The Influence of Structural Hole on The Efficiency of Knowledge Acquisition of MSMEs in China

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Abstract

The objectives of this research were to analyze the relationships between structure hole and efficient knowledge acquisition of MSME, to identify the ways of MSMEs acquiring knowledge from social networks, and to determine whether there is a significant effect of knowledge characteristics on the relationship between structural hole and the efficiency of knowledge acquisition of MSMEs. The research was designed as quantitative research and used survey questionnaires to collect data from 486 entrepreneurs or senior managers of MSMEs, and respondents come from more than 20 different business areas.

In this paper, as the independent variable, structural hole included two dimensions: richness and diversity. Efficient knowledge acquisition of MSME as the dependent variable, its dimensions include proprietorship, satisfaction, a variable quantity of knowledge base, and degree of knowledge innovation. Knowledge characteristics was selected as the moderating variable, it was measured from explicit and tacit knowledge aspects.

After passing the validity and reliability tests, the relationships between independent and dependent variables passed the Pearson Correlation examination. For further specifying the direction of correlation and the causal relationship between variables, One-Way ANOVA was employed in this study, and the findings showed that there is a positive correlation between the richness and diversity of structural holes and efficient knowledge acquisition of MSMEs at significant level. Knowledge characteristics as moderating variable significant effect on the relationship between structure hole and efficient knowledge acquisition of MSMEs.

Keywords: Explicit Knowledge; Knowledge Acquisition; Knowledge Transfer; Social network; Structural Hole; Tacit Knowledge;

Introduction

Micro, Small, and Medium Enterprises (MSMEs) play a major role in most economies, particularly in developing countries. Formal MSMEs contribute up to 60% of total employment and up to 40% of national income (GDP) in emerging economies. These numbers are significantly higher when informal MSMEs are included (the World Bank, 2019). Based on the

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overview of Micro, Small, and Medium Enterprise Country Indicators (MSME-CI) in 199 economies, there are about 322.4 million formal MSMEs, employing more than 1 billion employees (MSME economic indicators, 2019). Gonzales, Hommes, and Mirmulstein (2014) mentioned that high-income economies have the most MSMEs per 1,000 people or MSME density. But the growth rate in the number of MSMEs is highest among low-income and middle-income economies and countries in Europe and Central Asia. MSMEs account for 50 percent to 70 percent of employment across regions. While MSMEs are important because of their total numbers and contribution to employment, they could improve the amount of value-added they contribute to an economy, particularly in developing countries. However, the inefficiency and inequality in acquiring knowledge are key constraints to the growth of MSMEs.

According to the in-depth market research and investment strategy analysis report of Chinese MSMEs, China has 23,280,000 MSMEs until 2019, of which 97.3 percent are small and micro-businesses. The density of MSMEs in China is 16.792 per 1000 people, in 2019. (SME Finance, 2019). MSMEs contributed 60 percent of China's GDP, 50 percent of tax revenue, and 80 percent of urban employment. In addition, there is more than 65 percent of China's invention patents, 75 percent of enterprise technological innovation, and 80 percent of new product development are supported by the MSMEs (Chinabgao, 2018). MSMEs are the fundamental force of China’s economic development, today. However, most of MSMEs are difficult to draw advantages from the process of acquiring knowledge. It significantly restricts these MSMEs to survive and grow in the fierce market competition.

In 1959, Drucker coined the term "knowledge worker," and later many scholars also considered knowledge-worker productivity to be the next frontier of management. Drucker (1959) pointed out that knowledge resources are the source of future competitive advantage of enterprises. Nowadays, the speed of technological iteration and the difficulty of technological innovation make it impossible for MSMEs to acquire the most advanced knowledge by themselves, thus it is inevitable to search for knowledge across organizations. The development of MSMEs is inseparable from the absorption and innovation of knowledge. In addition to relying on traditional resources such as capital, natural resources, and human capital, etc., the success or failure of MSMEs depends more on knowledge resources. The efficient learning, transfer, and sharing of internal knowledge in MSMEs is the key factor to constitute the core competitiveness. However, most of the knowledge possessed by individuals or organizations is tacit knowledge, which is not easy to transfer and share. Tacit knowledge is non-coding and non-structural, and it is closely related to specific organizations and has personalized characteristics. In order to overcome the difficulty, most of MSMEs utilize changes from the process of inlaying and integrating external relations to dynamically adjust their position in the social network for grasping more tacit knowledge.

Problem Statement

In previous studies, knowledge transfer is mainly studied in a point-to-point framework, with emphasis on the status and situation of knowledge transfer between two objects. However, the recent research trend is to add the scenarios into the study of knowledge transfer, which majorly focuses on the influence factors of the "field" of knowledge transfer object and considers that the knowledge transfer activities are in a specific situational environment. Granovetter (1973, 1983) argued that individual behavior is embedded in a concrete and real-time system of social connections. Based on the characteristics of tacit knowledge, knowledge transfer as a social practice must occur in a social network system.

