Action Mechanism of Relation Skills of Villager Autonomy Organizations on Operation Performance of Farmer Households

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Abstract  Through building "relation skills - knowledge acquisition - operation performance", this paper discussed action mechanism of relation skills of villager autonomy organizations on operation performance of farmer households. On the basis of questionnaires survey of 208 farmer households in Guangdong, it studied influence of relation skills of villager autonomy organizations on operation performance of farmer households from hierarchical relation skills and market relation skills, and introduced knowledge acquisition as mediator variables to discuss the influence mechanism. Results indicate that relation skills and knowledge acquisition have positive influence on operation performance of farmer households, knowledge acquisition takes intermediate action on market relation skills and operation performance, while hierarchical relation skills promote improvement of operation performance only through acquisition of explicit knowledge.

Key words  Village autonomy organizations, Market relation skills, Hierarchical relation skills, Explicit knowledge, Tacit knowledge, Operation performance

The household contract responsibility system changes collective unified management of people's commune system, but it is not small private ownership of dividing farmland to farmers. Under the household contract responsibility system, there is collective unified management and household separate households, which is called double-tier management system that combines unified and separate management. However, in the process of farmers going to market, due to separate entities, lack of information and low organizational level, they often remain in weak position[1]. Farmers must have certain organizational degree and negotiation skills. In other words, transaction costs between farmers should be lowered, to easily reach consensus of opinions, form competitive power and effective pressure with government organizations and business organizations[2]. In miscellaneous social public affairs and numerous agricultural development problems of rural areas, how to bring into play functions of villager autonomy organizations in the process of increasing farmer households' operation performance is a practical and significant problem. This also leads to concern and thinking of scientific researchers for the relation between villager autonomy organizations and operation performance of farmer households; in which approach they mutually influence each other? Whether there is correlation between relation skills of village autonomy organizations and operation performance of farmer households? How different relation skills exert influence on operation performance of farmer households? For these, we will explore the action of organization relation skills to knowledge acquisition, so as to find function and influence of knowledge acquisition to operation performance of farmer households in the village autonomy organizations, to provide theoretical guidance and practical recommendations for villager autonomy organizations and farmer household operation management knowledge.

1 General situation of relevant researches and building of models

1.1 Relation skills of villager autonomy organizations  Relation skills are ability of realizing cost reduction, acquiring certain knowledge, integrating resources and ultimately raising self competitive edge through the relation resources established by interactive, cooperative and knowledge sharing on the basis of trust. Social relation network is foundation and carrier of social capitals, and rural social capitals can be divided into instrumental and emotional functions. Instrumental function is to provide information and trust, and emotional connection in emotional function is easier to reach credit agreement[3]. Villager autonomy organizations with social capital of more relation networks can possess relatively more social material wealth relying on their economic or political resources[4]. Social capital can fully explore and use local resources, reduce social activity cost, help farmers realize resource sharing, and cover the shortage of manpower and agricultural tools, and it is favorable for improving cooperation awareness and promoting realization of organization goals[5].

Relation skills determine enterprises obtaining strategic heterogeneous resources from allied partners in which kind of efficiency, quality and value concept. Such heterogeneous resources cross enterprise boundary and imbed conventional practice and process through mutual cooperation and exchange, forming exogenous relational rents[6]. Zeng Fu'e et al[7] defined enterprise relation skills as the ability of enterprises to obtain core heterogeneous resources and make organic integration of internal resources to improve competitive edge through strategic cooperation and interaction with ex-
ternal allied partners. In the process of economic transformation, a typical characteristic is gradual introduction of market mechanism, forming the pattern of coexistence of two types of resource allocation system: one is planned allocation mechanism (allocating resources through administrative system) and the other is price mechanism (guiding resource allocation through market competition system). In the process of contacts with related people in these two systems, enterprises condense different social relation network through social network mechanism. This produces two completely different heterogeneous social capitals; hierarchical social capital and market social capital. The cooperation relation skills of enterprises with related people in these two systems have significant influence on business efficiency\(^{[7]}\). According to the above analysis, we divide relation skills of villager autonomy organizations into hierarchical relation skills and market relation skills, and define it as the relation between villager autonomy organizations with cooperative partners in different systems.

