editing, publishing and improving. User authentication honor take reference to the pass rate of entries auditing, the quality of entries, exciting entries, entries community initiating, entry mobilization participating, entries' fans and etc, in order to achieve the labelled management of users upgrading, professional certification, achievements and honors; Virtual currency take consideration of entries release, entries sharing and retransmission, reward of task, in order to achieve

users' wealth accumulation in "Encyclopedia" module; Experical value is based on user registration, login and sign-in, entries release, participation in mobilization entries and etc, so as to achieve the increasing of user's experience value. Incentive design of "Interactive bar" carry out from aspects of questions' quizing, answering and adopting. User certification take reference to the quality and quantity of answers to questions, rate of adoption, rate of attention, influence, the point of praise of answers, so as to achieve the labelled management of employee users upgrading, professional certification, the field's honor, recommendation adopting, knowledge community initiating and etc; Virtual currency take consideration of answers' questions, rewards of users offering, adoption of questioner, frequency of interactive and etc. So as to achieve the employees' wealth accumulation in "Interactive" module; Experical value is based on user registration, attendance, questions, answers, interaction and etc, so as to achieve the increasing of user experical value.

For the demanders of knowledge, the community module designs incentive mechanism based on users' suggestion of adoption, evaluation and recommendation, download and share, improvement of mobilized entry, community participation degree and so on. Knowledge demanders achieve user upgrades, virtual currency accumulation, the value of experience increased by means of sharing experience on the knowledge be adopted, recommending the best contributors, participating in the knowledge community discussion and other activities.

In addition, besides the realization of each module's incentive in the knowledge community, enterprise should periodically (such as the end of the year) carry out a knowledge quantify the reward incentive mechanism out of the knowledge community combined with the nature of enterprise. Enterprises can incorporate the behavior and representation in the enterprise performance appraisal, which contains behaviors of employees knowledge contribution, sharing and exchange in enterprise intranet of knowledge community and can promote organizational knowledge creation and knowledge profits, or carry out incentives separately, such as the establishment of enterprise knowledge community special award, some professional awards are set according to the knowledge contribution of different modules different categories in the community, and other category of special awards are set according to staff overall knowledge sharing and contribution, knowledge innovation and creation.

Finally, the operation of knowledge community and the implement of incentive mechanism still need some control mechanism. The implementation of incentive mechanism provide the impetus for enterprise employees to forwardly share and learn tacit knowledge. But it is difficult to avoid the occurrence of sharing behavior that of reaching quantity and ignoring the knowledge's quality, which leads to the act of employees exchanging for corporate incentive with lower sharing cost and inferior production knowledge. Therefore, an effective control mechanism should be adopted to support the positive operation of the incentive mechanism in the framework of enterprise tacit knowledge management. Knowledge demanders have evaluation and recommendation to the obtained knowledge, knowledge contributors enhance the quality forwardly according to uploaded requirements, knowledge managers control the quality of entries and documents, the pass rate and establish an appraising mechanism and etc. By the process above, enterprise can establish a trinity control mechanism including knowledge demanders, knowledge contributors and knowledge managers.