Moreover, as an important research method in sociology, social network analysis has gradually become the main mode of social activity analysis. Generally, it mainly emphasizes on the explanation of social activity phenomenon by interpersonal relationship, relationship connotation, and social network structure. As a new theoretical framework, social network is different from other theoretical frameworks to some extent. Granovetter (1985) took the theoretical framework of neoclassical economic theory as the object of comparison, it describes the clear outline of social network theory in studying economic behavior. Pelz and Andrews (1976) and Allan (1979) believe that people prefer to acquire knowledge from the interpersonal network instead of text, thus social network becomes the main path and platform for individuals to search for knowledge. As a result, a new paradigm of knowledge transfer research based on social network is formed.

Based on the research gaps and the purposes of this study, there are three problems could be summarized as below:

1. The research about the influence of structural holes on knowledge acquisition is insufficient.

2. The research about the ways of MSMEs acquiring knowledge from social networks is insufficient.

3. The research about the influence of knowledge characteristics on efficiently acquiring knowledge of MSMEs from social network by occupied structural holes is insufficient.

Research Objectives

In order to deeper understand the influence mechanism between different types of social network and the efficiency of knowledge acquisition of MSMEs. The research objectives of this paper are set as below:

1. To determine the influence of structural holes on knowledge acquisition.

2. To identify the ways of MSMEs acquiring knowledge from social networks.

3. To determine whether there is a significant effect of knowledge characteristics on the relationship between structural hole and the efficiency of knowledge acquisition of MSMEs.

Conceptual Framework

The conceptual framework was developed from the literature review on structure hole, knowledge characteristics, and efficiency of knowledge acquisition of MSMEs.

The independent variable is a structural hole that includes two measurement dimensions: the richness and the diversity. For the richness, according to Carroll and Teo (1996), it involves 4 aspects: the number of external relationship resources, market information, business opportunities, and the degree of familiarity with the external partners. For the diversity, based on Seibert, Kraimer, and Linden (2001) and Anderson (2002), it could involve 3 aspects: the frequency of social activities that entrepreneurs participate in, the frequency of social relations that entrepreneurs contact with, and the degree of close relationships between entrepreneurs and external partners.

The moderating variable is the knowledge characteristics which include two types of knowledge in this study, which are explicit knowledge and tacit knowledge. (Davies, 2015). Based on the purpose of this study and by referencing Chilton and Bloodgood (2010), Madsen, Riis, and Waehrens (2008), we select four dimensions to measure these three types of knowledge, which are validity, social connectedness, temporality, and heterogeneity.

The dependent variable is the efficiency of knowledge acquisition of MSMEs, which is described analyzed by the efficiency of knowledge transfer, in this research. It means on the premise that a certain amount of knowledge and transfer costs are set, a certain amount of knowledge is transferred from the knowledge sender to the knowledge receiver along the knowledge transfer path within a certain period of time and is absorbed, applied or recreated by the knowledge receiver. According to the relevant research results of scholars from different perspectives on the efficiency of knowledge transfer, this study discussed it from four dimensions, which are proprietorship, satisfaction, a variable quantity of knowledge base, and degree of knowledge innovation.

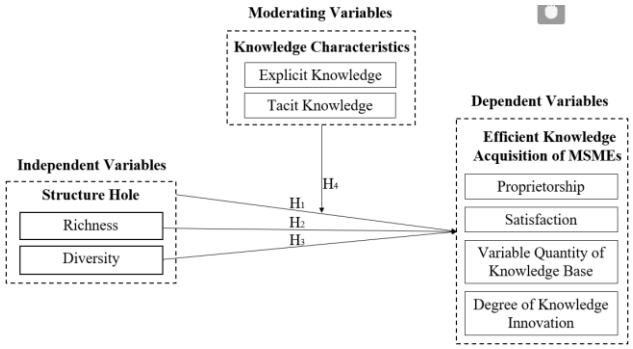


Figure 1.1 Logical relations among the research hypotheses

Source: Designed by the author

Research Hypotheses

H_1: There is a significant correlation between structural hole and efficiency of knowledge acquisition of MSMEs.

H_2: There is a significant correlation between richness of structure hole and efficiency of knowledge acquisition of MSMEs.

H_3: There is a significant correlation between diversity of structure hole and efficiency of knowledge acquisition of MSMEs.

H_4: Knowledge characteristics as moderating variable, it has significant moderating effect on the correlation between structure hole and efficiency of knowledge acquisition of MSMEs.

2. Literature Review

The Number Richness and the Diversity of Structure Hole

Changes in the number of entrepreneur's structure holes will bring changes in the amount of information. Kahler (2015) noted that the more structure holes that an entrepreneur has, the more accesses he or she can have for getting more heterogeneous information, as a result, who is more likely to accurately capture the potential information from the market. By the number of entrepreneurial structural holes increases, the number of information sources will increase, the more new-information will available, and the number of non-redundant information will increase. Moreover, De-Carolis and Saparito (2006) stated that the more entrepreneurial structure holes there are means the wider range and the greater quantity of knowledge in the social network. Once entrepreneurs grasp the opportunity, they can reduce the time cost and timely reserve favorable information resources for their MSMEs.

