

How to Improve the Quality of System Usage for New Users: Evidence from A Chinese Enterprise Management System

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Abstract: Based on the sense-making theory, this paper develops a theory-driven model from the perspective of new users to understand the impact and mechanism of different support structures on new users in the enterprise environment by reviewing the existing literature and scholars' research on new users' behavior in other fields. The following conclusions are drawn: (1) the system use behavior of new users positively influences their use quality; (2) the direct peer support structure in the network positively regulates the relationship between the use behavior of the new user system and its use quality; (3) the indirect support structure in the network negatively regulates the relationship between the use behavior of the new user system and its use quality.

Keywords: New user, System use, Support structure, Use quality, Social network.

1. Introduction

As the information system gradually penetrates into the work process, the proportion of new users using information system is steadily increasing. For new users of information system, it is unknown how to improve the quality of use and what personal relationships within the system are beneficial to them [1]. It has been proposed that new users of information system often experience a steep learning curve when trying to understand the system, or even struggle with the most basic system functions [2]. The perception process is often accompanied by a large number of complaints, unnecessary work delays and additional workloads, which makes them doubt whether the system can recover the efficiency before use [3]. Similarly, if the perception process is not properly managed, the resistance of new users to the system will lead to a decline in system utilization, and the enterprise revenue can not meet the expected requirements [4].

Therefore, based on the sense-making theory, this paper proposes a model from the perspective of new users with the help of user task network formed by using the same functions to understand how different support structures (direct peer support and indirect peer support) in user task network can adjust the impact of new user system usage behavior on its quality of use.

2. Research Model

The sense-making theory holds that when employees encounter ambiguous situations in the organization, they may be confused, which challenges their self-efficacy in the organization. As the result of perception is constructed by social environment, the perception process of new users will be referenced in the form of support through the organization environment to help explain the effect of the system [5]. Based on it, the model studied in this paper is shown in Figure 1.

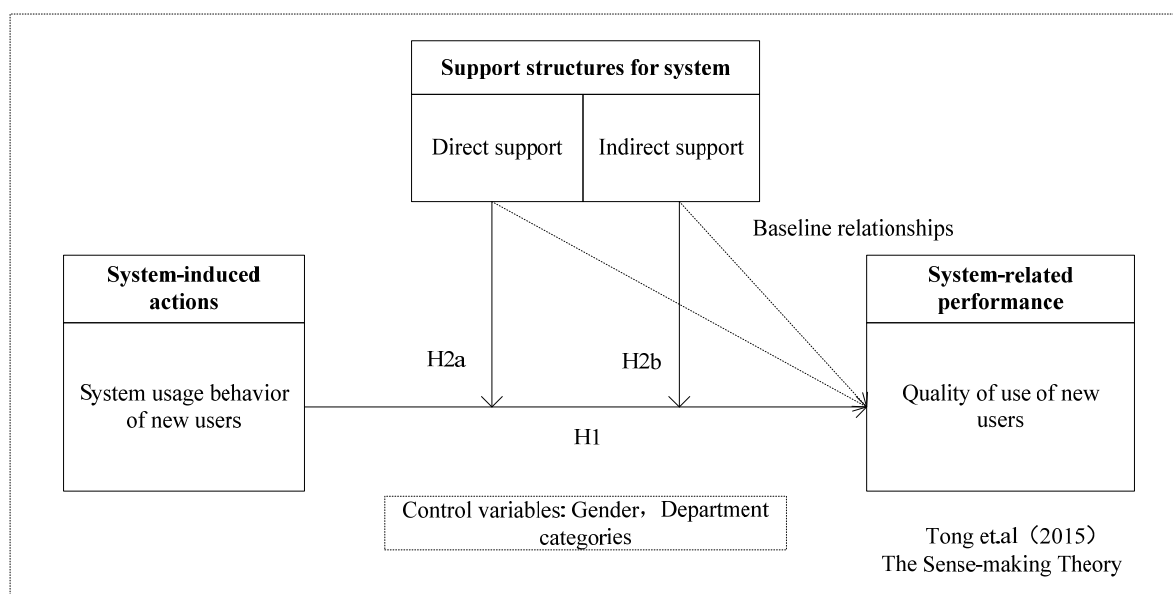


Figure 1. Research Model

3. Hypothesis Development

The information system usage behavior of new users can be regarded as a perception process [6], that is, new users interact with the system through continuous use of the information system to perceive the meaning of the information system. Specific to the information system implementation process, facing with unfamiliar systems, new users hope to familiarize themselves with the functions of the system through their own use behavior and continuous interaction with the system, thereby improving their quality of use and working efficiency. Therefore, for new users, in the process of using the system, not only can they increase their understanding of the system functions, but also use the non-personal support such as user information and usage records provided by the information system to accurately and efficiently complete work tasks and improve the quality of system use. Then, a hypothesis is proposed.

