Influencing factors of answer adoption in social Q&A communities from users’ perspective: Taking Zhihu as an example

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Abstract

Purpose: Taking Zhihu as the object for a case study, we intend to analyze the key factors that have affected users on adopting answers in social Q&A (SQA) websites.

Design/methodology/approach: With information adoption model (IAM) as the theoretical foundation and widely accepted evaluation criteria for answer quality in SQA sites as variables, we constructed a factor model that has influenced SQA community users to adopt offered answers. With the partial least squares (PLS) technique, our model was then empirically tested through a sample of 311 Zhihu users.

Findings: Our results showed that answer usefulness is the most effective variable, and answer interactivity and answer entertainment both have positive and significant impacts on users’ attitude to adopt answers in an SQA community. Except for novelty, other three components of answer quality, i.e. knowledge, reliability, and solution to the problem have all significant effect on answer usefulness.

Research limitations: First, due to the limited sample size, it is still questionable if our research results based on Zhihu could be applied to other SQA communities. Second, our questionnaires were mainly designed to investigate how users felt about the answers in an SQA site, but did not differentiate the content of the answer itself.

Practical implications: As a three-year-old SQA platform, Zhihu has developed very quickly with its high-quality answers and public intellectual users, and has been regarded as one of the representatives of fast emerging Chinese SQA communities in recent years. Our study

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could help shed light on users’ information sharing and knowledge adoption behaviors in a Chinese SQA site, such as Zhihu.

**Originality/value:** Compared with previous studies on answer quality assessments in SQA sites and on information adoption model, to the best of our knowledge, this is one of the pioneer studies which combined answer qualities with users’ intention of adopting SQA answers. Our study on user answer adoption in Zhihu community could further develop the theory of IAM. This study showed that answer usefulness is the most important motivation of Zhihu users in the process of adopting answers.

**Keywords** Social question & answer (SQA) site; Zhihu; User in SQA site; Answer quality; Answer adoption

1 Introduction

Social question & answer (SQA) sites, also called community question answering (CQA) sites, are online communities which focus on asking and answering questions based on social relations. Users in SQA sites can discuss or assess questions and answers deliberately in these platforms by the means of voting best answers[1].

In 2002, South Korean company NHN launched the first SQA site, Knowledge-iN, as a component of its popular Naver search engine, since then, SQA sites have been mushroomed one after another[2], such as Answerbag in the United States, many similar Chinese SQA sites, such as Baidu Knows®, Tencent Soso Wenwen® and Sina iAsk®. However, Yahoo! Answers was regarded as a notable landmark for the development of SQA sites as it was launched in December 2005[3]. As Liu & Deng[4] noticed, though these SQA websites have absorbed “the wisdom of crowds” to some extent, they are still not considered as real social networks, which are normally formed based on the relationship between users and close social ties.

Over the past three years, new SQA sites based on online communities, user relations and content operation have aroused popular attention due to their benign interpersonal communication. Many professionals, with similar or different interests and knowledge, have been attracted to participate in asking and answering questions of these sites[5], which have led to producing more high-quality answers and attracting more people to join in these new SQA sites and accept their services, Quora® and Zhihu® are two typical examples among them.

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0) http://zhidao.baidu.com/
1) http://wenwen.sogou.com/
2) http://iask.sina.com.cn/
3) http://www.quora.com/
4) http://www.zhihu.com/
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According to the existing studies of online communities, Zhang & Watts[6] found that studies about online communities focused more on the answer sharing instead of answer adoption. For those studies on the answer itself in SQA sites, much more concerns were voiced about the quality of answers, but not the degree that the answer quality has influenced the answer adoption itself[7]. In order to identify which factors have affected users’ intention to adopt answers in SQA, we first constructed a theoretical model based on the information adoption model, then analyzed how Zhihu users selected and adopted the answers with indicators of the previous studies on answer quality in SQA sites.

2 Related work

2.1 Answer quality assessment of SQAs

Answer quality is an important part of SQA research. Studies on answer quality evaluations in SQA sites mainly include factors that have influenced the users to select their best answers. Researchers wanted to know which criteria that users take it for importance while evaluating the quality of the answer in a social Q&A community. On the basis of SQA service of Yahoo! Answers, Shah & Pomerantz[8] summarized a small set of questions, with at least five answers for each, then asked Amazon Mechanical Turk workers to assess the quality of each answer for a given question based on 13 different criteria.