For the MSMEs, the change in the type of entrepreneurial structure holes could make the change in the diversity of information. Burt (1997) has explained that the more heterogeneous network could have more diverse and non-redundant information that can be collected and selected by entrepreneurs depending on the type of their structure holes. Therefore, the diversity of entrepreneurial structure holes is very important for entrepreneurs to get diversified information and to select useful information sources according to the complex status and various problems of MSMEs, so as to meet the needs of growth, development and time cost saving. Furthermore, with the expansion of the scale of entrepreneur social networks brought by the increase of heterogeneity of structural holes, entrepreneurs can occupy more structural holes that have more information and advantages of controlling. As a result, their MSMEs can have more opportunities to obtain the competitiveness of getting non-residual and diversified information preferentially.

Theories of Knowledge and Knowledge Acquisition

Since the concept of knowledge can be defined from multiple academic perspectives, such as philosophical, management, economic, etc., so far, there is no common definition of knowledge. The earliest definition of knowledge comes from the discussion of philosophers. Plato thought that "knowledge is nothing but a memory". “The Encyclopaedia of China” describes knowledge: "...for its contents, it is the reflection of the attributes and connections of objective things, and is the subjective image of the objective world in the human brain. In terms of the form of its reflection activity, sometimes it is embodied in the subject's perceptual perception or representation of things, which belongs to perceptual knowledge; sometimes it is embodied in the concept or law of things, which belongs to rational knowledge”. (p.). Churchman (1998) argued that to regard knowledge as a combination of information is to separate the concept of knowledge from the whole life of people. Knowledge exists only in its users, not in the information combination, and the interaction between the user and the information is the most important function of knowledge. Drucker (1999) pointed out that knowledge is a kind of information that can change some people or some things. This includes both ways of making information the basis for action and of using it to empower an individual (or institution) to change or behave in a more effective way. Davenport and Prusak (2000) gave a definition of knowledge from a working perspective that knowledge is a dynamic combination of structured experience, values, relevant information, and experts' opinions. It originates in the mind of the knower and works on the mind of the knower. Within an organization, knowledge exists not only in files and databases, but also embedded in the organization's daily work, processes, practices, and specifications.

In the field of management, the concept of knowledge is not unified, but many scholars deemed that knowledge has the common contents like embodied in physical skills and professional knowledge" (Hedlund & Nonaka, 1993), "the trick skill and factual knowledge" (Kogut & Zander, 1992), "embedded in a variety of database" (Walsh & Ungson, 1991), "practices, procedures, processes and structures of the ability" (Teece, 2000)

Theories of Knowledge Transfer

The concept of knowledge transfer was first proposed by Teece in 1977, and also pointed out that international technology transfer can enable enterprises to accumulate knowledge, promote the diffusion of knowledge and technology, and thus narrow the technology gap in different regions. Since then, knowledge transfer has become a hot topic for scholars all over the world. From different perspectives, scholars have different definitions of the concept of it. Kogut and zander (1992) believed that the ability of enterprises to transfer knowledge is an important condition for enterprises to survive. The efficiency of knowledge transfer plays an important role in the improvement of competitive advantages. Szulanski (1996) deemed that Knowledge transfer is the process of transferring knowledge from the

source unit to the target unit, in a certain context, which could be between members, departments or across organizations. From another perspective, knowledge is embedded in different knowledge bases, and the process of knowledge transfer includes related factors, such as the knowledge network formed by roles, tools, and rules. Nonaka (1994) also mentioned that the transfer of knowledge between different units in knowledge management is one of the most important fields. Argote, Ingram, Levine, and Moreland (2000) pointed out that knowledge transfer is a process in which one subject (such as, organization, department, team or individual) is influenced by the knowledge experience of another one. Gilbert and Cordey (1996) believed that knowledge transfer is a dynamic process of knowledge transfer, which includes five stages of knowledge acquisition, knowledge communication, knowledge application, knowledge acceptance, and knowledge assimilation. Then, Garavelli, Gorgoglione, and Scozzi (2002) argued that knowledge transfer is a cognitive process, which consists of coding and interpretation.

According to these different perspectives about the conception of knowledge transfer, the author of this research believes that knowledge transfer is not a mechanical diffusion activity, but a purposeful process of knowledge interaction between two knowledge owners. By the interaction of these two parties, the stream of knowledge could add value to the knowledge base of the acceptor or create new knowledge through assimilation. Therefore, knowledge transfer is the way for organizations or individuals to acquire knowledge.

Models of Knowledge Transfer

Based on different perspectives, scholars gave different knowledge transfer models, which could be categorized as process models, element models, and other models.

