# Knowledge sharing in online health communities: A social exchange theory perspective

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## ABSTRACT

Online health communities (OHC) are becoming valuable platforms for patients to communicate and find support. These communities are different from general online communities. The knowledge shared in an OHC can be categorized as either general (public) or specific (private), and each category is shared in vastly different ways. Using the social exchange theory, we propose a benefit vs. cost knowledge sharing model for OHCs. The benefits are mainly based on Maslow's hierarchy of needs, and the cost includes cognitive and executional costs. We use this benefit vs. cost model to examine how OHC members share general and specific knowledge. Data were collected from 323 users of two well-known OHCs in China and were analyzed using the structural equation model. The results demonstrate that three factors positively impact the sharing of both general and specific knowledge: a sense of self-worth, members' perceived social support, and reputation enhancement. Another factor, face concern, has a negative influence on specific knowledge sharing and a positive influence on general knowledge sharing. Executional cost only negatively impacts general knowledge sharing, and cognitive cost only negatively impacts specific knowledge sharing. This study of OHCs reveals that personal benefits promote knowledge sharing and costs prohibit it. These impacts vary between general knowledge and specific knowledge sharing.

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## 1. Introduction

Worldwide, nearly 4.5% of Internet searches are related to health [15]. In Europe, 41.5% of the population believes the Internet is a good place to find medical information, and 23% actually use the Internet to get medical information [53]. In China, 64% of Internet users visit social-service websites, and health websites are visited most frequently by users — more than 100 million per month between January 2011 and January 2012 [28]. Online communities are important places for people to search for health information and discuss their experiences with medical treatments. Eleven percent of adults in the U.S. have followed their friends' health updates on online communities, and 5% have posted

their own information, questions, or comments about health or medical matters [19].

Though OHCs are a valuable platform to share general health knowledge, such as hospital information, drug side effects, and healthy behaviors [45], questions still remain as to what factors determine whether community members' will share their specific knowledge, including their own private medical information.

OHCs make it possible to exchange medical knowledge in many modes, including mailing lists, newsletters, message boards, blogs, discussion forums and social networking sites [5]. OHCs can help connect patients with similar health conditions, so they can share experiences regarding treatments and nutrition regimens [2]. Moreover, OHCs can diminish geographic barriers and provide medical information and social support without specific time limits [4]. OHCs also promote positive behavior. Members' treatment decisions, health expectations and outcomes, and behavioral changes are influenced by their peers in the community [20].

Some previous studies (e.g., [21,35,38,47]) explore users' motivations for sharing health knowledge online. However, these

studies do not distinguish between general (public) knowledge and specific (private) knowledge. OHCs focus on the exchange of both kinds of health knowledge: general information, such as hospital or doctor information, as well as specific information, such as personal health conditions, medical treatments, and painful medical experiences. General knowledge is normally publicly available and independent of personal health information, but specific knowledge is usually related to patients' privacy. Specific knowledge may be uncomfortable, unpleasant or even painful to share, but it can also be particularly valuable for other community members.

This study considers the different value and impact of specific and general knowledge on OHC members, and examines the factors that influence how both kinds of knowledge are shared. We apply social exchange theory [16] as the theoretical foundation to develop the benefit and cost analysis framework. We focus on the different impacts of community members' perceived benefits and costs on their knowledge sharing behavior. The benefit factors in this research, which are based on Maslow's hierarchy of needs theory [36], include reputation, sense of self-worth, face concern, and social support. The cost factors include cognitive and executional costs.

The paper is organized as follows: Section 2 reviews the theoretical foundation and proposes research hypotheses. Section 3 discusses the research methodology. Section 4 presents the results of our analysis. Section 5 concludes the paper by discussing the contributions of our research, as well as its implications and limitations.

## 2. Theoretical foundation and research hypotheses

Social exchange theory seeks to explain individual behavior involved in the process of resources exchange [16]. It states that an individual exchanges resources with another individual out of the desire to receive something through contact. From the perspective of social exchange theory, the principle of individual behavior is to maximize benefits and minimize costs. Social exchange theory is widely applied to explain individual behavior across various domains, including information technology adoption [22], consumer behavior [41], information sharing [23], and behavior in online communities [29]. In this research, we use social exchange theory as our main framework to analyze the impact of perceived benefits and costs on knowledge sharing in OHCs.