On the basis of expert consulting, users’ investigation and comparative analysis with other studies, Zhu et al.[9] developed a multi-dimensional model which includes another 13 indicators for users to evaluate the answer quality of an SQA site. Soojung & Sanghee[10] used the criteria of selecting the best answers in Yahoo! Answers and analyzed 2,140 comments with the content analysis, then identified that 23 individual relevance criteria could be divided into six classes, which are content, cognition, utility, information sources, extrinsic state, and socio-emotion. In addition, they also found that the importance degree of individual criteria varies according to topic categories, and socio-emotion is a popular criterion in discussion-oriented categories of SQA sites[10].

Up to date, most popular approaches applied for the answer quality evaluation of SQA sites are content analysis[9,10] and questionnaire surveys[8,9], but all criteria for the answer quality assessment are based on the Yahoo! Answers[8–10], so these studies are lack of systematic demonstration of their models and have no extent description of how far each of these factors (criteria) has influenced the answer adoption of an SQA site, especially of a Chinese SQA site.
2.2 Information adoption model

The theoretical foundation of this study is the information adoption model (IAM) proposed by Sussman & Siegal\cite{11} in 2003. IAM is an integration of the technology acceptance model (TAM) constructed by Davis in 1989\cite{12} and the elaboration likelihood model (ELM) proposed by Petty & Cacioppo\cite{13}. In IAM, Sussman & Siegal explained how people were influenced to adopt information posted in computer-mediated communication context\cite{11}, while in ELM, Petty & Cacioppo\cite{13} described how a message had influenced information users’ attitudes and behaviors centrally and peripherally. According to Sussman & Siegal’s study\cite{11}, information quality and information source credibility are two dominant factors that help users decide whether to adopt ideas, knowledge or answers in online communities, but the former (information quality) is called a central element, while the latter a peripheral element. At present, IAM has already been applied to explain the adoption of online opinions in e-commerce sites\cite{14} and knowledge adoption in online communities\cite{6}.

2.3 Answer adoption model in SQAs

Until now, we have not found any studies directly on the behavior of answer adoption in SQA sites. Related studies include platform features of SQA sites\cite{15}, answer satisfaction criteria of SQA sites\cite{7-10} and how users are sharing knowledge in online communities\cite{6}. Deng et al.\cite{15} identified 3 driving factors of adopting Web-based Q&A sites by applying the unified theory of acceptance and use of technology (UTAUT)\cite{16} as its theoretical background. They constructed an adoption model with the structural equation modeling (SEM) approach and found that performance expectancy, effort expectancy and facilitating conditions are significant predictors that influenced the intention to use SQA sites. These three factors can also be generalized as usefulness and ease of use in SQA sites\cite{15}.

Zhang & Watts\cite{6} investigated how members of online communities of practice (COPs) adopted knowledge contributed by other COP members. According to their study, argument quality and source credibility are main factors that affect COP members’ intention of knowledge adoption. In addition, they found the two moderation variables, focused search and disconfirming information, could influence the levels of the source credibility and argument quality. This means, a higher level of focused search could reduce the source credibility, while a higher level of disconfirming information could increase the argument quality\cite{6}.

As for the analysis of answer adoption in SQA sites, Deng et al.\cite{15} regarded the answer content as a part of the SQA platform services and examined the acceptance behavior of users in SQA sites from a macroscopic perspective. However, users’
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acceptance intention and attitudes toward the SQA platform services are not the same as the behavior of the answer adoption in SQA sites[17], so these two aspects need to be studied separately. Since the content of member reviews[14] is one of the main criteria for evaluating answer quality of SQA sites[8] and users’ information adoption largely depends on the information quality[11], in this study, we want to accept some core criteria for answer quality evaluation of SQA sites in the studies mentioned above and try to find a more suitable indicators to select answers in SQA communities.

3 Research model and influencing factors

According to IAM by Sussman & Siegal[11], we adopted the important criteria by Shah & Pomenrantz[8], Zhu et al.[9], Soojung & Sanghee[10] for answer quality assessment of SQA sites, and constructed a research model for the answer adoption based on the features of Zhihu community®. The research model is shown as in Fig. 1. In this study, we defined the answer adoption as “to agree with, endorse and/or believe the answers in Zhihu community[11]”.