The representation theories in the process models are Szulanski (1996) and Gilbert and Cordey (1996). Szulanski (1996) gives four stages for describing the knowledge transfer. At the initial stage of the first stage, when the organization discovers the knowledge gap, the opportunities for knowledge transfer is forming, then the organization will decide to carry out the knowledge transfer, the process enters into the second stage. In this stage, the knowledge receiver and the knowledge provider establish a specific relationship to exchange a lot of information with each other. In order to fill the knowledge gap, the two sides must establish common channels, such as common language, cooperation and so on. The third stage is the spreading stage, in which the knowledge receiver acquires new knowledge and applies it. If the application of new knowledge can get the expected performance or develop towards the expected performance, then knowledge transfer will enter the fourth stage. The fourth stage is the integration stage, in which if the application of new knowledge achieves the expected performance level, the new knowledge will be internalized into new best practices. Of course, it may also result in abandoning the new best practices and returning to the original state.

Gilbert and Cordey (1996) gave five stages for describing the knowledge transfer. In the first stage of knowledge acquisition, the organization searches for new sources of knowledge by means of past experience, activity practice, market transaction, etc. The acquisition and search mode of knowledge will be affected by its own knowledge background. In the second stage of knowledge communication, the transfer of knowledge is inevitably affected by various factors, so an effective communication mechanism must be established. In the third stage of knowledge application, the acquired knowledge must be applied and tested, and finally internalized into the best practices of the organization for achieving the expected performance. The fourth stage is knowledge acceptance. The process of knowledge transfer takes place not only in the senior managers' group, but also in the whole organization. In the fifth stage of knowledge assimilation, the ultimate goal of knowledge transfer is to fill the knowledge gap, form best practices, and internalize them as part of the organization's daily core work.

These two different models have some common ideas about the final goal of knowledge transfer. Therefore, it could be understood that only the knowledge that can be applied in practice can be counted in the calculation of knowledge transfer efficiency. In addition, the process of knowledge transfer needs time, thus the time could be considered as an important influence factor of the efficiency of knowledge transfer. Before the organization completes knowledge assimilation, the newly acquired knowledge needs to go through a cyclic dynamic process, such as communication, control, and feedback.

Effectiveness and Efficiency of Knowledge Transfer

Davenport & Prusak (1998) believe that knowledge transfer must have the receiving side, if the knowledge is not absorbed by the receiving side, then the knowledge transfer will lose meaning. The availability of knowledge is the premise of knowledge transfer, but it cannot guarantee the successful transfer and application of knowledge. Some scholars have pointed out that knowledge transfer means that the receiving party has stored the transferred knowledge in the brain. After the successful knowledge transfer, the receiving party should be able to use the knowledge. Therefore, the final evaluation of knowledge transfer is particularly important.

Allen (1983) mentioned that a successful transfer is often used as a dependent variable in the empirical study of knowledge transfer. Previous identified the successful transfer from different perspectives, mainly including the following four views. The first method is considering how much knowledge is transferred in a certain period of time, (Hakanson and Nobel, 2000). The second method is from the project management literature. Szulanski (1996) believes that a successful transfer is receiving satisfactory knowledge. The third method is technology transfer and knowledge innovation. It focuses on knowledge innovation. Within the planned budget of the organization, new knowledge is used to design new products and

new production processes or optimize the organizational structure. This application of new knowledge can be regarded as the dynamic learning process of the organization. The fourth method is the degree of internalization of knowledge in the learning process. Kostova (1999) argued that knowledge internalization is conceptually close to the traditional structure of organizational behavior, such as organizational commitment, job satisfaction, and psychological ownership.

The effectiveness of knowledge transfer cannot be directly measured. Due to the individual knowledge storage cannot be measured, it is impossible to directly measure the knowledge changing the degree of the receiving party after knowledge transferred. However, the effectiveness of knowledge transfer can be measured by other indicators: first, the effectiveness of knowledge transfer can be measured by measuring degrees of the increased performance. Arogte (2000) and the internalization of knowledge. Nonaka (1994). As for the performance of knowledge transfer, this paper adopts "transfer effectiveness" to carry out relevant description and analysis. The effectiveness of knowledge transfer means that under a certain amount of knowledge and transfer cost, a certain amount of knowledge is transferred from the knowledge sender to the knowledge receiver along the knowledge transfer path within a certain period of time, and is absorbed, applied or recreated by the knowledge receiver. According to the relevant research results of scholars from different perspectives on the efficiency of knowledge transfer, this study discussed it from four dimensions, which are proprietorship, satisfaction, a variable quantity of knowledge base, and degree of knowledge innovation, within a certain period of time

1. Knowledge proprietorship. Bouty (2000) believed that the measurement of knowledge proprietorship should be determined by the amount of the ideas and unique knowledge that the receiving party invests in the process of knowledge transfer, and the internalization degree of the frequency, time, and energy of applying new knowledge.

2. The degree of satisfaction of knowledge transfer. In general, the higher the degree of trust between the two parties, the lower the pressure and resistance in the process of knowledge transfer, and the transfer efficiency is higher.

3. The change of knowledge base. It refers to the knowledge change rate of the receiving party.

4. The degree of knowledge innovation. It refers to that the receiving party localizes the transferred knowledge according to its own environment, so as to use the new knowledge to design new products, new production processes, and optimize organizational structure.

