Searching for Answers - Knowledge Exchange through Social Media in Organizations

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Abstract
Organizations need information systems that facilitate the exchange between knowledge seekers and contributors in order to manage knowledge successfully. As prior research suggests, social media platforms are a promising solution for bridging the gap between both sides in an effective manner. To enhance our understanding of the benefits of these technologies for knowledge management, we analyze the content of 15,505 enterprise microblogging messages created by 1,166 employees of an international financial institution. Specifically, we explore what kind of knowledge users seek and how knowledge is contributed from an individual perspective. Building upon social capital theory we further analyze how the strength of the relationship between seekers and contributors influences the quality of knowledge exchange. Our results provide first insights on how knowledge exchange through social media takes place in organizations. Moreover, we find empirical evidence that these technologies leverage an organization’s existing knowledge, specifically through bridging of otherwise disconnected people.

1. Introduction

Since knowledge is an organization’s most valuable resource for differentiating from competitors and thus achieving competitive advantage, its utilization and effective management is of central importance for enterprises [1, 2]. To address this issue, knowledge management systems (KMS) are needed to support the exchange of knowledge between distributed workers efficiently [3]. One specific form of KMS relies on social networks which are enabled through electronic communication between individuals sharing a common practice [4, 5]. As prior research has shown, such electronic networks of practice (ENoP) help to bridge the gap between knowledge seekers and knowledge contributors [3, 6].

In this context, social media platforms are considered a promising solution for building electronic social networks [7]. Leveraging the connectivity of the WWW with a variety of Internet-based technologies such as, wikis, tagging sites, discussion forums, and microblogging platforms, social media changes the way users communicate, collaborate, and exchange knowledge [8]. As a result organizations have started to explore the value of these technologies ‘behind their firewall’, e.g., for online collaboration or knowledge exchange [9]. However, many firms struggle when it comes to implementing such tools in their communication infrastructure since the impact of social media on work performance is difficult to measure. While some research on social media has been conducted in the public domain, very few studies have been carried out in a corporate context (e.g., [9, 10]). Recently, there have been several calls for more dedicated research on the use of social media in enterprises (e.g., [7]), specifically with respect to the question of how these technologies might be leveraged for effective knowledge management (KM).

Therefore, this article aims to shed light on how social media facilitates the exchange of knowledge in an organizational context. In particular, we analyze the content of a huge dataset of enterprise microblogging (EMB) messages to gain insights about the interactions between knowledge seekers and contributors in this specific form of electronic network. Since direct questions can be viewed as explicit requests for knowledge from a knowledge seeker [11], we interpret answers towards these questions as knowledge contributions from knowledge contributors. We therefore focus on questions posted on the EMB platform to investigate what kind of knowledge users seek and request via social media technologies. Moreover we assess the quality of each answer to explore how users contribute knowledge as a result of these explicit requests. In this regard we view the interactions between knowledge seekers and contributors through the lens of social capital theory...
analyzing the impact of tie strength on the quality of knowledge contributions.

By addressing these research questions, we contribute to KM literature by analyzing how social media platforms as ENoP might be used to foster knowledge exchange in organizations. Moreover, we add to the literature on social capital by analyzing the ‘strength of weak ties’ [12] in a social media enabled corporate network. Finally, we follow the call by Richter et al. [7] and provide further insights regarding the value of social media for enterprises.

The remainder of this paper is organized as follows. In the next section, we provide the theoretical background for our research questions. Subsequently, we elaborate on the details of our empirical study, describe our research methodology and illustrate the results of our analysis. Finally, we discuss our findings and present limitations of our work as well as implications for further research.