1.2 Relation skills, knowledge acquisition, and operation performance

Relation skills involve organized exchange of resources, knowledge and ability, such exchange can obviously increase organizational efficiency, thus the development of relation skills is deemed certainly leading to performance improvement and promoting organizations to launch more efficient exploration in potential cooperative partners\(^{[6]}\). With development of organization network and fuzzy trend of enterprise boundary, organizations no longer just rely on possession of scarce resources, but obtain competitive edges through constantly learning and knowledge innovation; their competitive edges not only depend on their internal resources, but also depend on various resources and ability difficult to be imitated by competitors in various relation networks\(^{[8]}\).

Knowledge can realize external resource integration through cross-organizational relation network\(^{[9]}\), and enterprise can be benefited through knowledge transfer between members of social network\(^{[10]}\). Therefore, knowledge acquisition is in essence relation network based knowledge interaction process, and knowledge acquisition and performance largely depend on construction effect of relation network\(^{[11]}\). In other words, knowledge acquisition is based on improvement of relation skills, while improvement of relation skills is helpful for absorbing knowledge in interaction of network relations.

In the times of knowledge economy, knowledge becomes more and more important for development of organizations. To obtain and keep competitive edges, enterprises must constantly acquire and absorb knowledge from outside. The ability of absorbing outside knowledge is a key element of corporate innovation ability\(^{[12]}\). Through knowledge acquisition, enterprises can accurately predict changes of future environment and take related strategic actions and make proactive response, to obtain constant competitive edges\(^{[13]}\). Knowledge diversity (including explicit and tacit knowledge) is favorable for promoting learning depth, scope and speed, and accordingly favorable for lifting operation performance of enterprises\(^{[14]}\). Empirical studies show that various knowledge acquired from outside will exert positive influence on organizational performance\(^{[14-16]}\).

In this study, following the path of "relation skills - knowledge acquisition - operation performance" of villager autonomy organizations, starting from market and hierarchical relation skills, taking knowledge acquisition as intermediate variables, we built the concept models of relation skills of villager autonomy organization influencing operation performance, as shown in Fig. 1.

![Fig. 1 Concept model of this study](image)

2 Theoretical hypotheses

2.1 Relation skills of villager autonomy organizations and operation performance

Since relation is important source for organizations creating competitive edges, developing relation skills will exert significant influence on operation performance of organizations. In this study, we will discuss from market relation skills and hierarchical relation skills. From the perspective of market relation skills, for an organization, excellent market relation skills are helpful for promoting market outlook\(^{[17]}\), trust relation between organization members\(^{[18]}\), and development of business platform, to absorb external resources better, reduce internal transaction cost, and increase performance potential of organizations, to ultimately improve operation performance\(^{[19-20]}\). Therefore, improving market relation skills of villager autonomy organizations is favorable for raising operation performance.

From the perspective of hierarchical relation skills, hierarchical relation skills are horizontal relation skills\(^{[21]}\) and refer to ability of realizing organic combination of internal resources to improve competitive edges through interaction, cooperation and knowledge sharing of scientific research institutions, government departments, financial institutions, intermediaries, and industrial associations forming effective integration and management of resources. Hierarchical relation skills are helpful for establishing trust relation, so as to provide enterprises with competitive edges that are impossibly obtained by other channels\(^{[22]}\). Such form of social capital can promote unity and cooperation of organization members, regulate operation, obtain external resources, and increase management efficiency, so as to improve operation performance\(^{[23]}\). Therefore, improvement of hierarchical relation skills of villager autonomy organizations is helpful for establishing trust relation between government departments and subordinate and superior organizations, obtaining benefits from policy and competitive edges in the process of contacts, accordingly exerting certain influence on operation performance of farmer households. On the basis of the above analysis, we put forward following hypotheses:
2.3 Intermediation of villager autonomy organizations in knowledge acquisition