The Influence of Knowledge Characteristics on The Efficiency of Knowledge Transfer

The efficiency of knowledge transfer is not only influenced by social network and transfer situation, but also influenced by the characteristics of knowledge. Although there are many categories of knowledge, knowledge has some common characteristics, such as implicit,

tacit, explicit, uncertainty, complexity, embeddedness, ambiguity, etc. In this research, we selected explicit and tacit knowledge as moderating factors.

Explicit knowledge is the knowledge that can be readily articulated, codified, stored and accessed. It can be easily transmitted to others. Most forms of explicit knowledge can be stored in certain media. Thus, explicit knowledge is easy to express. The opposite of knowledge expressivity is the causal ambiguity of knowledge. Szulanski (1996) pointed out that the "causal ambiguity" of knowledge would also hinder the knowledge transfer process because the reason for the success or failure of ability replication is uncertain. Causal ambiguity is a major obstacle to the transfer of best practices between individuals and between organizations. The higher level of the causal ambiguity, the more difficult to determine the relevant knowledge elements and the relationships in networks that support activities of knowledge transfer. As a result, the causal ambiguity is usually considered as an important factor affecting knowledge transfer. Moreover, the knowledge that is more difficult to express, it is more difficult to learn and teach, and it is more difficult to transfer in organizations. Based on the research of the best practices of knowledge transferring, Szulanski (1996) argued that causal ambiguity is one of the three major obstacles to knowledge transfer performance. Therefore, Nonaka (1994) concluded that expressible knowledge is easier to transfer than tacit and implicit knowledge, and knowledge expressivity is an important factor affecting knowledge transfer.

Tacit knowledge can be defined as skills, ideas, and experiences that people have but are not codified and may not necessarily be easily expressed (Chugh, 2015). With tacit knowledge, people are not often aware of the knowledge they possess or how it can be valuable to others. Goffin and Koners (2011) pointed out that an effective transfer of tacit knowledge generally requires extensive personal contact, regular interaction, and trust. This kind of knowledge can only be revealed through practice in a particular context and transmitted through social networks. To some extent, it is "captured" when the knowledge holder joins a network or a community of practice. In the field of knowledge management, Lam (2000) argued that the concept of tacit knowledge refers to knowledge that cannot be fully codified. Therefore, an individual can acquire tacit knowledge without language. Apprentices, for example, work with their mentors and learn craftsmanship not through language but by observation, imitation, and practice. The key to acquiring tacit knowledge is experience. Without some form of shared experience, it is extremely difficult for people to share each other's thinking processes. Inkpen and Dinur (1998) pointed out that tacit knowledge can be divided into three categories: conscious knowledge, unconscious knowledge, and team knowledge. Conscious knowledge could be encoded, but it may difficult to be learned by others without practice or similar experience. Unconscious knowledge is "naturally occurring" and often referred to as implicit knowledge. Team knowledge is tacit

knowledge with social or public characteristics. All types of knowledge have a common thing that no matter explicit or tacit knowledge they can be implicit at different levels of analysis.

In different industries, the implicit form of knowledge is different. Law firms and consultancies, for example, are characterized by the fact that most knowledge is tacit or implicit in the individual. Both tacit knowledge and explicit knowledge can be transferred through the flow of individual members. If knowledge does not flow with the individual, recipients do not know who has the expertise they need. The transfer of knowledge implicit in individuals requires the flow of individual units. Moreover, knowledge can also be hidden in products. At a particular stage in the product life cycle, the more knowledge is included in products, the more difficult to transfer the knowledge. However, Kogut & Zander (1993) pointed out that knowledge implicit in products or technologies is easier to transfer between units than knowledge implicit in other organizational units. In addition, knowledge can also be implicit in organizational practices. The best practices of an organization are accumulated and formed along with the development of organizational activities. They are the core competitiveness of an organization. Kostova (1999) argued that since organizational practices are meaningful and valuable, the meaning, value, and transferability can determine the activities of knowledge transfer. For example, transferring 15 percent of practices to foreign subsidiaries that involves not only transferring the literal rules to explain the practices, but also the meaning of the parent company's employees gets from the practices. As a result, the practice is implicit in meaningful structures, which makes the transition is more difficult. Furthermore, knowledge can also be hidden in various relational networks. Teece (2000) believes that the condition for knowledge transfer to enterprises is a group of people who are familiar with each other and establish a certain pattern together. The different knowledge contributed by individuals in the team is conducive to the rapid transfer of knowledge, the acceleration of knowledge innovation and the improvement of team performance. It means that the interpersonal network is conducive to knowledge transfer and team performance. Thus, Moreland (1996) found out that training helps improve team performance, while turnover reduces team performance.