3.1 Answer usefulness

Usefulness is the important determinant of technology acceptance[11] and information adoption[12]. In this study, we defined answer usefulness as “the answer is useful or helpful to address the question”[8]. For users in Zhihu community, if they think an answer is useful, then they will have greater intention to adopt the answer. As shown in Fig. 1, we used four sub-dimensions to measure the answer quality, which are reliability, novelty, knowledge and solution. Details are described as in Table 1.

Fig. 1 Research model.

http://www.chinalibraries.net
Table 1 Four dimensions of answer quality

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Criteria</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>Information sources</td>
<td>Soojung &amp; Sanghee(^{10}); Zhu et al.(^{9})</td>
</tr>
<tr>
<td></td>
<td>Truthfulness</td>
<td>Zhu et al.(^{9})</td>
</tr>
<tr>
<td>Novelty</td>
<td>Novel</td>
<td>Shah &amp; Pomerantz(^{8}); Zhu et al.(^{9})</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Informative</td>
<td>Shah &amp; Pomerantz(^{8})</td>
</tr>
<tr>
<td>Solution</td>
<td>Solution</td>
<td>Shah &amp; Pomerantz(^{8}); Jiang &amp; Wang(^{7})</td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
<td>Jiang &amp; Wang(^{7})</td>
</tr>
</tbody>
</table>

3.1.1 Reliability

Soojung & Sanghee\(^{10}\) divided 23 relevance criteria for answer quality evaluation into six classes which are also mentioned in Section 2.1. Among them, information source is used to assess the validity of answers, and people can read the original source if they want\(^{10}\). Zhu et al.\(^{9}\) deemed the truthfulness also to be an important dimension for answer quality assessment. In online communities, it is the identity of answer repliers and the accuracy of the information itself that keep users to judge whether an answer is credible\(^{9}\), or whether they are convinced to adopt the answers.

3.1.2 Novelty

Besides the reliability of information source, Shah & Pomerantz\(^{8}\) and Zhu et al.\(^{9}\) also suggested that novelty is another important dimension for the answer quality assessment of SQA sites. In our study, we used the definition of Shah & Pomerantz\(^{8}\) about novelty, and it is defined as the extent to which the content of an answer is new to a user or different from what the user has known before. This means, when a user asks a question in an SQA site, he/she not only wants a answer, but also creative opinions or inspiring thoughts. A novel answer will bring users new insights, and thus be considered useful for users, too.

3.1.3 Knowledge

According to Shah & Pomerantz\(^{8}\), enough information and/or knowledge for a given question is an important aspect for users to judge whether the answer is qualified or not. Soojung & Sanghee’s study\(^{10}\) showed that richness in knowledge and details suggests “to be informative” of an answer, which will thus be thought useful.

3.1.4 Solution

Shah & Pomerantz\(^{8}\) suggested that an answer will be considered enormously important if it can help a user to make a decision or solve a problem at hand directly. Jiang & Wang\(^{7}\) also found that questioners often evaluated the effectiveness of the
answer and picked the most effective one as the best answer to follow. Thus, the answer is thought to be useful if it can help to solve specific problems of users.

### 3.2 Answer interactivity

In this study, we used the definitions of answer interactivity described as Shah & Pomerantz\(^8\) and Jia et al.\(^{19}\), namely, the extent to which an answer is perceived by users in an SQA site as prone to discuss, assess and cite.

According to the IAM theory\(^{11}\), peripheral cues will play a more critical role in the influence process when an individual is either unable or unwilling to process the information quality. In their study, peripheral cues are interpreted as the relation between different types of information readers\(^{11,13}\). The newly-emerged SQA communities, such as Zhihu and Quora, also have above-mentioned two characteristics, namely, social relations and ask-reply mechanism\(^{1}\), in which “social relation” refers to the relations established by users in SQA communities through exchanging questions and answers to each other, while “ask-reply mechanism” means the operation mode that the SQA communities depend on\(^{18}\).

Zhihu has strong social ties\(^2\), and communication or interaction between Zhihu users is an important factor which can be summarized as peripheral cues to keep users active in communities\(^{19}\). For users in Zhihu, “the identity of who you are” sometimes far outweighs “whether you can answer the question”\(^{19}\). Therefore, if users in Zhihu think that an answer makes them willing to discuss, evaluate and cite, etc., they will have greater intention of adopting the answer.