H1: System usage behavior positively affects the quality of use of new users.

This paper argues that the personal support structure can explain the path of action of new users' usage behaviors on the quality of their use from both information resource sources and behavioral patterns. In terms of information resource paths, direct peer support may have the knowledge and resources needed to complete work tasks with new users, by closing contact with the immediate neighbors, not only the enthusiasm of the new users to use the system to complete the work tasks is increased, but also the knowledge and resources provided by the direct neighbors are greatly improved, and the work completion efficiency is refined; Compared to direct peer support, indirect support provides new users with a control advantage, that is, new users in the user task network establish contact with other users occupying the intermediary location, it can obtain the breadth of non-redundant information from different contact summaries and improve the timeliness of information flow between non-connected wholes, moreover, it can also grasp different types of information through the work perspective of other users, and then more skillfully grasp multiple functions of the system, improve the quality of its own use. As far as the behavioral pattern is concerned, some scholars have suggested that new users are more dependent on the way of observing and asking other people to complete tasks when seeking information [7], by learning the behavior patterns of other users, new users can smoothly adapt to system functions and improve the quality of use. Therefore, this paper proposes the hypothesis that the personal support structure regulates.

H2a: The personal support structure (direct peer support) positively regulates the relationship between system usage behavior and the quality of new users.

H2b: The personal support structure (indirect support) negatively regulates the relationship between system usage behavior and the quality of new users.

4. Method

4.1. Data Collection

This paper selects the system usage log data of a large

shipping company from November 2011 to August 2018 for a total of 82 months, After eliminating the abnormal data (the operation time is less than 6 seconds and more than 12 hours and the employee gender is empty), the final data is 650 effective users, including 505 males, 78%, and 145 females, accounting for 22%, and users are mainly distributed in the management department, auxiliary production department, basic production department, information implementation department and transaction department.

4.2. Measures

Information system usage indicates the extent to which users use information systems, some scholars have adopted measurement indicators such as frequency of use and duration of use. This paper measures by calculating the frequency of use of the system at each stage of the new user; direct access to information and resources is represented by closeness centrality. Closeness centrality describes how close or distant network actors are to every other actor within the network, Individuals who are closer to all other actors would have greater access to resources. Accessing information by approaching other users, but other users are not related to each other as betweenness centrality. Betweenness centrality represents the openness of the participant's network. The higher the betweenness centrality indicates the information exchange location of the participant in the network. Many information can only be transmitted through this node; Quality as a key determinant of satisfaction, existing research measures quality through skill levels, communication, interpersonal interactions, and time spent, but scholars suggest that objective indicators should be used to measure the quality of use, such as error rates. Because the higher the error rate, the worse the quality of use, this paper takes a negative number of error rates to measure the quality of user use.

5. Results

We employed linear regression to test the hypotheses by using SPSS 22. To eliminate the influence of original variable units and different dimensions, we standardized all variables in the model. We estimate three regression models by entering control variables, independent variables, and interaction terms successively. Model 1 only tests the effects of two control variables: gender and department category. In Model 2, the main effects of the system usage behavior are estimated. Finally, Model 3 includes the interaction effects: user behavior \times direct peer support and user behavior \times indirect support. The results are shown in Table 1.

We find the system usage behavior in model 2 has a positive impact on the quality of new users ($B=0.061$, $P<0.001$), supporting H1. The interaction between user behavior and direct effect is significant ($B=0.025$, $P<0.01$), supporting H2a. While the interaction between user behavior and indirect effect is not significant ($B=-0.031$, $P<0.01$), rejecting H2b.

Table 1. Results of regression analysis

	DV: Use quality		
	Model1	Model2	Model3
R2	0.020	0.020	0.020
$\Delta R2$		0.023	0.024
Control variables			
Gender	0.260***	0.290***	
Department category	0.091***	0.098***	
Independent variable			
System usage behavior		0.061***	0.051***
Moderators			
user behavior \times direct effect			0.025**
user behavior \times indirect effect			-0.031**

Note: * < .05, ** < .01, *** < .001

6. Discussion

This paper makes two important contributions. First, in terms of theoretical contributions, this paper supplements previous studies, by explaining how to understand the use of new users from the perspective of the sense-making theory and describing how support structures play different roles in influencing the relationship between the system usage behavior and the quality of use of new users. It is concluded that new users can improve the quality of use through system usage behavior and deepen their understanding of support structure and information system usage. Second, in terms of practical contributions, considering the positive effect of direct peer support on the usage behavior and quality of new users and the negative effect of indirect peer support on the usage behavior and quality of new users. Management should encourage new users to establish close contact with users with the same or similar resources in the user task network, while avoiding support from users other than direct peer support.

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