2. Theoretical Background

2.1. Knowledge Management and Knowledge Management Systems

The knowledge-based view of the organization views knowledge as a scarce resource and its creation, ability to exchange and use is what determines the competitive advantage of an organization [1]. Therefore, organizations are turning to KM initiatives and technologies to leverage their knowledge resources [3]. Knowledge management is defined as a process which is systemic and organizationally specified for acquiring, organizing, and communicating knowledge of individuals so that other individuals may make use of it to be more effective and productive in their work [13]. Since the functionalities of information technologies play a critical role in shaping organizational efforts for KM the concept is of particular relevance to IS [14]. In this regard, KMS have been defined as systems supporting the processes of knowledge creation, storage, transfer and application in organizations [13]. In general, literature suggests distinguishing between two distinct models of KMS to manage organizational knowledge: the repository model and the network model [3]. KMS which are based on the repository model focus primarily on the storage of knowledge in knowledge bases such as searchable document repositories [14]. Typically, such KMS include mechanisms for acquisition, control, and publication of knowledge, e.g., knowledge contributors may be required to fill in templates and have their knowledge items validated by experts prior to inclusion in the repository [6]. On the other hand, the network model proposes to develop systems that foster the linkage among people for the purpose of knowledge exchange [3]. Such KMS provide its users access to resources of non-collocated individuals in their social network [13] which enable them to openly interact within communities and networks of practice [5, 15].

2.2. Realizing Electronic Networks of Practice through Social Media Platforms

The literature distinguishes between two forms of practice-related social networks occurring in work environments: communities of practice and networks of practice [5, 16]. Communities of practice are tightly interlinked groups of people who know each other, work together, typically meet face-to-face, communicate and coordinate themselves [4]. In an organizational context, communities of practices are formed on team or departmental level. In contrast, a network of practice consists of a larger, loosely interlinked, geographically distributed group of people engaged in a shared practice or strategic orientation. While participants often do not know or meet each other face-to-face, nevertheless they are capable of exchanging a great deal of knowledge [4]. Based on advances in computer-mediated communication, e.g., the advent of web technologies, such as email or electronic bulletin boards, networks of practice were able to significantly extend their reach [16]. Thus, Wasko and Faraj [5] define an ENoP as a special case of the broader concept of networks of practice where the sharing of practice-related information occurs primarily through computer-based communication technologies [5]. Electronic networks of practice are generally self-organized by their members who voluntarily choose to participate for building new relationships. Moreover, such networks are typically semi-open which means that participation is open to all employees belonging to the same organization.

Since the success of such social networks essentially relies on member participation they are not without challenges [3]. Typically, the process of knowledge exchange in ENoP involves people seeking knowledge and people contributing knowledge to the network [3, 17]. Knowledge contributors cannot be certain that knowledge seekers who regard the contribution as useful will return the favor [5]. On the other hand, it is not sure that knowledge seekers will make use of the knowledge received. From a knowledge market perspective, a lack of either seeking or contributing would render the knowledge exchange process incomplete and ineffective driving members away from the community [6]. However, as prior research has shown, knowledge seekers and knowledge contributors have their knowledge items validated by experts prior to inclusion in the repository [6]. On the one hand, the network model proposes to develop systems that foster the linkage among people for the purpose of knowledge exchange [3]. Such KMS provide its users access to resources of non-collocated individuals in their social network [13] which enable them to openly interact within communities and networks of practice [5, 15].
contributors often engage in rich interaction leading to effective exchange of knowledge in ENoP (e.g., [5, 8, 18]). Thus, the role of social capital in ENoP is gaining importance for the understanding of this behavior.

With respect to the aforementioned characteristics, social media platforms such as wikis, blogs or microblogs are promising technologies for realizing ENoP in enterprises [19, 20]. Such platforms rely heavily on new computer based communication technologies and enable rich interaction between otherwise disconnected individuals. In most cases participation is voluntary and the emerging social network is self-organized by its members. Moreover access is typically limited to users behind the enterprise’s firewall. Thus, social media platforms in enterprises are semi-open with respect to new members. From a KM view social media platforms as ENoP might thus be a valuable solution to facilitate the exchange of knowledge between distributed knowledge seekers and knowledge contributors.