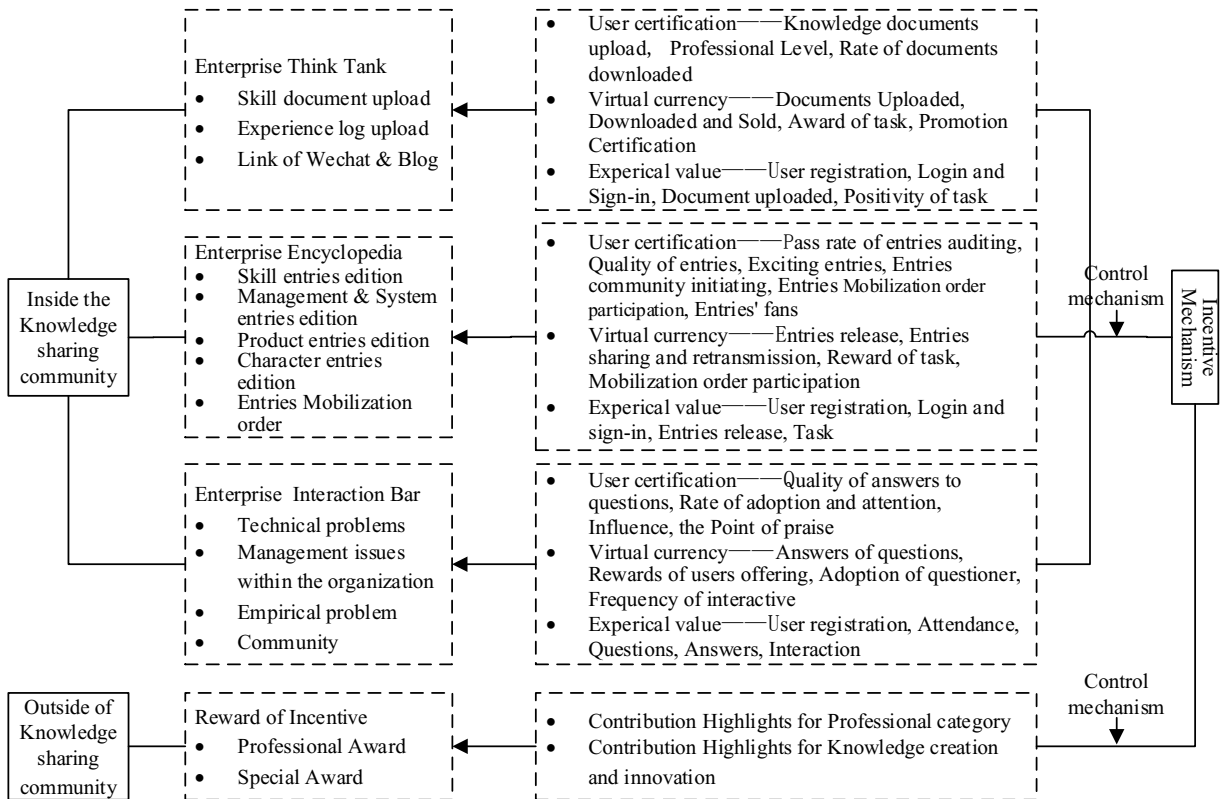


Fig. 4. Incentive Mechanism of Tacit Knowledge Sharing.

5. Conclusion

Tacit knowledge is an important value element for enterprise to obtain competitive advantage, which reflect in the creation and growth of value, and tacit knowledge has gradually become a core part of enterprise knowledge management. But there are certain difficulties to realize the tacit knowledge sharing on basis of employee individual, and therefore it' s difficult for enterprise to achieve the management target of knowledge assets and profits. So how to build incentive mechanism within enterprise, guide and promote enterprise employees to share and learn valued knowledge from each other has become an important part of the enterprise knowledge management system. Based on the previous research and enterprise management problems, This paper defines the connotation of enterprise interior employees individual tacit knowledge, analyzes and sorts out the process of tacit knowledge transformation between the individual and the organization, and the management objectives of enterprise knowledge sharing, dominant, assets and income. Thus, the paper constructs tacit knowledge management framework including knowledge subjects, information technology and knowledge community, and puts forward a sharing incentive mechanism and a control mechanism of the knowledge community, in order to provides a train of thought for the enterprise to explore internal knowledge management path and incentive model.

References

[1] Meister M, M Masella R. Perspectives on knowledge management systems theoretical framework and design of an empirical study. *International Journal of Plasticity*. 2014;55(2):80-93.
 [2] Mohammad P A, A Siadat S, S Rajaepour. The Relationship between Organizational Wisdom and Knowledge Management, Competitive Intelligence and Business Intelligence. *British Journal of Haematology*. 2015;5(2):341-8.