### 3.3 Answer entertainment

In this study, we adopted the definitions of answer entertainment by Soojumg & Sangheee\(^{10}\) and Utpal et al.\(^{20}\) as follows: An answer that can bring users entertainment value in an SQA site. According to Soojumg & Sangheee\(^{10}\), there are various social and emotional values that users take into consideration while selecting the best answers in an SQA site. Users tended to adopt those answers with emotional support, positive attitudes, or personal experiences, sometimes, even with personal humors\(^{11}\). Utpal et al.\(^{20}\) also found that the entertainment value is derived from fun and relaxation through interacting with others. For Zhihu users, they will intent to adopt an answer if they think the answer has entertainment values. Therefore, socio-emotion is an important criterion for assessing answer quality. To sum up, we thus hypothesize:

- **H1**: Answer usefulness is positively related to answer adoption.
- **H2**: Answer interactivity is positively related to answer adoption.
- **H3**: Answer entertainment is positively related to answer adoption.

\(^\circ\) [http://www.zhihu.com/question/19551114](http://www.zhihu.com/question/19551114)
4 Methodology

4.1 Data collection

A questionnaire survey is designed based on Fig. 1. The targeted users are those who have using experience with Zhihu community. Questionnaires were posted on sojump.com®, then distributed by e-mails, QQ, Sina Weibo® and Zhihu through its private message function® from May 20, 2014 to June 3, 2014, and July 4, 2014 to July 18, 2014. Within 4 weeks, we received totally 311 questionnaires. As we settled the questionnaire on the platform (sojump.com) in advance, only those filled with complete information can be submitted successfully, therefore, all 311 questionnaires are valid.

4.2 Demographic analysis

The basic demographics of the respondents are summarized in Table 2. As we can see, there are 59% male and 41% female participants, respectively, and most of them aged from 18 to 24 years old. The results also showed that 91% of respondents have received university education or above, and 63% of respondents visited Zhihu community nearly once a day.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>59.09</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>40.91</td>
</tr>
<tr>
<td>Using experience of Zhihu</td>
<td>≤0.5 year</td>
<td>28.18</td>
</tr>
<tr>
<td></td>
<td>0.5–1 year</td>
<td>43.64</td>
</tr>
<tr>
<td></td>
<td>1–2 years</td>
<td>21.82</td>
</tr>
<tr>
<td></td>
<td>≥ 2 years</td>
<td>6.36</td>
</tr>
<tr>
<td>Visiting frequency of Zhihu</td>
<td>≤ 1 per week</td>
<td>11.82</td>
</tr>
<tr>
<td></td>
<td>2–3 times for every week</td>
<td>17.27</td>
</tr>
<tr>
<td></td>
<td>4–5 times for every week</td>
<td>6.36</td>
</tr>
<tr>
<td></td>
<td>Once a day</td>
<td>19.09</td>
</tr>
<tr>
<td></td>
<td>Less than once a day</td>
<td>43.64</td>
</tr>
<tr>
<td>Age</td>
<td>&lt;18 years old</td>
<td>4.55</td>
</tr>
<tr>
<td></td>
<td>18–24 years old</td>
<td>74.55</td>
</tr>
<tr>
<td></td>
<td>24–28 year old</td>
<td>16.36</td>
</tr>
<tr>
<td></td>
<td>≥28 years old</td>
<td>4.55</td>
</tr>
<tr>
<td>Educational level</td>
<td>Senior high school or below</td>
<td>6.36</td>
</tr>
<tr>
<td></td>
<td>Junior college</td>
<td>1.82</td>
</tr>
<tr>
<td></td>
<td>Bachelor</td>
<td>75.45</td>
</tr>
<tr>
<td></td>
<td>Master student</td>
<td>15.45</td>
</tr>
<tr>
<td></td>
<td>PHD candidate</td>
<td>0.91</td>
</tr>
<tr>
<td>Studied field</td>
<td>Humanities</td>
<td>20.91</td>
</tr>
<tr>
<td></td>
<td>Social science</td>
<td>26.36</td>
</tr>
<tr>
<td></td>
<td>Natural science</td>
<td>26.36</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>26.36</td>
</tr>
</tbody>
</table>

4.3 Measurement

We used a multi-item approach with each being measured with a few items for the construct of validity and reliability. Items of the questionnaire were adapted from

* http://www.weibo.com/
* http://www.zhihu.com/inbox
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from the existing literatures like Davis\cite{12}, Zha et al.\cite{21}, Sussman & Siegal\cite{11}, Deng et al.\cite{15}, Utpal et al.\cite{20}, Soojung & Sanghee\cite{10} and Zhu et al.\cite{9}. All of the items on the questionnaire were measured with a 7-point Likert-type scale (1-strongly disagree, 7-strongly agree).