2.3. Knowledge Exchange and Social Capital Theory

The concept of social capital has been applied to explain various phenomena of social behavior, such as collective action (e.g., [21]), community involvement (e.g., [22]), as well as knowledge exchange (e.g., [5]). The main difference between social capital and other forms of capital is that it is embedded in a social realm (e.g., community or group). While other forms of capital are based on assets or individuals, social capital resides in the relationships between individuals and participants of a social network [23]. According to the definition provided by Nahapet and Ghoshal [24] social capital can be described as the “… sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit”. This definition encompasses the social network as well as the assets and resources that can be accessed and mobilized through the network. Moreover, social capital is considered a multi-dimensional construct consisting of a relational, a cognitive and a structural dimension [24]. In this regard, the structural dimension describes whether and how members of a network are connected. Important aspects of the structural dimension are the presence or absence of network ties between individuals as well as corresponding network positions. The relational dimension refers to the nature of personal relationships among individuals in a network. It involves the extent to which individuals trust each other and how they identify themselves with the network. Finally the cognitive dimension refers to resources which provide a shared representation, interpretation, and sense of meaning among the network’s members, e.g., a shared language or shared narratives.

While all these three dimensions of social capital are important drivers of knowledge exchange in social networks, the structural dimension has been highlighted in particular [25]. Specifically, the ‘strength-of-ties’ concept has received considerable attention from researchers [8, 12, 26]. Ranging from weak to strong ties, the concept describes the closeness of a relationship between two members of a network [12, 27]. In his seminal work, Granovetter [12] theorized that weak ties were more likely to be sources of novel information. He argues that strong ties tend to be connected to individuals who are close to a knowledge seeker and thus might provide knowledge the seeker already knows. Subsequent research has confirmed this so called phenomenon of the ‘strength of weak ties’ in other contexts [26, 28]. In contrast, it has been claimed that strong ties are more important since they are more accessible and willing to be helpful [29]. The importance of strong ties for knowledge exchange has been shown by many studies as well [27, 30]. While research has demonstrated benefits of both weak and strong ties to knowledge exchange, evidence suggests that strong ties lead to greater knowledge exchange in social networks [29].

3. Empirical Study - Knowledge Exchange through Enterprise Microblogging

Although other social media technologies might be worth analyzing with respect to our research questions, enterprise microblogging (EMB) is considered one of the most pervasive forms of electronic communication [20], and as such, is a promising technology for improving knowledge exchange in organizations. Moreover, since microblogging in private life (e.g., Twitter) has gained momentum, corporations have started to investigate how to exploit the potential of this technology for internal communication and KM. Several vendors are already offering solutions for microblogging in an organizational context (e.g., yammer) and promise a range of benefits, such as improved communication and organization-wide information sharing. While practitioners have often raised the concern that EMB might lead to productivity losses due to information overload, the first scientific studies (e.g., [10], [31]) have confirmed the potential benefits of this technology. Accordingly, we suggest that EMB is a promising social media technology for fostering knowledge exchange in organizations [8].
3.1. Case Description and Data Collection

The data was gathered from a leading international financial institution with around one hundred thousand employees all over the world that implemented and intensively used an EMB platform to support knowledge exchange between individuals in different departments and countries. After a short development phase in the first half of 2010 the platform went online in June and was extensively used by more than a thousand employees from all internal corporate divisions (e.g., IT and HR) by the end of the year 2010.

While participation is voluntary, users can access the platform via a web frontend, a desktop application, as well as different mobile devices. Similar to Twitter, users can post short messages that appear in a chronological stream on the user’s EMB interface. The posts are visible to everyone but can be tagged and filtered by keywords, users, and groups. Furthermore, incoming message streams can be customized by a ‘follower-feature’. That means a user can define specific users he “follows” and might then restrict incoming messages only to them. Since participation is non-anonymous each person’s name as well as a profile picture are visible as part of the message header. The maximum length of each message is restricted to 300 characters.

