ABSTRACT
Social Q&A (SQA) sites that allow users to exchange knowledge by asking and answering questions in natural language have become increasingly popular due to their ability to leverage the wisdom of crowds and provide personalized answers. Considerable research efforts have been devoted to studying users’ information and knowledge sharing within SQA sites. Past research, however, has neglected users’ information sharing behavior from SQA to other social media platforms (e.g., microblogs). In this study, we utilized Zhihu, one of the most popular Chinese SQA sites, as a lens to explore users’ information sharing from SQA to third parties, as this has become a widespread behavior among Chinese Web users. A survey that gathered 591 valid responses yielded interesting findings. Overall, respondents who had higher educational levels and who spent more daily time on the Internet via mobile devices were more likely to share SQA posts to other virtual spaces. Their experiences with Zhihu, their content preferences, and their friends’ sharing behavior also significantly influenced their sharing behavior. Our findings generate quite a few directions for future research.

Keywords
Social Q&A, information sharing, social media

INTRODUCTION AND LITERATURE REVIEW
Online question and answer (Q&A) services have gained popularity since the early 2000s (Choi, Kitzie, & Shah, 2012). Through these platforms, users can benefit from the collective intelligence of many by exchanging knowledge through asking and answering questions in natural language. In recent years, social Q&A (SQA) sites that combine both Q&A and social networking features (e.g., following, blogging, moments) not only provide platforms for knowledge sharing, but also build linkages among users, questions, and topics (Jin, Li, Zhong, & Zhai, 2015).

Previous research on SQA sites mainly focused on areas such as question classification (e.g., Harper, Weinberg, Logie, & Konstan, 2010), quality assessment and detection (e.g., Yao et al., 2015), user motivations (e.g., Jin et al., 2015), and knowledge sharing (e.g., G. Wang, H. Wang, Li, Abrahams, & Fan, 2014). Among these areas, knowledge and information sharing within SQA sites have been topics of continued interest because of their impact on users’ daily lives. Users exchange all types of knowledge and information on SQA, including factual information, advice, and personal opinions (Harper, Moy, & Konstan, 2009). G. Wang et al. (2014) proposed an analytical framework for examining the knowledge sharing processes in Q&A communities. They discovered that discussions with reciprocity communication patterns and answers from various users were more likely to be helpful. Shen, Li, Liu, and Grant (2015) studied Yahoo! Answers, and found that 10% of the site’s users contributed 80% of its best answers, though each of these top contributors focused on only a few knowledge categories.

While information and knowledge sharing have gained considerable attention, the information sharing from SQA to other social media platforms (e.g., microblogs) has been scarcely studied, if not completely ignored. In the study reported in this paper, we utilized Zhihu¹, a major Chinese SQA site, as a lens to understand the interaction among attributes of Chinese social media users (e.g., gender, education, average working time per day), their daily social media usage (e.g., microblogs, social networking sites [SNS], SQA), and their sharing of information from SQA to other social media platforms. Zhihu is one of the most popular Chinese SQA sites with more than 17 million users by March, 2015 and approximately 100 million average monthly visits (“User report”, 2015). As an SQA

¹ https://www.zhihu.com/
community seeking to facilitate the communication of knowledge, experiences, and opinions between users (Zhihu Manager, 2016), Zhihu allows users to post, answer, and edit questions as well as interact with each other using social networking features (e.g., following). It also provides multiple ways for both registered and potential users to enter its online platform and to share its contents to other virtual spaces (e.g. mobile app-based & Web-based service, links of widely-cited Zhihu posts spreading in SNS). For instance, users can read and share Zhihu posts within third party sites (e.g., micro blogs, SNS) without a Zhihu account. Zhihu has been a fertile ground for Chinese SQA research in topics like motivations for contributions (e.g., Jin et al., 2015) and answer adoption (e.g., Chen & Deng, 2014).