- [3] Barry Andrew Piorkowski, Gao James Xiaoyu, Evans Richard David, Martin Nick. A dynamic knowledge management framework for the high value manufacturing industry. *International Journal of Production Research*. 2013;51(7):2176-85.
- [4] Tianyushan. Research on the framework of tire enterprises tacit knowledge management based on web 3.0. *Journal of Chemical & Pharmaceutical Research*. 2014;6(2):67-71.
- [5] Krčál M. Knowledge Management, ICT support and Reverse Logistics processes: A case study[J]. *Histopathology*. 2015;53(6):621-33.
- [6] Daniel Z. Levin, Cross Rob. The Strength of Weak Ties You Can Trust: The Mediating Role of Trust in Effective Knowledge Transfer. *Management Science*. 2004;50(11):1477-90.
- [7] Byounggu Choi, Lee Heeseok. An empirical investigation of KM styles and their effect on corporate performance. *Information & Management*. 2003;40(5):403-17.
- [8] Kurt Matzler, Renzl Birgit, Müller Julia, Herting Stephan, Mooradian Todd A. Personality traits and knowledge sharing. *Journal of Economic Psychology*. 2008;29(3):301-13.
- [9] Stankiewicz J, M Moczulska. The involvement of employees in knowledge management in the light of the research results. *Computational Materials Science*. 2014;46(2):447-51.
- [10] J. Scott Holste, Fields Dail. Trust and tacit knowledge sharing and use. *Journal of Knowledge Management*. 2010;14(1):128-40.
- [11] Allameh S M, A Rezaei, M. Bagheri M. The Mediating Role of Organizational Learning between Knowledge Management Success Factors and Organizational Innovation A Conceptual Framework. *Journal of Comparative Neurology*. 2014;2(2):1444-8939.
- [12] Sajjad M. Jasimuddin, Zhang Zuopeng. Knowledge management strategy and organizational culture. *Journal of the Operational Research Society*. 2013;65(10):1490-500.
- [13] Anna Rogozińska-Pawelczyk. The role of the psychological contract in knowledge management. *Managerial Economics*. 2014;15(2):203.
- [14] Yang Xu, Bernard Alain, Perry Nicolas, Xu Jing, Sugimoto Shigeo. Knowledge evaluation in product lifecycle design and support. *Knowledge-Based Systems*. 2014;70:256-67.
- [15] Edrisi Muñoz, Capón-García Elisabet, Laínez-Aguirre José M., España Antonio, Puigjaner Luis. Supply chain planning and scheduling integration using Lagrangian decomposition in a knowledge management environment. *Computers & Chemical Engineering*. 2015;72:52-67.
- [16] Amy H. I. Lee, Chen Hsing Hung, Chen Silu. Suitable organization forms for knowledge management to attain sustainable competitive advantage in the renewable energy industry. *Energy*. 2015;89:1057-64.
- [17] M. El Fadel, Rachid G., El-Samra R., Bou Boutros G., Hashisho J. Knowledge management mapping and gap analysis in renewable energy: Towards a sustainable framework in developing countries. *Renewable and Sustainable Energy Reviews*. 2013;20:576-84.
- [18] J.B. Noh, Lee K.C., Kim J.K., Lee J.K., Kim S.H. A case-based reasoning approach to cognitive map-driven tacit knowledge management. *Expert Systems with Applications*. 2000; 19(4):249-59.
- [19] Xiao Hong Zhou, Wang Liang, Cheng Qing. Research on Application of SNA in Tacit Knowledge Management of Project Team. *Advanced Engineering Forum*. 2012;6-7:1173-6.
- [20] Shaofeng Liu, Leat Mike, Moizer Jonathan, Megicks Phil, Kasturiratne Dulekha. A decision-focused knowledge management framework to support collaborative decision making for lean supply chain management. *International Journal of Production Research*. 2013;51(7):2123-37.
- [21] Michel Mitri. Applying tacit knowledge management techniques for performance assessment. *Computers & Education*. 2003;41(2):173-89.
- [22] Iuliana Dorobat. The Role of Tacit Knowledge Management in ERP Systems Implementation. *Ssrn Electronic Journal*. 2008(1-4):78-82.
- [23] Alina Mihaela Dima, Vasilache Simona. Social Network Analysis for Tacit Knowledge Management in Universities. *Journal of the Knowledge Economy*. 2013;6(4):856-64.
- [24] Ragna Seidler - de Alwis, Hartmann Evi. The use of tacit knowledge within innovative companies: knowledge management in innovative enterprises. *Journal of Knowledge Management*. 2008;12(1):133-47.
- [25] Cristina Martinez-Fernandez, Leever Kim. knowledge transfer and industry innovation the discovery of nanotechnology by South-West Sydney organisations. *International Journal of Technology Management*. 2004;28(28):560-81.
- [26] Teece D J. Technology transfer by multinational firms the resource cost of transferring technological know-how. *Economic Journal*. 1977;87:242-61.
- [27] David Constant, Kiesler Sara, Sproull Lee. What's Mine Is Ours, or Is It? A Study of Attitudes about Information Sharing. *Information Systems Research*. 1994;5(4):400-21.
- [28] Yixiang Zhang, Fang Yulin, Wei Kwok-Kee, Chen Huaping. Exploring the role of psychological safety in promoting the intention to continue sharing knowledge in virtual communities. *International Journal of Information Management*. 2010;30(5):425-36.
- [29] Jan Salzmann, Grasha Anthony F. Psychological Size and Psychological Distance in Manager-Subordinate Relationships. *Journal of Social Psychology*. 1991; 131(5):629-46.
- [30] Yasemin Y. Kor, Mahoney Joseph T. How dynamics, management, and governance of resource deployments influence firm-level performance. *Strategic Management Journal*. 2005;26(5):489-96.
- [31] Oded Nov, Kuk George. Open source content contributors' response to free-riding: The effect of personality and context. *Computers in Human Behavior*. 2008;24(6):2848-61.
- [32] Shaul Oreg, Nov Oded. Exploring motivations for contributing to open source initiatives: The roles of contribution context and personal values. *Computers in Human Behavior*. 2008;24(5):2055-73.