We obtained a large data sample consisting of more than 15,000 messages posted via the EMB platform during the second half of 2010. In order to ensure that the initial stage of assimilation, which is often characterized by use lags and unstable utilization [32], had no influence on our results we cut off the first 2 months of data (July and August). Moreover we utilized the data from September for pilot and coder training purposes [33]. As a result the dataset consisted of 8,366 messages from September 2010 until December 2010. Due to our specific research focus we then extracted all posts including a question mark to determine which messages are questions. While we cannot rule out the possibility that we missed some questions where users did not include a question mark, prior research has shown that most questions (>80%) asked on social networking sites contain a question mark [34]. From the resulting 1,816 question candidates we eliminated those with extraneous questions marks (e.g., URLs including “php”) leading to a basket of 1,538 questions. Finally, all responses to these messages were extracted (1,164) based on metadata information. Overall, we identified 395 unique users, 339 of which posted at least one question and 230 provided at least one answer to them. According to information gathered in an expert interview with one of the responsible IT managers, approximately 80% of the users work in the IT department, which is one of the largest internal departments of the financial institution. Moreover, participants range from university hires to directors across all age groups.

3.2. Method and Measures

In order to discover the types of questions knowledge seekers ask via the EMB platform and to assess the quality of knowledge contributor’s answers (AQ) towards these questions we conducted a manual content analysis. As a technique to make systematic, replicable and valid inferences from data to the context, content analysis is typically used to classify many words of text into specific categories based on an explicit coding scheme [35]. Specifically, we applied a directed content analysis [36] which allowed us to use predefined categories and coding schemata based on existing theory. In this regard, Morris et al. [34] have developed a categorization for questions that individuals submitted to the public microblogging platform Twitter. Since the proposed categories of this research are defined broadly and not specific to public microblogging they were applied as the initial starting point for our content analysis on EMB. For the purpose of assessing the quality of knowledge contributor’s answers we applied a rating system which has been developed by Wasko and Faraj [5]. During the content analysis procedure both of these categorizations had to be only slightly adapted for the purpose of analyzing microblogging in the enterprise. The final categories of questions types and the coding scheme for AQ are depicted in table 1 and 2.

For analyzing the influence of tie strength on AQ an appropriate measure for the strength of ties between two individuals was needed. While there have been several proxies proposed in the literature [37] our measure of tie strength is based on Granovetter’s [12] argumentation that strong ties can be characterized by higher frequency of contact, friendship and reciprocity as compared to weak ties. In particular, we utilized the ‘follower-feature’ of the EMB platform as a proxy for tie strength for the following reasons: first, if person A follows person B, messages of person B are implicitly given higher priority than those of other persons. This leads potentially to a higher frequency of contact between A and B since A is more likely to read the higher prioritized messages of B and thus is more likely to respond to it. Second, if person A voluntarily decides to follow person B this suggests that A has similar ideas or topics of interests than B [38]. While this does not necessarily mean that A and B are friends it signals a common ground which is an important prerequisite for a strong relationship. Third, if person A and B are following each other, a bidirectional tie is
established indicating higher reciprocity between the two. Moreover frequency of contact is likely to be higher than in the unidirectional case. If neither A follows B nor B follows A both do not know each other or have less in common which leads to a low frequency of interaction. Given the asymmetrical structure of the ‘follower-feature’ we therefore measure tie strength on a scale from 1 (weak) to 3 (Strong) as follows: 1) A is not following B and B is not following A, 2) A is following B or vice versa, 3) A and B are following each other.

3.3. Content Analysis Procedure

While content analysis is a popular and widespread research technique, it has been often criticized for its subjectivity [39]. To address this issue, all actions and decisions during our analysis were guided by established principles, heuristics, and rules to make the analytical approach transparent and to assure reliability and validity of the results and measures used. Therefore, we closely followed the 5-step process for manual content analysis suggested by Morris [40]. First, we had to decide on the unit of analysis, which determines the segments the data is broken down for and validity of the results and measures used. Within literature, single messages are often used as a unit of analysis [39, 41], as these are objectively identifiable by independent coders. A further advantage of this approach is that analysis is conducted on the original unit as determined by the author [41]. Therefore, we chose each question and each answer as our unit of analysis.