For the pilot test, we invited 15 undergraduates from Huazhong Agricultural University and 5 master students from School of Information Management, Wuhan University in April, 2014. The purpose of the test was to ensure the quality of the questionnaire and the experiment procedure. Based on the results of the pre-test, items of the questionnaire were modified and refined, and we removed those items that might lead to misunderstandings and kept those that showed appropriate construct validity. The final questionnaire is shown as in Table 3.

5 Data analysis and results

Due to the relatively small amount of samples for this study, we used the partial least squares (PLS) technique, a structural modeling technique that is well suited for analyzing small samples. Afterwards, we used SMART-PLS\cite{11} for examining the measurement model and assessing the stability of the structural model.

5.1 Measurement model

In the PLS analysis, composite reliability (CR) is used to evaluate the model reliability. Normally, the questionnaire is regarded to be reliable when the CR values are above 0.7\cite{22}. As illustrated in Table 4, all Cronbach’s $\alpha$ values are greater than 0.7 and the CR values are above 0.77, so it shows that the model meets the recommended level.

In terms of content validity of the scales, the measurement variables are adapted from the existing Refs. \cite{7–11,14,19,20}. We also carried out a pre-test as to ensure that every meaning of the measurement variables is clear and accurate.

The convergent validity indicates that all items are related to each other, for the average variance extracted (AVE) of each latent factor is higher than 0.5, which means that a construct could explain more than 0.5 of the item variance\cite{23}. In Table 4, the values of AVE are higher than 0.63, and the square root of AVE for each construct is higher than correlations between themselves and all other constructs, which suggests an adequate differentiation of the validity of all measurements (Table 5).

\cite{11} http://www.smartpls.de/
<table>
<thead>
<tr>
<th>Construct</th>
<th>Items of questionnaire</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Answer usefulness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>Answers in Zhihu community are accurate, detailed and convincing.</td>
<td>Davis\cite{12}, Zha et al.\cite{21}, Sussman et al.\cite{11}, Deng et al.\cite{15}</td>
</tr>
<tr>
<td>R1</td>
<td>Answers in Zhihu community are accurate, detailed and convincing.</td>
<td>Soojung &amp; Sanghee\cite{10}; Zhu et al.\cite{9}</td>
</tr>
<tr>
<td>R2</td>
<td>Answers in Zhihu community are accurate, detailed and convincing.</td>
<td></td>
</tr>
<tr>
<td>R3</td>
<td>Answers in Zhihu community are accurate, detailed and convincing.</td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>Answers in Zhihu community contain much knowledge and information.</td>
<td>Shah &amp; Pomerantz\cite{8}</td>
</tr>
<tr>
<td>K1</td>
<td>Answers in Zhihu community contain much knowledge and information.</td>
<td></td>
</tr>
<tr>
<td>K2</td>
<td>Answers in Zhihu community contain much knowledge and information.</td>
<td></td>
</tr>
<tr>
<td>Novelty</td>
<td>Answers in Zhihu community contain much knowledge and information.</td>
<td>Shah &amp; Pomerantz\cite{8}; Zhu et al.\cite{9}</td>
</tr>
<tr>
<td>N1</td>
<td>Answers in Zhihu community contain much knowledge and information.</td>
<td></td>
</tr>
<tr>
<td>N2</td>
<td>Answers in Zhihu community contain much knowledge and information.</td>
<td></td>
</tr>
<tr>
<td>Solution</td>
<td>Answers in Zhihu community are helpful to me.</td>
<td>Shah &amp; Pomerantz\cite{8}; Jiang &amp; Wang\cite{7}</td>
</tr>
<tr>
<td>S1</td>
<td>Answers in Zhihu community are helpful to me.</td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>Answers in Zhihu community are helpful to me.</td>
<td></td>
</tr>
<tr>
<td><strong>Answer interactivity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN1</td>
<td>Answers which have gained many endorsements in Zhihu community are feasible for me</td>
<td>Soojung &amp; Sanghee\cite{10}</td>
</tr>
<tr>
<td>IN2</td>
<td>Answers which have gained many endorsements in Zhihu community are feasible for me</td>
<td></td>
</tr>
<tr>
<td>IN3</td>
<td>Answers which have gained many endorsements in Zhihu community are feasible for me</td>
<td></td>
</tr>
<tr>
<td><strong>Answer entertainment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td>Answers in Zhihu community are always given in words and pictures and it is funny to read them.</td>
<td>Utpal et al.\cite{20}, Soojung &amp; Sanghee\cite{10}</td>
</tr>
<tr>
<td>E2</td>
<td>Answers in Zhihu community are always given in words and pictures and it is funny to read them.</td>
<td></td>
</tr>
<tr>
<td>E3</td>
<td>Answers in Zhihu community are always given in words and pictures and it is funny to read them.</td>
<td></td>
</tr>
<tr>
<td><strong>Answer adoption</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td>I tend to agree with answers in Zhihu community.</td>
<td>Sussman et al.\cite{11}</td>
</tr>
<tr>
<td>A2</td>
<td>I trust in the answers in Zhihu community.</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>If possible, I would like to apply answers in Zhihu community to my daily life.</td>
<td></td>
</tr>
</tbody>
</table>
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5.2 Structural model