3. Research Methodology

Population Size

In order to achieve the research objectives of this study, we look at the number of MSMEs in Yunnan province, China. There are 23,280,312 MSMEs of the whole of China, which have registered on State Administration for Market Regulation. (SME Finance, 2019). Therefore, the sample size for the study is derived from Taro Yamane formula (1967) for calculating sample size. The Yamane formula is shown below:

Supposing to calculate a sample size of a finite, when the original sample collected is more than 5% of the population size, the corrected sample size is determined by using the Yamane' s formula. Based on this study, the population size is 23,280,312, the error level is 0.05. The calculation for the required sample size will be as follows:

$$n = \frac{23{,}280{,}312}{(1 + 23{,}280{,}312 \times 0.05^2)} = 399.99 \approx 400$$

By applying Taro Yamane formula (1967) to derive the sample size for the survey on the population is finite, the sample size from the computation was 400 samples. However, for more convenience and to protect from the incomplete questionnaire, the researcher used 500 samples in this research for easy computation.

Data Collection

In order to avoid possible misunderstandings caused by different personal cognition about our designed questions, we distributed questionnaires in designated groups which nearly formed by entrepreneurs or high-level managers of MSMEs, such as SME co-operation working places, entrepreneur social communities, activities and meetings of " start- ups and innovation", and part-time MBA programs in universities.

Reliability and Validity Tests of Questionnaire Design Test of Reliability

The questionnaire was tested with 30 people who are entrepreneurs or high-level managers of MSMEs, and they were not in the sample group. The reliability value was calculated by using Cronbach's alpha to ensure whether there was internal consistency within the items. The Alpha value of this pilot test was 0.959, it indicated that the questionnaire of this research was highly reliable.

The index of item-objective congruence (IOC) is adopted in this study to test development for evaluating content validity at the item development stage (Rovinelli, & Hambleton, 1977). The result of the IOC test was 0.737, the designed questions of this research are acceptable.

Data Analysis

Due to the research design for the study was designed as quantitative research, descriptive and inferential statistics were employed to analyze the data from the survey questionnaires. The descriptive statistics in the survey questionnaire includes frequency, percentage, mean, and standard deviation, which describes the personal data and the MSME's data. In addition, KMO, Cronbach's Alpha, and One-Way ANOVA are employed to test variables and the hypothesis. The obtained data from the survey questionnaires were inputted into a software computer program for computation and analyzing the data.

4. Findings

Descriptive Analysis Results

Since this study only focuses on small and medium enterprises, all data from 33 large size enterprises of 519 samples had been deleted, as a result, the total valuable sample number is 486. The findings from this research illustrated that the majority of the respondents were male 54.8 percentage and female 45.2 percentage. The rate of female and male are not nearly balanced that could be caused by the survey target population is entrepreneurs of SMEs. In addition, there are around 88.6 percentage of respondents are high-level managers and have more than one-year working experience in their enterprise.

Regression Sample Validity and Reliability Test

The validity analysis of this research is based on factor analysis. KMO and Bartlett's sphere test is adopted to examine whether samples are suitable for factor analysis, to estimate whether the different measurement items under the same variable can reflect the characteristics of the measured variable more accurately. If the value of KMO is closer to 1, the more common factors between variables there are, and it is more suitable for the factor analysis. If the value of Bartlett's Sphericity Test is less than 0.5, it means the samples are not suitable for the factor analysis. In the common criteria, the value of KMO should bigger than 0.6. Therefore, we employed KMO and Bartlett's sphere test to examine the validity of the samples. The reliability test is a measurement method used to check whether the data from the questionnaire survey has consistency or not, which usually employ Cronbach's Alpha to test the consistency coefficient. In general, the value of Cronbach's Alpha above 0.7 indicates that the scale has high reliability.

Table 4.1 Validity and Reliability Test Result

Factors	KMO	Sig	Alpha
Structure Hole	.985	.000***	.983
Richness	.968	.000***	.956
Diversity	.972	.000***	.978
Knowledge Characteristics	.872	.000***	.949
Explicit Knowledge	.764	.000***	.929
Tacit Knowledge	.773	.000***	.905
Efficient Knowledge Acquisition	.957	.000***	.968
Proprietorship	.937	.000***	.958
Satisfaction	.926	.000***	.913

Variable Quantity of Knowledge Base	.942	.000***	.968
Degree of Knowledge Innovation	.951	.000***	.924
All Scale Factor (48 Items)	.990	.000***	.990

Sig <0.05

Correlation and Regression Analysis

As the premise of regression and correlation analysis were used to preliminarily judge whether the interaction and influence between variables exist and whether the hypothesis is valid. Pearson correlation analysis is employed in this study to analyze the correlation coefficient. According to the coefficients of Person Correlation in Table 4.2, there are high degrees of correlation between the variables, which, therefore, accepted the hypotheses of this research. The regression analysis employed to further test the directions of correlations of Hypotheses. The results of the regression analysis mainly reflect the standardized coefficients Beta of independent variables on dependent variables, the significance test value of the regression coefficient, multiple determination coefficient R^2, and overall determination coefficient Adj.R^2.

Table 4.2 Coefficients of Correlation and Regression between Variables

IV	Person Correlation Coefficient	Adjusted R^2	Sig.	Standardized Coefficients Beta	DV	Hypotheses Test Result
SH	.946	.894	.000***	.946	EKAM	H_1 Accepted
R	.882	.778	.000***	.882	EKAM	H_2 Accepted
D	.899	.808	.000***	.899	EKAM	H_3 Accepted

Sig < 0.05

Annotation: IV is Independent Variable; DV is Dependent Variable; SH is Structural Hole; R is Richness of Structural Hole; D is Diversity of Structural Hole; EKAM is Efficient Knowledge Acquisition of MSMEs.