Based on the work of Morris et al. [34] and Wasko and Faraj [5] we then developed the coding schemata for the types of questions and the quality of answers [35, 40]. To ensure validity, both schemata were intensively discussed with a panel of one practitioner and two academics. Moreover, the coding schemata have been subject to several revisions as a part of the process until the final version was created. The final schemata are illustrated in Table 1 and 2.

In a third step, two researchers were provided a training sample of 100 questions and answers for sample coding [33]. Since training enhances a coder’s familiarity with the scheme this is an important activity to ascertain the objectivity of the judges [42]. The results were discussed afterwards and the coding schemata were revised accordingly.

According to Morris’ [40] procedure we then started an iterative process of sample coding on a larger reliability sample and revisions of the coding until all reliability measures reached an acceptable level. Consistent with the findings from prior research [33] the size of each reliability sample was set to 200 messages which were not part of our final research sample. Then, the coders independently assigned all posts in the sample to the categories of our coding schemata. Next we computed Krippendorff’s alpha and Cohen’s kappa to assess the reliability of the coding schemata and to ensure the validity of our analysis [33, 34].

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Operationalization</th>
<th>Example from data sample</th>
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<tbody>
<tr>
<td>Recommendation (QT1)</td>
<td>Questions asking for suggestions about a broader issue as an open-ended request for subjective Knowledge of others.</td>
<td>“If you could change one thing about HR before year end, what would it be?”</td>
</tr>
<tr>
<td>Opinion (QT2)</td>
<td>Questions requesting other’s knowledge and experience about a specific issue such as, e.g., a rating of an item or a suggestion.</td>
<td>“Have you worked with them? any hands-on experience?” „Suggestion... What do you think ?”</td>
</tr>
<tr>
<td>Factual (QT3)</td>
<td>Questions asking for objective Knowledge about a specific issue, e.g., how something has to be done, or the meaning of something.</td>
<td>“Does anyone know how many servers we have in our company?” “Quick question anyone - what is xyz?”</td>
</tr>
<tr>
<td>Rhetorical (QT4)</td>
<td>Questions that do not expect an answer and thus do not express a “real” knowledge request. Questions as linguistic device, e.g., suggestive questions, or answers formulated as questions.</td>
<td>“Light travels through fibre at 122T mps.. who would have thought?” “RE: have you tried to print to pdf using pdf-xchange?”</td>
</tr>
<tr>
<td>Offer (QT5)</td>
<td>Questions that ask whether others are interested in receiving a service or object or want to participate in some activity, e.g., invitations.</td>
<td>“Is anyone interested in bulk purchasing xyz licenses to get a discount?” “Any one for lunch today? say 11:30 - ?”</td>
</tr>
<tr>
<td>Favor (QT6)</td>
<td>Questions that request knowledge, services or objects from others, beyond simply providing the answer to a specific question.</td>
<td>„Can you email me some case papers?...” “Would anyone be able to give me a 30 minute demo of xyz?”</td>
</tr>
<tr>
<td>Social Connection (QT7)</td>
<td>Questions asking for knowledge about people with specific characteristics, e.g., subject-matter experts or a contact person for a specific issue.</td>
<td>“Who would be best person to ask few question about XYZ?” “Anyone out there with Ajax knowledge?”</td>
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</table>
As suggested in the literature, for both measures we considered a value of more than .70 as evidence for the reliability of our measures [43, 44]. The discrepancies between the coders were then discussed and the coding schemata were revised. The whole process was repeated twice until an acceptable level of intercoder agreement was reached [40].

Finally, after reliability of the coding schemata was approved, one research assistant processed all 1,538 questions and 1,164 answers in our research dataset. While intercoder reliability is sometimes computed on the coding results of the whole sample as well, it is a common approach to rely on a census of the data in the case of large datasets [33, 45].

3.4. Analysis and Results

3.4.1. What Kind of Knowledge Users Seek. The results of our analysis on the 1,538 questions asked via the financial institution’s EMB platform clearly show what kind of knowledge people request from their colleagues. As figure 1 illustrates, factual, opinion, recommendation and rhetorical questions occur with highest frequency among all 7 question types.