H1a: Market relation skills of villager autonomy organizations have positive influence on operation performance

H1b: Hierarchical relation skills of villager autonomy organizations have positive influence on operation performance

2.2 Relation between knowledge acquisition and operation performance

Knowledge resources in relation network have become key and essential factors for enterprises improving operation performance\(^{[24]}\), knowledge resources owned by enterprises determine their operating ability and are important foundation for creating competitive edges and improving operation performance\(^{[25-26]}\). Through learning and acquiring valuable knowledge and skills, it is able to expand knowledge foundation of enterprises, increase application scope of original knowledge, transform their knowledge structure, and promote enterprises to make correct decisions, which are extremely important for realization of performance objectives\(^{[27]}\). Empirical researches show that knowledge acquisition plays an intermediary role in the relation between absorption ability and operation performance\(^{[28]}\). Besides, some scholars made researches on the relation between knowledge acquisition and innovation performance from types of knowledge (explicit and tacit knowledge) and proved that explicit knowledge has direct positive effect on innovation performance\(^{[29]}\). Senker\(^{[30]}\) stressed important role of tacit knowledge for enterprise innovation because advanced knowledge, technology and successful innovation experience are tacit. Similarly, only through effectively improving acquisition effect of external knowledge, may it be able to generate significant promotion to innovation performance. In this study, we divide knowledge acquisition into explicit knowledge acquisition and tacit knowledge acquisition. Acquisition and conversion of such knowledge resources make villagers obtain and keep competitive edges. According to the above analysis, we put forward following hypotheses:

H2a: villager autonomy organizations can improve operation performance through acquisition of explicit knowledge

H2b: villager autonomy organizations can improve operation performance through acquisition of tacit knowledge

2.3 Intermediation of villager autonomy organizations in knowledge acquisition

Only in certain relation network, may organizations survive, and relation network is an important approach and channel for enterprises obtaining external knowledge resources\(^{[31]}\). Actions of individual economy are influenced by dual relation and overall network structure\(^{[32]}\), while relational social capital owned by organizations will directly influence their knowledge acquisition and performance\(^{[33]}\). Therefore, on the one hand, villager autonomy organizations need constantly improving relation skills for survival, taking full advantage of local resources and social capitals, improving knowledge acquisition with the aid of the relation with other market organizations, to bring more explicit and tacit resource advantages. On the other hand, as described in 2.2, knowledge acquisition of villager autonomy organizations plays a key role in improving villagers' operation performance. Based on this, we believed that knowledge acquisition of villager autonomy organizations plays a certain intermediary role in relation skills and operation performance.

According to the above analysis, we put forward following hypotheses:

H3a: explicit knowledge plays an intermediary role in the relation between market relation skills and operation performance

H3b: tacit knowledge plays an intermediary role in the relation between market relation skills and operation performance

H3c: explicit knowledge plays an intermediary role in the relation between market relation skills and operation performance

3 Study methods

In this study, we took local farmer households of Guangdong Province as research objects, samples came from the Delta of the Pearl River, where rural areas have made some new attempts in implementing villager autonomy system and it has introduced new means of rural administration, established new mechanism of village level administration, which transcends general administration structure established in the context of villager autonomy system, is of great significance for promoting development of rural village level administration. It can better prove theoretical hypotheses and is helpful for obtaining representative recommendations. We adopted random sampling. Before formal survey, we surveyed willingness of those farmer households by telephone and issued and collected questionnaire copies for those willing to be interviewed. We issued 250 questionnaire copies and collected 239 copies (96%), and the valid copies were 208 (83.2%). We adopted Likert-Type Scale. Respondents gave one to seven points according to actual situations of enterprise; 7 points for strongly agree, 6 points for agree, 5 points for somewhat agree, 4 points for either agree or disagree, 3 points for somewhat disagree, 2 points for disagree, and 1 point for strongly disagree. The value of all 5 latent variables was calculated for 19 variables using Likert-Type 7 point scale method.