Table 4.2 shows the results of the two-tailed test between variables are all less than 0.01, which means they correlate each other at the significance level of one percent. From the Pearson correlation coefficient, all values of the correlation coefficient are greater than 0.8, which indicates that there are high degrees of correlations between independent variables and dependent variables. Therefore, based on the results, hypotheses 1 to 3 can be accepted. Moreover, all variables have entered into the regression analysis at the level of significance 0.01, which means the error rate remains at the level of one percent. All of the Adj.R^2 coefficients have presented there are a high percentage of explanation from independent variables to dependent variables. The standardized coefficients Beta here indicates there are significant positive correlations between independent variables and dependent variables. As a result, the H1 to H3 was accepted with positive correlations.

Effectiveness of Moderating Variable

The effectiveness of the moderating variable can be analyzed by the method of variable standardization that is introduced in Aiken and West (1991). The variable standardization is a technique of mean centering, the purpose of it is to avoid the collinearity. After regression analysis, the significance of the moderating variable can be identified. By adding one standard deviation and subtracting one standard deviation from the mean of the moderating variables, one high score and one low score grouping of the moderating variable can be obtained. After the regression analysis between the independent variables and the dependent variables under conditions of different two groups of the moderating variable, the influence result of the moderating variable on the relationship between the independent variables and the dependent variables can be clearly presented. (Kraemer & Blasey 2004). Table 4.3 shows the results of regressions on dependent variable (efficient knowledge acquisition) into z score of independent variable (structural hole); into z score of moderating variable (knowledge characteristics); into the multiplication of z score of structural hole and z score of knowledge characteristics.

Table 4.3 Regressions between Z Score of Variables

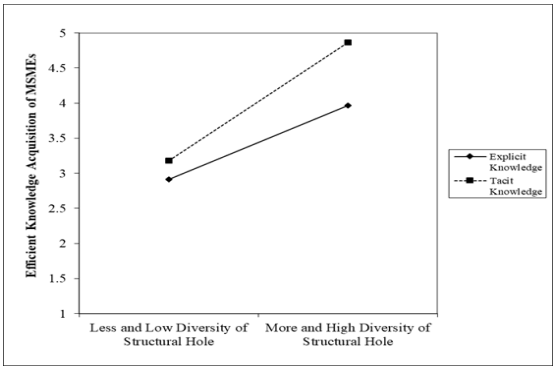
Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	3.673	.020		184.262	.000		
	Z score (SH)	1.049	.020	.919	52.547	.000	1.000	1.000
2	(Constant)	3.673	.017		214.319	.000		
	Z score (SH)	.525	.043	.460	12.294	.000	.162	6.186
	Z score (KC)	.572	.043	.502	13.412	.000	.162	6.186
3	(Constant)	3.440	.027		136.677	.000		
	Z score (SH)	.528	.043	.463	12.279	.000	.160	6.266
	Z score (KC)	.584	.046	.512	12.607	.000	.137	7.275
	SH(z)*KC(z)	.315	.031	.132	3.657	.000	.783	1.277

a. Dependent Variable: Efficient Knowledge Acquisition

Annotation: SH is Structural Hole; KC is Knowledge Characteristics.

All z scores of variables are at significant level (< 0.05), it means the effect of moderating variable (knowledge characteristics) was significant. Therefore, hypothesis 4 can be accepted. The following figure 4.1 shows the comparison of the regression effect of the high-value and low-value grouping of the moderating variable on the relationship between independent and dependent variables.

Figure 4.1 Comparison of regression effects of different groupings of moderating variable



The figure 4.1 clearly displayed that the slopes of two lines are different obviously, which means the effects of explicit knowledge and tacit knowledge as moderating dimensions on the correlation between the independent variable (structural hole) and dependent variable (efficient knowledge acquisition) are different. Therefore, there is a significant moderating effect on the correlation between structure hole and efficiency of knowledge acquisition of MSMEs. H_4can be accepted.

In summary, after reliability, validity, correlation, and regression analyses, a conclusion can be drawn that hypothesis 1-3 is acceptable with positive correlations. In addition, by the z score variables regression analysis, hypothesis 4 can be accepted.

5. Conclusions

Contribution to Knowledge

This paper discusses the new mission and value of MSMEs from the perspective of structural hole and knowledge acquisition, and reveals the intrinsic value of entrepreneurial structural hole, providing a new perspective of innovation for future research. By analyzing the relationship between the structure hole and the social network, this study provides a valuable theoretical perspective on the social network and efficiency of knowledge acquisition of MSMEs. Moreover, based on the study of the outcomes of the knowledge Characteristics and the benefits of knowledge transfer in the network brought by the reconstruction of the relationship chain, it provides a theoretical reference for the MSMEs in how to choose, shape and optimize their social networks and structural holes. In addition, by analyzing the variables' measurement dimensions of structure hole, knowledge characteristics, and efficient knowledge acquisition of MSMEs, this study presents a new perspective compared with previous studies, that entrepreneurs of MSMEs should reasonably optimize, eliminate, and reconstruct their social relationship network based on the current operating situation of enterprises, which could help them to explore and identify new potential opportunities of innovation, coordinate internal and external knowledge of enterprises, and establish a reliable and efficient knowledge base of the enterprise.