Specifically, with an average frequency of 27% the users utilize the EMB platform to request factual knowledge from their colleagues (QT3). Further, a great share of questions was posted to obtain opinions and recommendations from the social network (QT2, QT1). While rhetorical questions (QT4) typically do not express a request for knowledge, this question type was part of the predefined coding schema and we decided to keep it since it helps to explain the nature of more than 25% of all questions. The remaining 3 question types (QT5, QT6, QT7) are all well below 10% regarding their frequency of occurrence in the sample. Although every post via the EMB platform is visible to everyone in the network almost 50% of all questions were directed to specific users (e.g., “@John Doe:…?”). In this regard, we found significant differences from this 50:50 distribution for QT1 and QT7 as well as QT6. Specifically, the majority of all requests for recommendation (73%) and social connections (80%) were not directed to a specific person. This indicates that knowledge seekers explicitly try to leverage their social network to find answers to QT1 and QT7. On the other hand, when asking for the favor to provide specific knowledge resources, e.g., personal assistance by an expert users mostly turn to people they already know (63%).

3.4.2. How Users Contribute Knowledge. Switching from the knowledge seeker to the knowledge contributor view, we found that 1,164 answers were posted to more than 55% of all questions. Among the different question types, response rates were comparably stable around 60% except for QT4 (below 45%). Based on our definition of QT4 in table 1 rhetorical questions were excluded which lead to an overall response rate of 60%. On average, users contributed to the 1,143 questions with 0.85 answers. With respect to the 682 answered questions each

<table>
<thead>
<tr>
<th>Score</th>
<th>Answer quality (AQ)</th>
<th>Operationalization of AQ</th>
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<tbody>
<tr>
<td>1</td>
<td>Not Helpful</td>
<td>Answer was not helpful for the knowledge seeker. This is confirmed by a corresponding comment on the answer.</td>
</tr>
<tr>
<td>2</td>
<td>Indirect Helpful</td>
<td>Answer is not directly providing the knowledge requested but contains a link to a potential information source or gives feedback information</td>
</tr>
<tr>
<td>3</td>
<td>Somewhat Helpful</td>
<td>Answers the question posted at least partially, provides a valuable insight into how the issue was resolved elsewhere, and/or contains relevant knowledge (including meta-information like references to information sources, e.g., Websites).</td>
</tr>
<tr>
<td>4</td>
<td>Helpful</td>
<td>Answers the question posted directly and/or complements the initial request with useful information. The recipient confirms the helpfulness by a thankful respond. Answers marked by users with a ‘like’ tag were additionally added to this type.</td>
</tr>
<tr>
<td>5</td>
<td>Very Helpful</td>
<td>Answers the question and/or provides helpful information in the form of a valuable comment. Moreover, the reply is positively marked with a ‘win’ tag that can be set by the user to demonstrate the usefulness of this reply.</td>
</tr>
</tbody>
</table>
received an average number of 1.41 contributions. Further, directed questions had a higher response rate of 65% as compared to undirected questions (55%). On the other hand, undirected (answered) questions on average received more contributions (0.85, (1.53)) than directed questions (0.83, (1.27)).

Next we analyzed the quality of knowledge seekers contributions to the questions asked via the EMB platform. Overall AQ averaged at 2.74 with a standard deviation of 0.90. However, we were more interested in the question of how the type of knowledge requested had an influence on AQ. Moreover, based on social capital theory we expected tie strength between seeker and contributor to influence AQ [5, 29]. Therefore we conducted several one-way analyses of variance (ANOVA) as this is a common approach for conducting tests of mean equality between groups [46]. Since the reliability of ANOVA relies on the assumption that the outcome measure is normally distributed we graphically (QQ-plot, histogram) and empirically (Chi-square test) analyzed the distribution of AQ to assure that our method’s requirements were not violated. For all ANOVAs, Levene statistics were examined to test for equality of variance between the groups. If violation of this assumption was found, Welch and Brown-Forsythe tests were conducted as these are robust against heterogeneous variances. For detailed comparison of differences between the groups Tukey-Kramer as well as Scheffé tests were applied for post-hoc analysis.