Sharing Zhihu posts on other social media platforms is a widespread behavior of Chinese Web users, but rather an often-ignored research topic. Therefore, we based our study on Zhihu and its users to investigate the phenomena of Chinese users’ information sharing from SQA to other social media platforms. We investigated four research questions (RQs) which corresponded with four categories of factors that influence users’ SQA information sharing behavior: What are the effects of individual attributes (e.g., age, gender) (RQ1); What are the effects of the frequency of Internet usage (both web-based and mobile-device-based) and social media usage (RQ2); What are the effects of users’ interaction with the SQA community (RQ3); What effect do the types of the contents viewed on the SQA community (RQ4) have on SQA information sharing behavior via third parties (other social media sites)?

To respond to the RQs with empirical evidence, an exploratory quantitative analysis employing regression technique was performed based on the survey data collected from 591 Zhihu users. We present our preliminary results in this paper. To the best of our knowledge, this is the first study on the relations between user attributes, social media usage behavior, and behavior in which users share SQA posts on social media.

**METHOD**

We collected 591 valid responses via an online survey posted from December 2015 to January 2016. The survey was conducted by the first author with a snowball sampling technique: the author shared the link of the online questionnaire via Sina microblog, 2 Wechat moments, and Renren, which are three of the most widely used social media platforms in China. Participants were also asked to spread the link to their friends and on other online social networks. The survey included 24 multiple-choice questions that inquired about participants’ basic demographic information, usage of the Internet and social media (e.g., how many hours per day do you spend on the Internet on mobile devices?), usage of SQA (e.g., how frequently do you use Zhihu each day?), sharing behavior (e.g., how frequently do you share Zhihu post to/on other social media platforms?), and categories of content viewed on Zhihu (e.g., how often do you view Zhihu posts that sought factual information?).

Of the total participants, 53.3% were males and 46.7% were females. 75.7% had at least a college education. 28.6% had full-time jobs, and the rest were either students or new graduates with internships. All were located in China at the time of survey completion.

**Dependent Variable**

We measured users’ SQA information sharing behavior by recording how frequently they shared Zhihu posts to other social media using the 5-point Likert scale, with 1 being the least frequent and 5 being the most frequent.

**Independent Variables**

We assumed that a variety of factors influenced users’ SQA information sharing behavior (e.g., demographics, Internet usage). To identify the effects of these factors, we classified the variables into four categories to facilitate statistical analysis and result comparison: a) individual attributes, which included gender, age, daily working time, and education level; b) Internet and social media use, which was measured by the time spent on the Internet and social media per day; c) interaction with SQA, which was represented by an individual’s Zhihu information seeking and browsing behavior within the Zhihu community and other social media platforms; d) facets of the contents viewed on Zhihu, which included semantic attributes and structural attributes of Zhihu contents (see Table 1 for the full list of independent variables). Since this is, to our knowledge, the first attempt to explore SQA sharing on third party sites, we chose some variables through a series of formal and informal discussions within the research group. Some of the independent variables that related to Zhihu content were inspired by the literature about SQA question types and knowledge sharing (i.e., Harper, Moy, & Konstan, 2009; Choi & Shah, 2016).

Besides a few true or false questions (e.g., do you have a Zhihu account?), most of the variables were measured by the Likert scale. Larger values often indicated higher ratios (e.g. ratio of single questions vs. questions with multiple sub-questions), higher frequencies (e.g. frequency of accessing Zhihu per day), or longer durations (e.g. working time per day, average duration of reading Zhihu contents per visit). Dummy variables were also employed in this study to collect demographic information (e.g. gender) and capture users’ preferences on the various types of Zhihu questions and answers (e.g. long answers vs. short answers, answers based on personal stories vs. answers based on scientific analysis).

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2 http://www.weibo.com
4 http://renren.com/
Table 1. Independent variables

RESULTS
To test the robustness of the effects of our proposed factors, we ran various ordered logit regressions (several models with different combinations of selected RQ-specific variables and one full model with every independent variable) and compared the significance of corresponding coefficients from different models. In Table 2, we only reported the result of full model regression for brevity.