4 Analysis results

4.1 Reliability and validity test

For factor analysis and reliability test, we employed SPSS 20 statistical software to make factor analysis for relation skills and knowledge acquisition. We used regression method to extract factors and adopted maximum variance rotation. Results (Table 1) show that relation indicators can be reflected well in market relation skills and hierarchical relation skills (KMO and Bartlett tests reached 0.797, and total percentage of explained variance reached 65.97%); knowledge acquisition indicator can be well reflected in explicit and tacit knowledge (KMO and Bartlett tests reached 0.835, and total percentage of explained variance reached 59.53%).
Table 1  The results of factor analysis

<table>
<thead>
<tr>
<th>Latent variables</th>
<th>Variable measurement</th>
<th>Descriptive statistics</th>
<th>Factor loading coefficient</th>
<th>Principal component variance contribution rate/ %</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market relation skills</td>
<td>Villager autonomy organizations highly rely on establishment of strategic cooperation relation of market</td>
<td>Mean: 3.66, Standard deviation: 1.72</td>
<td>0.736</td>
<td>63.908</td>
<td>0.811</td>
</tr>
<tr>
<td></td>
<td>Strategic cooperation of market is more important than resources of villager autonomy organizations</td>
<td>Mean: 3.47, Standard deviation: 1.62</td>
<td>0.728</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Strategic cooperation of market provides an important internal information source</td>
<td>Mean: 4.16, Standard deviation: 1.75</td>
<td>0.819</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Strategic cooperation of market helps villager autonomy organizations maintain resource security</td>
<td>Mean: 3.93, Standard deviation: 1.62</td>
<td>0.788</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Hierarchical relation skills</td>
<td>Villager autonomy organizations highly rely on establishment of strategic cooperation relation with government and officials</td>
<td>Mean: 3.39, Standard deviation: 1.69</td>
<td>0.799</td>
<td>67.807</td>
<td>0.841</td>
</tr>
<tr>
<td></td>
<td>Strategic cooperation with government and officials is more important than resources of villager autonomy organizations</td>
<td>Mean: 3.32, Standard deviation: 1.68</td>
<td>0.807</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Strategic cooperation with government and officials provides an important internal information source</td>
<td>Mean: 3.95, Standard deviation: 1.73</td>
<td>0.842</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Strategic cooperation with government and officials helps villager autonomy organizations maintain resource security</td>
<td>Mean: 4.09, Standard deviation: 1.79</td>
<td>0.717</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Explicit knowledge</td>
<td>Villager autonomy organizations can acquire market demand information</td>
<td>Mean: 3.56, Standard deviation: 1.39</td>
<td>0.819</td>
<td>69.085</td>
<td>0.776</td>
</tr>
<tr>
<td></td>
<td>Villager autonomy organizations can acquire technological development information</td>
<td>Mean: 3.45, Standard deviation: 1.45</td>
<td>0.853</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Villager autonomy organizations can acquire government policy information</td>
<td>Mean: 3.81, Standard deviation: 1.51</td>
<td>0.821</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Tacit knowledge</td>
<td>Villager autonomy organizations can acquire technological research and development knowledge</td>
<td>Mean: 2.68, Standard deviation: 1.43</td>
<td>0.917</td>
<td>78.830</td>
<td>0.814</td>
</tr>
<tr>
<td></td>
<td>Villager autonomy organizations can acquire innovation management knowledge</td>
<td>Mean: 2.78, Standard deviation: 1.48</td>
<td>0.893</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Villager autonomy organizations can acquire market expansion knowledge</td>
<td>Mean: 3.08, Standard deviation: 1.55</td>
<td>0.863</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Democracy degree of villager autonomy organizations</td>
<td>Mean: 3.85, Standard deviation: 1.61</td>
<td>0.875</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Operation performance</td>
<td>Upgrade of capability and technology</td>
<td>Mean: 3.11, Standard deviation: 1.52</td>
<td>0.815</td>
<td>68.723</td>
<td>0.847</td>
</tr>
<tr>
<td></td>
<td>Profit</td>
<td>Mean: 3.88, Standard deviation: 1.49</td>
<td>0.840</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Sales growth</td>
<td>Mean: 3.54, Standard deviation: 1.41</td>
<td>0.859</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Productivity</td>
<td>Mean: 3.61, Standard deviation: 1.47</td>
<td>0.800</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