According to the results of ANOVA depicted in Table 3, there is sufficient evidence that the mean AQ differs among the seven types of questions at the 0.01 level of significance. However, the results of our post-

<table>
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<th>Table 3. ANOVA results AQ on questions types</th>
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<tr>
<td><strong>AQ</strong></td>
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<tr>
<td>Betw. Groups</td>
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<tr>
<td>With. Groups</td>
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<tr>
<td>Total</td>
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Levene p < 0.01; Welch p < 0.01; Brown-Forsythe p < 0.01

hoc analysis attribute this to the difference between AQ of rhetorical questions and AQ of all other question types only (Tukey-Kramer and Scheffé, p<0.05). With a value of 2.28 the mean AQ of QT4 is considerably lower than for all other questions types which are above the sample mean of 2.74. Given the nature of rhetorical questions this result is not surprising. However, the differences of means between all other groups were insignificant (Tukey-Kramer and Scheffé, p>0.2). This indicates that the type of question has no significant influence on AQ except for the special case of rhetorical questions.

Based on the tie strength concept we next examined the influence of weak and strong ties on AQ. Therefore an ANOVA was conducted to compare the differences in means between the three levels of tie strength. As it is shown by the results in table 4 the assumption of equal variance across the groups is met (p>0.31) and there is a significant difference in AQ means between them (p<0.01). Analyzing these results on group level the Tukey-Kramer as well as the Scheffé tests provide evidence that average AQ of the strong-tie group is significantly (p < 0.07) below the weak-tie group. As depicted in figure 2 mean AQ of groups 1 (2.77) and 2 (2.78) are almost equal as compared to group 3 (2.63).

<table>
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<tr>
<th>Table 4. ANOVA results AQ on tie strength</th>
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<tr>
<td><strong>Sum of Squares</strong></td>
</tr>
<tr>
<td>Betw. Groups</td>
</tr>
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<td>With. Groups</td>
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<tr>
<td>Total</td>
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Levene p > 0.31; Welch p < 0.07; Brown-Forsythe p < 0.06

Nevertheless post-hoc tests provide only weak evidence for a significant difference between groups 2 and 3 (Tukey-Kramer, p=0.2; Scheffé, p=0.19). This can be attributed to the fact that the standard error in group 2 (0.068) is significantly higher than in group 1 (0.033). However, the results clearly demonstrate that answers from weaker ties on average have better quality than those from stronger ties.

Since we were further interested in the validity of these results with respect to the different types of questions, separate ANOVAs on differences in AQ means were conducted for each questions type. While variance heterogeneity was an issue for QT5 only, ANOVA results were insignificant for all question types except for QT1 and QT2. As depicted in table 5 QA differs among the three groups of tie strength at the 0.05 level of significance for QT1 and 0.1 for QT2.
The results of post hoc analysis for QT1 provide sufficient evidence that answers from the weaker-tie groups 1 (2.88) and 2 (2.97) have higher AQ than those of the strong-tie group 3 (2.53). Specifically, difference in means is significant at $p<0.05$ between group 1 and 3 and $p<0.1$ between group 2 and 3. As illustrated in figure 3 a similar relationship was found for QT2. AQ from the strong-ties group was the lowest (2.58) as compared to group 1 (2.84) and 2 (2.62). In contrast to QT1 the difference in AQ means between group 1 and 3 and $p<0.1$ between group 2 and 3. As illustrated in figure 3 a similar relationship was found for QT2.

4. Discussion

The aim of this study was to explore how individuals exchange knowledge via social media platforms in organizations. Specifically, we focused on the questions of what kind of knowledge users seek and how knowledge is contributed as a result of these requests. Therefore, we analyzed the behavior of knowledge seekers and contributors on an EMB platform. Based on the results of our analysis we will subsequently discuss implications of our research for theory and practice and highlight some potential future research issues as well as limitations.

