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Research on Knowledge Sharing Efficiency Evaluation of Open Innovation

Community: A case of Xiaomi Community

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1. INTRODUCTION AND RESEARCH QUESTIONS

With the rapid development of the Internet and Web 2.0 technology level, virtual communities with online social functions have become an innovative platform for communication and knowledge sharing among members of all parties [1]. Open Innovation Community (OIC) is a virtual community for users to implement innovation activities, and an Internet platform for resource circulation, user participation in innovation and knowledge sharing [2]. OIC is an important environment for all participants to carry out knowledge sharing, and the effect of user knowledge sharing largely represents its development and construction level [3]. However, as the scale of the community continues to expand, the “knowledge trend” in the community is mainly dominated by the government, and the breadth of knowledge sharing in the community is not enough. Moreover, the community faces problems such as low user activity and low enthusiasm for knowledge sharing due to a flood of users have been “diving” for a long time after entering the community. Therefore, community managers need to understand users' needs and study what factors influence users' knowledge sharing in order to develop targeted promotion strategies, mobilize community users' enthusiasm to participate in knowledge sharing, and promote enterprises to broaden the path of innovative knowledge acquisition, and promote knowledge sharing for enterprises' innovative activities.

Hence, the paper introduces a scheme that firstly a total of 12 types of “circles” with high activity in Xiaomi community is selected as the research objects, secondly adopts a three-stage DEA model to measure the knowledge sharing efficiency of the enterprise self-built OICs. Then, eliminating the influence of environmental factors and random errors on the knowledge sharing efficiency of the enterprise self-built OICs, it reflects the actual value of the knowledge exchange efficiency of the enterprise self-built OICs more realistically. Finally, it proposes suggestions to promote the knowledge sharing efficiency of the OIC, furthermore, to provide reference and reference for the enterprise to build an OIC.

2. THEORY AND RESEARCH FRAMEWORK

In this paper, a three-stage DEA model was used to evaluate the efficiency of knowledge sharing in enterprise OICs, which facilitated the elimination of environmental factors, random errors and other factors. Also this paper uses DEA window analysis to achieve the purpose of expanding the number of DMUs in the article.

According to the activities of Xiaomi community, the first 61 “circles” were selected, and divided into 12 categories due to the discussion content, including: “Mobile Phone”, “Tablet PC”, “MIUI System”, “MIUI Application”, “APP Circle”, “Computer”, “Wearable Device”, “Daily Life”, “MI Fans Circle”, “Game”, “TV” and “Smart life”. Then, writing Python codes, it obtained data items that included user information, post information, discussion information of the “Featured” section in the 12 categories of “circles” in Xiaomi Community from 2020 to 2021.

3. RESULTS AND MAJOR FINDINGS

This study observed some valuable and interesting findings: (1) After eliminating the influence of environmental factors and random errors, 91.67% of the “circles” had a significant decrease in overall technical efficiency and scale efficiency and had a slight increase in pure technical efficiency. (2) The number of user posts was negatively correlated with personnel input and time input, and only increasing knowledge source input was not conducive to improving knowledge sharing efficiency. (3) Enterprise OICs can be divided into three categories. For “high-high” OICs, knowledge sharing within the community is ideal, and the maximum output can be achieved with the given input. For “high-low” OICs, the scale of the community should be adjusted and resource allocation should be rationalized, or community knowledge

management and institutional changes should be emphasized to enhance the efficiency of knowledge sharing. For “low-low” OICs, they should start from both management level and scale expansion, increase personnel and resource investment, and improve overall technical efficiency.

Table 1. Stage III DEA: Knowledge Sharing Efficiency of 12 Types of “Circles” in Xiaomi

Circles	Year 2020			Year 2021			η
	TE	PTE	SE	TE	PTE	SE	
Mobile Phone	1.000	1.000	1.000	0.773	0.794	0.974	0.886
Tablet PC	0.087	0.856	0.102	0.566	0.846	0.670	0.327
MIUI System	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MIUI Application	0.749	0.892	0.839	0.473	0.919	0.515	0.611
APP Circle	0.354	0.769	0.460	0.296	0.820	0.361	0.325
Computer	0.107	1.000	0.107	0.406	0.849	0.478	0.257
Wearable Device	0.977	1.000	0.977	0.650	1.000	0.650	0.813
Daily Life	0.525	0.696	0.754	0.086	1.000	0.086	0.305
MI Fans Circle	1.000	1.000	1.000	0.741	0.823	0.900	0.870
Game	0.518	1.000	0.518	0.250	1.000	0.250	0.384
TV	0.070	0.857	0.081	0.257	0.861	0.299	0.163
Smart Life	0.141	0.628	0.224	0.376	0.854	0.440	0.259
Xiaomi Community	0.544	0.892	0.589	0.489	0.897	0.552	0.517

4. CONTRIBUTIONS

Our research enriches the research on the organizational performance of Open Innovation Community through knowledge sharing. For the enterprise OIC, the external environment has a strong influence on the efficiency of community knowledge sharing, resulting in a false high comprehensive technical efficiency before adjustment and a low scale efficiency, which is the main reason for the low comprehensive technical efficiency in the third-stage of the enterprise OIC. Due to the revision of Xiaomi community and the degree of data openness, the volume of data used in the study is relatively small and the environmental variables are not perfect. In the subsequent study, to expect to get more perfect knowledge sharing research results of enterprise OICs, it can add different communities for comparison, and improve the way of collecting data to obtain more data volume and other environmental variables that affect efficiency.

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