Maslow's hierarchy of needs theory, which describes the inherent development requirements of individuals [36], identifies five basic universal needs that are essential to human existence. The lower orders in the hierarchy include physiological needs as well as the need for safety, love/belonging, and esteem. The

higher-order need is self-actualization. Maslow [36] also proposes that lower needs may take precedence over higher needs. Given its strong and sensible perspective, Maslow's theory provides a valuable framework to analyze the perceived benefits for knowledge sharing in OHCs.

Knowledge sharing is a kind of exchange behavior [6]. Users who share knowledge in OHCs may want to get some return of intrinsic and extrinsic benefits [31]. Intrinsic benefits, such as the feelings of pleasure and satisfaction people experience when they participate in an activity, are intangible and therefore may not be measured directly. Intrinsic benefits motivate individuals to perform certain activities for no other reasons than personal fulfillment and gratification. Extrinsic benefits, by contrast, come from outside an individual in the form of rewards, promotion, coercion, or punishment. The main extrinsic benefits of exchange behavior are economic reward, reciprocal benefits, and reputation feedback.

Knowledge sharing behavior is driven by a combination of intrinsic and extrinsic benefits. OHC contributors who share knowledge may find joy in enhancing their own knowledge or find social value in educating others. They may get money from the community or help other participants benefit from their knowledge. As a result of contributing, OHC members may also enhance their reputation in the community. From the perspective of Maslow's hierarchy of needs theory [36], once the low-level needs (i.e., physiological and safety needs) are basically fulfilled, individuals will attempt to satisfy their needs for love/belonging, esteem, and self-actualization. Social support discussed in health informatics literature [47], which can be categorized into Maslow's love/belonging category [36], represents an OHC member's social need as well as his or her active participation in relationships with other OHC members. Face, an extremely important concept in Chinese culture [27], together with reputation, can be categorized into Maslow's esteem category [36]. Face and reputation represent the need for self-respect and the respect of others. Sense of self-worth describes humans' ultimate need for self-actualization [36]. Based on the intrinsic characteristics of these factors, we define the sense of self-worth as an intrinsic reward of knowledge sharing in OHCs. We define face, reputation, and social support as extrinsic rewards.

Based on social exchange theory [16], we propose the following benefit versus cost research framework in OHCs (Fig. 1) and, by applying Maslow's hierarchy of needs [36], we propose the following knowledge sharing benefit analysis. We hypothesize that individuals' perceived benefits significantly motivate the sharing of general and specific knowledge, and perceived costs diminish their knowledge sharing behavior. Because the focus of this research is on factors that contribute to the sharing of general
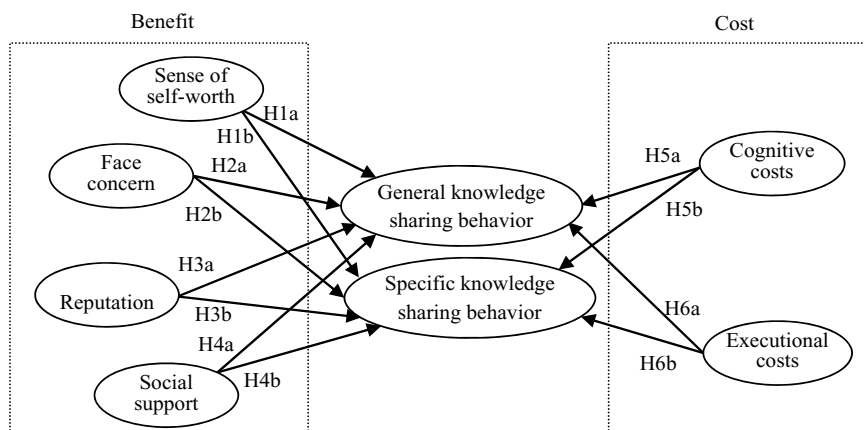


Fig. 1. Knowledge sharing model in online health communities.