4.2 Empirical analysis and discussion  In quantitative researches, regression analysis is widely applied in determining interdependence of two or more variables. Here, we used regression analysis to test data and check whether the above mentioned hypotheses hold true. We summarized regression coefficient of relation skills, knowledge acquisition and operation performance, which are listed in Table 2.

Table 2  The results of regression analysis

<table>
<thead>
<tr>
<th>Number of regression</th>
<th>Independent variables</th>
<th>Dependent variable</th>
<th>Regression coefficient (β)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Market relation skills</td>
<td>Operation performance</td>
<td>0.397</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Hierarchical relation skills</td>
<td>Operation performance</td>
<td>0.137</td>
<td>0.032</td>
</tr>
<tr>
<td>3</td>
<td>Explicit knowledge</td>
<td>Operation performance</td>
<td>0.178</td>
<td>0.033</td>
</tr>
<tr>
<td>4</td>
<td>Tacit knowledge</td>
<td>Operation performance</td>
<td>0.202</td>
<td>0.015</td>
</tr>
<tr>
<td>5</td>
<td>Market relation skills</td>
<td>Explicit knowledge</td>
<td>0.267</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Hierarchical relation skills</td>
<td>Explicit knowledge</td>
<td>0.151</td>
<td>0.025</td>
</tr>
<tr>
<td>7</td>
<td>Market relation skills</td>
<td>Tacit knowledge</td>
<td>0.202</td>
<td>0.003</td>
</tr>
<tr>
<td>8</td>
<td>Hierarchical relation skills</td>
<td>Operation performance</td>
<td>0.099</td>
<td>0.149</td>
</tr>
<tr>
<td>9</td>
<td>Market relation skills</td>
<td>Operation performance</td>
<td>0.342</td>
<td>0.000</td>
</tr>
<tr>
<td>10</td>
<td>Hierarchical relation skills</td>
<td>Operation performance</td>
<td>0.193</td>
<td>0.004</td>
</tr>
<tr>
<td>11</td>
<td>Explicit knowledge</td>
<td>Operation performance</td>
<td>0.343</td>
<td>0.000</td>
</tr>
<tr>
<td>12</td>
<td>Market relation skills</td>
<td>Operation performance</td>
<td>0.240</td>
<td>0.000</td>
</tr>
<tr>
<td>13</td>
<td>Tacit knowledge</td>
<td>Operation performance</td>
<td>0.240</td>
<td>0.000</td>
</tr>
</tbody>
</table>
From Table 2, we obtained following results:

(i) Relation skills and operation performance. We made multiple regression analysis taking hierarchical relation skills and market relation skills as independent variables and operation performance as dependent variables. Significance test indicates that significance level of market relation skills \( P = 0.000 < 0.05, \beta = 0.397 > 0 \). Thus, hierarchical relation skills have significant positive influence on operation performance, namely, the hypothesis H1a "Market relation skills of villager autonomy organizations have positive influence on operation performance" holds true. Similarly, \( P \) value of market relation skills is 0.032 and \( \beta \) is 0.137, proving that the hypothesis H1b "Hierarchical relation skills of villager autonomy organizations have positive influence on operation performance" holds true.

(ii) Knowledge acquisition and operation performance. We made multiple regression analysis taking explicit and tacit knowledge as independent variables and operation performance as dependent variable, the results indicate that explicit knowledge has significant influence on operation performance \( (P = 0.033, \beta = 0.178) \), thus the hypothesis H2a holds true. Similarly, tacit knowledge has significant influence on operation performance \( (P = 0.015, \beta = 0.202) \), and the hypothesis H2b holds true.