| Independent Variable | Coef. | P>|z|
|----------------------|-------|-------|
| Gender               | .032  | .845  |
| Age                  | .024  | .576  |
| Working time per day | -.030 | .244  |
| Education level      | .326  | .000  |
| Computer-based Internet use | .111 | .101 |
| Mobile-based Internet use | .181 | .003 |
| Social media use     | .063  | .409  |
| Experience with using Zhihu | .283 | .002 |
| Frequency of accessing Zhihu community | .038 | .609 |
| Average duration of reading Zhihu per access | .218 | .020 |
| Ratio: Sources of accessing Zhihu contents (i.e., Zhihu official site vs. other social media channels) | .017 | .781 |
| Registration for Zhihu | .431  | .058  |
| Frequency of friends’ Zhihu sharing | .500  | .000  |
| Number of friends/relatives/acquaintances using Zhihu | -.006 | .944 |
| Answer type: Factual | .019  | .794  |
| Answer type: Opinion (subjective) | .033  | .713  |
| Answer type: Practical advice (e.g., applying for a visa) | .118  | .147  |
| Answer type: Answers based on personal story | -.181 | .315 |
| Answer type: Analytical (answers based on scientific analysis and/or rigorous reasoning) | .095  | .018  |
| Question type: Single vs. multiple | .034  | .069  |
| Answer type: Text with image(s) vs. text | .256  | .015  |
| Question type: Single vs. multiple | -.062 | .378 |

Table 2. Ordered logit regression: Full model (Note: Cells in bold highlight the significant coefficients.)
Effects of Individual Attributes (RQ1)
For RQ1, we investigated the effects of individual attributes (i.e., gender, age, work time per day, and education level) on social media users’ information sharing from Zhihu to other types of social media. Specifically, we conducted regression analysis to explore how each attribute affected how frequently users shared information from Zhihu to third parties (i.e., WeChat moments, Sina microblogs, and Renren).

When we first ran the regression model with only the individual attribute variables, both working time and education level appeared to significantly affect Zhihu information sharing. However, when we added the duration of Internet usage (web-based and mobile-based) per day into the regression model, we found that the coefficient of working time became insignificant (coef.=.094, p=.845). This was also the case when we ran the full model with all variables. This result may indicate that only types of work that provided stable Internet access could expose users to Zhihu contents and in turn prompt them to share these contents to third parties.

Effects of the Usage of Internet and Social Media (RQ2)
To answer our second research question, we studied the impact that Internet usage (i.e., via PC or mobile device) and social media usage (i.e., SQA, SNS, and microblogs) have on users’ information sharing from Zhihu to other types of social media.

After running the two ordered logit regressions (both the regression with RQ2-specific variables and the full model), we found that only the length of Internet use on mobile devices per day was significant in all models, meaning that the positive effect of this variable was robust. Therefore, ceteris paribus, users’ time spent on mobile-based Internet platforms could positively affect their motivation to share information from Zhihu to other social media.

Effects of Users’ Interaction with SQA Community (RQ3)
For our third research question, we explored how users’ interactions within the Zhihu community affected their information sharing from Zhihu to other social media platforms. In this section, we also took the influence of users’ online social networks (i.e. the frequency of friends’ Zhihu content sharing, number of friends using Zhihu) into account.

The two ordered logit regressions (both the regression with RQ3-specific variables and the full model) revealed that users with years of experience using Zhihu tended to be more active in sharing Zhihu contents to other social media platforms. In addition, the data showed that longer time spent reading and browsing on Zhihu, as well as friends’ sharing behavior (frequency of sharing), also positively affected users’ information sharing behavior. More importantly, all these effects were statistically robust (significant in all models). Additionally, the effect of whether a user had registered for Zhihu was marginally significant (p=.058), meaning that registering as an official Zhihu user may increase an individual’s propensity to share Zhihu content to other social media platforms, though reading and sharing Zhihu posts do not require registration.