Figure 2 illustrates the results of SMART-PLS for the structural model. From the path coefficient and $R^2$ values, we can see that the percentages of the variance explained ($R^2$) of answer usefulness and answer adoption are 55.3% and 97.3%, respectively, which shows the model has good predictable effect. The results also demonstrate that all of three hypotheses are supported.

Table 4 Convergent validity of the measurement model

<table>
<thead>
<tr>
<th>Construct</th>
<th>CR</th>
<th>Cronbach’s α</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer adoption</td>
<td>0.886</td>
<td>0.807</td>
<td>0.722</td>
</tr>
<tr>
<td>Answer usefulness</td>
<td>0.874</td>
<td>0.820</td>
<td>0.682</td>
</tr>
<tr>
<td>Reliability</td>
<td>0.851</td>
<td>0.739</td>
<td>0.653</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.899</td>
<td>0.784</td>
<td>0.817</td>
</tr>
<tr>
<td>Novelty</td>
<td>0.976</td>
<td>0.951</td>
<td>0.953</td>
</tr>
<tr>
<td>Solution</td>
<td>0.882</td>
<td>0.731</td>
<td>0.788</td>
</tr>
<tr>
<td>Interactivity</td>
<td>0.776</td>
<td>0.822</td>
<td>0.634</td>
</tr>
<tr>
<td>Answer entertainment</td>
<td>0.819</td>
<td>0.893</td>
<td>0.735</td>
</tr>
</tbody>
</table>

Table 5 Correlation matrix and psychometric properties of key constructs

<table>
<thead>
<tr>
<th>No.</th>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Answer-adoption</td>
<td>0.849</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Knowledge</td>
<td>0.518</td>
<td>0.903</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Reliability</td>
<td>0.698</td>
<td>0.600</td>
<td>0.810</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Answer-entertainment</td>
<td>0.548</td>
<td>0.434</td>
<td>0.387</td>
<td>0.857</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Novelty</td>
<td>0.386</td>
<td>0.383</td>
<td>0.322</td>
<td>0.575</td>
<td>0.976</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Answer interactivity</td>
<td>0.509</td>
<td>0.410</td>
<td>0.402</td>
<td>0.413</td>
<td>0.227</td>
<td>0.796</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Solution</td>
<td>0.575</td>
<td>0.558</td>
<td>0.574</td>
<td>0.440</td>
<td>0.485</td>
<td>0.508</td>
<td>0.888</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Answer usefulness</td>
<td>0.683</td>
<td>0.777</td>
<td>0.665</td>
<td>0.468</td>
<td>0.452</td>
<td>0.501</td>
<td>0.551</td>
<td>0.826</td>
</tr>
</tbody>
</table>

Notes: The bold diagonal elements are square roots of AVE for each construct. Off-diagonal elements are the correlations between constructs.