4.1. Implications for Theory and Practice

4.1.1. Implications for Theory. The primary theoretical contribution of this work is our analysis of the tie strength concept to relationships between individuals exchanging knowledge on social media platforms. Specifically, we found evidence for the ‘strength of weak ties’ [12] regarding knowledge contributed to recommendation and opinion questions. In contrast to, e.g. factual knowledge, both of these types of knowledge requests particularly aim at obtaining diverse, unique and non-redundant knowledge from the network. Our results are therefore in line with Granovetter’s work [12] which proposes that distant and infrequent relationships are important for knowledge exchange since they provide access to novel, non-redundant information. On the other hand our results do not confirm the results of other researchers (e.g., [27]) who found that strong ties are better for gathering specific types of knowledge. A reason for that might be that strong-tied co-workers are aware of their mutual knowledge and thus request knowledge from each other more directly, e.g., via phone than via community based social media tools such as EMB. This implies that knowledge seekers predominantly utilize social media to address questions were a potential provider is unknown. Moreover we contribute to the KM literature by demonstrating, that social media platforms as ENoP facilitate the diffusion of knowledge in enterprises. As our analysis revealed, social media technologies such as EMB enable bridging between otherwise disconnected individuals in an organization. Thus they help to leverage the existing knowledge which otherwise may remain unused. An additional contribution to this stream of literature is our investigation of knowledge exchange from the two distinct but closely interrelated perspectives of knowledge seekers and knowledge contributors. Little research has been conducted incorporating both of these facets of knowledge exchange in a single study [17]. Finally we add to the
few articles on the use of social media in enterprises as proposed by Richter et al. [7]. To the best of our knowledge we are the first to analyze the requests of knowledge seekers and knowledge contributors on an EMB platform.

4.1.2. Implications for Practice. The results of our analysis provide evidence that the most valuable knowledge source for opinions and recommendations are individuals that knowledge seekers are not aware of. Thus, as conventional communication media such as email require knowledge about the recipient, individuals would not be able to obtain knowledge from these people using such a technology. Since, social media platforms as, e.g., EMB are able to bridge such gaps between knowledge demand and knowledge supply, organizations should implement such technologies into their communication infrastructure to improve knowledge exchange. Moreover, it has been shown that leveraging weak ties may also lead to lower overall knowledge search costs [27]. The rationale behind this is given by the fact that individuals might request the same knowledge from weak ties that they usually request from strong ties, but might obtain it at lower search costs and thus could dedicate more time and energy towards their work activities. Thus, the benefits of using social media technologies in organizations might not only arise through enhanced knowledge reach and richness but also through search cost efficiencies at the worker level. From a strategic management viewpoint the effective adoption of social media platforms in enterprise such as EMB might therefore be a potential source for gaining a competitive advantage in the market.

4.2. Limitations and Future Research

4.2.1. Limitations. A potential limitation of our research is that the results from our analysis of EMB data might not be generalizable to other social media technologies. Moreover, we cannot rule out the possibility that there may be differences between employees of organizations that operate in other industries or specific countries than in our case. However, this is the first study analyzing knowledge exchange through social media in organizations and we hope that future research will test the validity of our results. A second limitation of this work might be the method which has been applied to extract the questions and corresponding answers from the data sample. Questions might have been missed where users did not include or forgot the question mark. On the other hand users might have posted answers without using the “reply to” function. Although this might have lead to the loss of some relevant posts as well, we are convinced that both issues occur randomly and do not systematically influence our results.

4.2.2. Future Research. Apart from analyzing the role of social media on knowledge exchange in other contexts, another avenue of future research would be to analyze the impact of knowledge requested on other outcome variables than answer quality. In this regard, e.g., the time until a knowledge seeker receives a contribution might be an important outcome measure as well (e.g., [5]). With respect to social capital theory it should be analyzed to what extent the relational and cognitive dimensions have an influence on knowledge exchange. For example, trust might have an impact either on how knowledge is sought or on how and if knowledge is contributed or both (e.g., [29]). Beyond the specific focus on knowledge exchange, more research should be conducted on the use of social media in enterprises. In particular, attention should be paid to the differences between user behavior on public versus corporate social media platforms.

5. References