Effects of the Types of the Contents Viewed in Zhihu (RQ4)
For our final research question, we studied whether the type of content viewed in Zhihu affected users’ information sharing from Zhihu to other social media platforms. To address this, we adopted two ordered logit regressions in this section of analysis. First, we performed the regression with the variables depicting the semantic attributes of Zhihu answers viewed by users (i.e. factual, opinion, practical advice, story-based, analytical). Next, we added the structural attributes of Zhihu questions and answers encountered or preferred by users into regression (i.e. text vs. text with images, long-text vs. short-text, single-question vs. multiple-question). Furthermore, we also compared the results of these two regressions with that of the full model. We discovered that users’ preferences for long-text (answers exceeding 1000 words) and analytical answers (answers involving scientific analysis and/or rigorous reasoning) were positively associated with how frequently they shared Zhihu content in other virtual spaces. These effects were robust across all three regressions. Additionally, the effect of participants’ preference for answers with both text and image(s) was marginally significant (p=.069), which suggests that users who encountered this type of answers were more likely to share Zhihu content with individuals outside Zhihu community.

DISCUSSION AND CONCLUSION
We present the first phase of our study that investigates the factors that influence users’ SQA content sharing behavior on other social media platforms. Our preliminary results from a quantitative analysis using Zhihu as a test bed have yielded a series of intriguing findings.

First, education level positively and significantly influences participants’ Zhihu content sharing. This is not surprising because Zhihu has a reputation for offering high quality answers among Chinese Web users. Quite a few prestigious scholars and entrepreneurs (e.g., Kai-fu Lee, founder of the Innovation Works) have registered accounts and shared their knowledge and experiences on Zhihu, and thus attracted highly educated readers. We may also speculate that more highly educated users are more likely to be knowledge workers who have constant Internet access. Consequently, they may have better access to SQA contents. We did not specifically ask about participants’ Internet access at work, but that could be an interesting variable for future research. Notably, working time is insignificant when taking the duration of daily Internet access into account. This is probably because, given an Internet connection, social media platforms can be accessed easily through multiple channels, meaning users were able to
view Zhihu content both in and out of their work environments. These findings address RQ1.

Second, among the variables regarding Internet and social media use, only Internet use on mobile devices significantly affected Zhihu content sharing. This may be because participants associated different devices with different online purposes. Although almost half of the participants (48.7%) reported spending more than five hours on the Internet via computers each day, the Internet access on computers might be more likely used for work purposes. In contrast, mobile phones might be used for leisure reasons, including browsing social media posts. 48.6% of the participants accessed the Internet on mobile devices for more than three hours per day, which may have increased their chances of viewing and sharing interesting posts. This answers our RQ2.

Furthermore, participants’ past experience with Zhihu, time spent reading and browsing on Zhihu per visit, and friends’ sharing frequency all positively and significantly influenced their own sharing behaviors. This is reasonable because the more participants’ friends shared Zhihu posts on social media sites, the more participants would encounter Zhihu content. Friends’ sharing behavior may have had particular influence over participants who did not have Zhihu accounts, since those participants may have been less likely to actively visit Zhihu, and have mainly accessed Zhihu posts through their friends’ shared links. These findings address RQ3.

In addition, users who viewed long answers and/or analytical answers shared Zhihu contents more frequently than others. 71.2% of the respondents preferred analytical answers to answers based on personal stories. Compared to answers based on personal stories, analytical answers involve analysis rooted in scientific evidence or reasoning, which could be relatively objective and reliable. Long answers may offer more details that address posted questions or problems. In the future, it would be interesting to further classify those analytical answers to see if there are any subject or topic-related patterns. These findings address RQ4.

FUTURE RESEARCH
As the first step of our exploration of users’ SQA content sharing behavior on social media, this study has generated quite a few opportunities for future research. First of all, we plan to expand our study on a larger scale with random sampling. Our sampling for this study is somewhat skewed in that a majority of the participants were students or early graduates. This may also have resulted in the insignificant association between age and users’ sharing behavior. Second, in the next phase we will adopt a qualitative approach by conducting semi-structured interviews with a smaller group of participants to gain an in-depth understanding of the types of information users like to share and the factors that motivate them to spread SQA contents to other platforms. In addition, apart from directly asking participants, we may gather the questions and answers that have been shared from SQA to other sites to learn about the categories of posts that have been shared. The log data that depicts user behavior on SQA (e.g., visiting history, friends) can also inform our study of sharing behavior. As we tackle these challenges one by one and formulate a deeper understanding of this often ignored topic of information sharing, we may provide practical implications for SQA design that facilitate information and knowledge sharing among users.

REFERENCES