5.2 Structural model

Figure 2 illustrates the results of SMART-PLS for the structural model. From the path coefficient and $R^2$ values, we can see that the percentages of the variance explained ($R^2$) of answer usefulness and answer adoption are 55.3% and 97.3%, respectively, which shows the model has good predictable effect. The results also demonstrate that all of three hypotheses are supported.

* $p<0.05$, ** $p<0.01$, *** $p<0.001$, ns: No significant

Fig. 2. Results of the research model.
6 Discussions and conclusions

6.1 Results analysis

From Fig. 2 we can explain the research model as follows:

- First, answer usefulness is positively associated with answer adoption ($\beta = 0.482$, $p<0.001$). Answer usefulness is the most effective factor influencing answer adoption in Zhihu community, in which reliability ($\beta = 0.457$, $p<0.001$) and solution ($\beta = 0.452$, $p<0.001$) have almost the same effect on the answer usefulness. In addition, knowledge ($\beta = 0.255$, $p<0.001$) is also significant to answer usefulness, but only to a small degree. However, novelty has nearly no impact on answer usefulness for users in Zhihu community no matter whether an answer is innovative or not. This is consistent with the study of Zhu et al.\[9\], they also found that novelty is negatively correlated with the overall quality, one reason might be that new ideas are not necessarily important for a useful answer.

- Second, answer interactivity is positively associated with answer adoption ($\beta = 0.163$, $p<0.001$). Compared with the previous studies on the SQA sites\[4,7,10\], Zhihu community shows some new features while attaching importance to interpersonal communication, user relations and content operation. Our results also confirmed that user communication and interaction are important features in Zhihu community, and user communication and interaction can influence answer adoption for Zhihu members.

- Third, answer entertainment is positively associated with answer adoption ($\beta = 0.256$, $p<0.001$). Answer entertainment is another important factor that has influenced the answer adoption. According to the study of Utpal et al.\[20\], higher entertainment value can lead to a stronger desire to participate in the virtual community. But different from the study of Utpal et al.\[20\], in this study, entertainment value is specific to the level of users’ perception of answers in an SQA site, so for Zhihu members, whether the answer is funny or not has an effect on answer adoption.

- Fourth, SQA sites have become an important source channel of information and knowledge acquisition. Our study found that answer usefulness, answer interactivity and answer entertainment have exerted positive and significant impacts on users’ answer adoption in an SQA community, so such new SQA sites as Zhihu or Quora\[17,19\] can strengthen their functions if they could improve the above three aspects in the future. Since the answers in Zhihu community are ranked and sorted according to the numbers’ votes, options such as “to be useful” and/or “to be funny” could also be taken as indicators.
when inviting users to evaluate the answers. As sub-indicators of “usefulness”, options specific to “reliability”, “solution” and “informative” can also be taken into consideration.

6.2 Limitations and future work

• First, as a newly emerged SQA site, there are only a small proportion of people who have experience in using Zhihu community, thus it is difficult to obtain large samples within the limited time.
• Second, in this study, we used novelty as one of the dimensions of answer quality, but our analysis showed that it has no significant impact on usefulness. According to Zhu et al.\[8\], novelty is also an important criterion for answer quality assessment. In the future, we want to use novelty as a dimension and to examine its direct effect on answer adoption. In addition, Deng et al.\[15\] found the ease of use is another dominant factor for the adoption of SQA platform services, thus we also want to examine the effect of this variable on answer adoption in the future.
• Finally, our study is mainly based on the Zhihu community, so it is still too early to say that this research result could be applied to other SQA communities (such as Baidu Knows or Quora). Furthermore, more accurate data and interesting conclusions would be come out if we could enrich the content of the questionnaire designs based on the answers content analysis.

Author contributions

Both authors have equal contributions to the paper. X. Y. Chen (chenxiaoyu0928@126.com) put forward the research topic, collected and analyzed the data, then wrote the draft; S. L. Deng (victorydc@sina.com, corresponding author) made the final version of this paper. Both authors took an active part in designing the questionnaire and research framework, as well as in research question discussions. They revised the manuscript accordingly.

References


Influencing factors of answer adoption in social Q&A communities from users’ perspective: Taking Zhihu as an example


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