Contribution to Practice

Based on the conceptual analysis, the relationships analysis, and the product analysis of social network, structure hole, knowledge characteristics, and efficient knowledge acquisition of MSMEs in this paper, we found that in daily social communicational activities, the enterprise should focus on expanding the scope of its social circle and network, and devote the time and the energy to establishing connections with individuals and social groups at all levels and fields, including governments, media, and financial institutions. MSMEs should constantly look for structural holes in social activities, dig unique resources, and enrich new knowledge by participating in market and non-market activities among external stakeholders.

Entrepreneurs should also focus on selecting the "primary contacts" who are most important to them in their relationships and use them to gain access to a wider range of knowledge among groups. This approach could improve the efficiency of relationship connection and maintain a balance among connections which could be differentiation, decentralization, and cluster. Moreover, in order to clearly identify the relationship that can really bring innovation opportunities, MSMEs should consciously sort out connections with different levels in the relationship network at ordinary times. If the structural hole is in an active position, the enterprise can use the existing structure hole to seize the usable and valuable knowledge, otherwise, if it is in a passive position, such as the number of structural holes is not enough or very lack, the enterprise also should actively "create" opportunities for enriching its knowledge. Furthermore, in order to effectively use and prevent knowledge leakage, effectively manage personal network relationships and timely adjust and reposition the status of structure holes, entrepreneurs need to unite their behaviors of building a personal relationship with the growing needs of enterprises. The structure hole is in a dynamic process of change. The dynamic change is accompanied by growth, management, optimization and reconstruction of the structure hole, which are also an important function of MSMEs in relationship management. MSMEs could have to reach the different needs for its survival and development by the dynamic adjustment of structural holes with different characteristic forms, diversity, and heterogeneity. On the one hand, MSMEs need to get rid of their own existence of various business difficulties, must proceed from the individual entrepreneur and employees, who should have a good performance on innovation, marketing strategy, satisfying customer needs, winning in the competitive market, and obtaining sustainable profits. On the other hand, when the enterprise is faced with the current situation of limited knowledge and marketing practice, and the effect of weakening from competitors, it should flexibly use the occupied structural hole in the relationship network to explore better and richer network benefits. In the process of construction and maintenance of individual relationship networks, MSMEs need to pay more attention to searching structure holes in the network of different groups. Entrepreneurs or employees should play a role as a "relationship bridge builder" in different industries or fields in the market when they consolidate the various relationship chains, which could make previously unrelated groups form connectional unit, make them become the intermediary of knowledge and information flow, which could combine internal and external heterogeneous information and interests for their enterprise. Entrepreneurs and employees should also initiatively enhance the connections strength, the relevance, and the heterogeneity of the related networks, and enable differentiated network members to communicate and interact each other more closely and smoothly, which could help the enterprise to reinforce the advantages of obtaining and controlling knowledge sources, so as to improve the level of innovation. At the same time, MSMEs should pay attention to prevent

the disadvantageous situation that informal organizations and closed networks could disintegrate their structure hole. There are many ways, such as optimizing, eliminating, and reconstructing their redundancy relationship, which the enterprise could adopt to expand the diversity of its relationship network, explore and identify new potential opportunities, coordinate internal and external related parties, and rebuild the trust and the reputation in the market. Thus, the knowledge transfer advantage of the structure hole could be used to obtain an efficient investment return and diversified social resources for helping the innovation of the MSMEs.

Limitation and Future Research

This study mainly focusses on the research about the influence of structural hole in the efficient knowledge acquisition of MSMEs. However, with the development of the social economy and market economy, it is difficult for MSMEs to survive individually in the increasingly fierce market competition. Therefore, there are many MSMEs clusters and joint office space (or called co-working space) as new things have appeared in the market. In future research, the entrepreneurial structural hole could be deeper analyzed from the perspective of closed and opened MSMEs clusters, such as knowledge transfer in internal relationships of a cluster, and knowledge acquisition from different clusters. In addition, functions of structural hole are touched upon in this study, which could be also deeply analyzed as new functions of entrepreneurs in future research. From the perspective of social relationships, functions of seeking, occupying, optimizing, and maintaining structure holes could be considered as the key duties of MSMEs. Although it is nearly impossible for one enterprise to occupy all structure holes in a network, the number and the richness of occupied structure holes can help MSMEs to acquire more usable and valuable knowledge. However, too many redundancy structure holes could cost too much energy and reducing the work efficiency of MSMEs for maintaining them. Thus, how to optimize structure holes could be studied in the future.

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