(iii) Intermediary role of knowledge acquisition. In the regression of relation skills to knowledge acquisition, the market relation skills have significant influence on both explicit knowledge \( (P = 0.000, \beta = 0.267) \) and tacit knowledge \( (P = 0.003, \beta = 0.202) \), while hierarchical relation skills have significant influence only on explicit knowledge \( (P = 0.025, \beta = 0.151) \) but has no significant influence on tacit knowledge \( (P = 0.149, \beta = 0.099) \), so the hypothesis H3d does not hold true. Explanation of operation performance using market relation skills, hierarchical relation skills and explicit knowledge found that market relation skills have significant influence on operation performance, but the explanatory ability declines, indicating that explicit knowledge plays an intermediary role in market relation skills and operation performance; on the other hand, hierarchical relation skills do not have significant explanatory ability \( (P = 0.104) \), indicating explicit knowledge plays complete intermediary role in hierarchical relation skills and operation performance. In the regression of market relation skills, tacit knowledge and operation performance, the explanatory ability of market relation skills for operation performance falls, indicating that tacit knowledge plays an intermediary role in them. Thus, the hypotheses H3b, H3c and H3d hold true.

5 Conclusions and recommendations

5.1 Conclusions Through analyzing the influence of relation skills on operation performance of villager autonomy organizations, we found that villager autonomy organizations are influenced from market relation and hierarchical relation in existing social and economic environment. As a platform of information acquisition platform for farmer households, villager autonomy organizations provide communication of external explicit knowledge and tacit knowledge for farmer households, and effectively promote improvement of operation performance. Our study indicates that relation skills of villager autonomy organizations include hierarchical relation skills and market relation skills, both have significant promotion for operation performance of organizations. Comparatively, the direct effect of market relation skills on operation performance is more significant, while the hierarchical relation skills play indirect role through acquisition of explicit knowledge. We built the "relation skills - knowledge acquisition - operation performance" model. This is of great theoretical and practical significance for understanding connotation and action mechanism of relation skills. Besides, we expanded theoretical study of relation skills from hierarchical relation and market relation and supplemented the study of intermediary effect of relation skills on operation performance.

5.2 Recommendations

(i) At the same time of improving operation performance through relation skills, villager autonomy organizations should fully realize the importance of knowledge acquisition for raising the operation performance. Relation skill activities of villager autonomy organizations are in essence recombination and use of various market or hierarchical elements, and also a process of farmer autonomy organizations constantly absorbing and acquiring explicit or tacit knowledge. In this process of dealing with government and authorities, it is required to fully explore various types of explicit knowledge. This is also a key path for organizations improving their knowledge acquisition ability. An essential purpose of villager autonomy organizations establishing relation with external market is to acquire external knowledge through such market relation network, so as to improve their operation performance.

(ii) To effectively improve operation performance, market skills are indispensable for villager autonomy organizations, hierarchical skills are also important, but it is more difficult to grasp hierarchical skills. In act, many hierarchical relations exist in the form of acquiring tacit knowledge, but hierarchical relation skills of villager autonomy organizations lack this function. Specialized and commercial sensitive knowledge of organizations are significant for their development, but such knowledge is difficult to transfer between different entities. To realize smooth transfer, it is necessary to establish trust relation through increasing hierarchical knowledge acquisition ability, to realize the improvement of operation performance.

(iii) At the same time of effectively acquiring internal and external knowledge resources, villager autonomy organizations should deeply realize knowledge relies on their market relation network and hierarchical relation network to a great extent. Knowledge will not automatically produce without restriction. The difference of organizations in industrial chain or hierarchical relation will also lead to difference in their ability of acquiring external knowledge resources. Therefore, in the process of development, villager autonomy organizations should constantly build their important position in the industrial chain, seek proper position in hierarchical relation, and establish excellent trust and cooperation.
relations. Only through this, may villager autonomy organizations constantly improve operation performance in dynamic and complicated market environment.

References


