

What is Your Organization ‘Like’? A Study of Liking Activity in the Enterprise

Ido Guy*, Inbal Ronen**, Naama Zwerdling**, Ira Zuyev-Grabovitch*, Michal Jacovi**

*Yahoo Labs, Haifa, Israel {idoguy@acm.org, iragz@yahoo-inc.com}¹

**IBM Research-Haifa, Israel {inbal, naamaz, jacovi}@il.ibm.com

ABSTRACT

The ‘like’ button, introduced by Facebook several years ago, has become one of the most prominent icons of social media. Similarly to other popular social media features on the web, enterprises have also recently adopted it. In this paper, we present a first comprehensive study of liking activity in the enterprise. We studied the logs of an enterprise social media platform within a large global organization along a period of seven months, in which 393,720 ‘likes’ were performed. In addition, we conducted a survey of 571 users of the platform’s ‘like’ button. Our evaluation combines quantitative and qualitative analysis to inspect *what* employees like, *why* they use the ‘like’ button, and to *whom* they give their ‘likes’.

Author Keywords

Like activity; like analysis; social media; workplace.

ACM Classification Keywords

H.5.3. Group and Organization Interfaces: Computer-supported cooperative work.

INTRODUCTION

Social media has become very popular both on the web and within the enterprise. In 2009, the leading social network site, Facebook, introduced the ‘like’ feature [24], which enabled users to actively support a post, picture, or page. Liking has quickly become one of the most common activities that users perform on Facebook: in 2013, it was reported that 4.5 billion likes were performed daily [15]. The number of likes received has often become an indication of interestingness and even prestige or reputation [48]. According to Facebook, users who click on the ‘like’ button are more engaged, active, and connected than the average user [46]. A similar functionality has been adopted by other leading social network sites (SNSs). For example, Google added the ‘+1’ button as part of the Google+ SNS [1] and LinkedIn added a ‘like’ functionality of its own [2].

¹Part of the research was conducted while working at IBM Research.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions@acm.org.

CHI’16, May 07-12, 2016, San Jose, CA, USA

© 2016 ACM. ISBN 978-1-4503-3362-7/16/05...\$15.00

DOI: <http://dx.doi.org/10.1145/2858036.2858540>

On all of these websites, the liking action may appear on the feed of the people who are connected to or follow the likers, and therefore takes part in the content dissemination process. In addition, the authors of liked posts get notified of the liking action, and the likes are visible to all people who have access to the content item.

Aside from liking, there are other forms of feedback that are popular on social media, but none of them share the simplicity of like. Commenting and tagging, as opposed to liking, involve the contribution of some content, thus requiring more user engagement. Other related concepts are sharing [17], reposting [45], rating, and voting [3,33]. Compared to sharing or reposting, liking reflects a less explicit type of support, with a lower level of commitment on the part of the user. Rating or voting typically enable positive and negative feedback along a scale and often require more effort deciding on the exact value to be used.

In addition to the direct feedback that liking provides, Facebook itself, as well as various search engines, use the number of likes in their scoring algorithms as a popularity measure to boost content’s score [28,39]. Both the number of likes a post receives and the user’s previously liked posts play a key role in generating the user’s news feed [38]. When applied on comments, likes can be used for highlighting, hiding, or ranking them. Social influence services, such as Klout [14] use likes as one of the primary features for deriving a person’s influence score.

Subsequently to its success on the web, social media has started to prosper within the enterprise. Enterprise social media platforms, such as Jive [12], Yammer [41], and IBM Connections [25], adopted various technologies, including SNSs, social bookmarking, microblogging, and others, for use behind the firewall. It is therefore not a big surprise that the ‘liking’ notion has also recently been adopted by these platforms, following its proliferation on the web.

The value of enterprise social media has been extensively studied [7,13,19,32,47]. For individual employees, social media opens opportunities to create new, sometimes remote, connections. It exposes them to fresh content, increases their awareness of what is going on within the organization, and helps them promote their projects and ideas [13]. For the organization as a whole, social media fosters knowledge sharing, strengthens interaction and collaboration among teams, and helps establish a stronger sense of belonging [47]. Applying advanced analytics on

enterprise social media data is used to enhance search, content recommendations, and expertise location [18,35]. Organizational units, such as human resources, sales, and IT, are starting to use enterprise social media analysis in order to better understand employees' thoughts and opinions regarding organizational processes, tools, and products [19,42].

The 'liking' feature can play a key role in the overall use and value of enterprise social media. Its simplicity may lower the entry barrier and get more employees to participate in the "social game" within the organization [9]. For example, our own data spanning a 7-months experimental period indicates that the overall number of likes was more than double the number of comments, even though the 'liking' feature was newly introduced, whereas comments have been used for several years. The potential is even bigger: a recent Instagram study reported a number of likes that was nearly 50 times the number of tags and 35 times the number of comments [26]. Liking can help surface valuable content, both from a personal perspective, to individual employees; and from an organizational perspective, to different business units. It can spark interaction between employees and groups; encourage contribution and engagement; and enhance information diffusion. As the amount of enterprise social information keeps growing, the 'like' button can play a significant role in the success of enterprise social media and it is therefore important to understand the characteristics and motivations of its use.

In this paper, we study liking behavior within an enterprise social media platform. Our evaluation is based on analysis of the platform's logs in a large global organization over a period of seven months. During that period, 58,644 users ("likers") performed 393,720 liking actions on 176,515 entities authored by 44,291 users ("likees"). Liking was performed on entities originating from five social media applications: blogs, microblogs, wikis, forums, and shared files. We did not analyze quantitative features of the entities' content, but rather focused on their type, liker, and likee. To get an in-depth understanding of the different motivations and other aspects of liking, we also conducted a user survey with 571 'like' users.

Our results are described across three dimensions: *what* employees like; *why* they like; and *who* the likers and likees are. To the best of our knowledge, this is the first study to provide a comprehensive analysis of liking activity within the enterprise. The findings have relevant implications both for enterprise social media designers and for organizations deploying social media behind their firewalls.

RELATED WORK

There are many studies about the motivation behind social media use. Lin et al. [34] stated that the most influential factors of continued SNS use are enjoyment, usefulness, and number of peers also using it. Smock et al. [43] showed that users' motivations predict their use of different

Facebook features, such as status updates and wall posts. Baek et al. [6] found that the primary motivation for posting links on Facebook is information sharing. In addition, users shared links for convenience, entertainment, time passing, interpersonal utility, control, and business promotion.

Social media motivations have also been studied within the enterprise. DiMicco et al. [13] identified three key factors: connecting on a personal level with coworkers, lobbying for projects, and advancing one's career. Steinfield et al. [44] found that frequent use of the enterprise SNS is associated with bonding relationships, a sense of corporate citizenship, interest in connecting globally, and access to new people and expertise. In their study of corporate microblogging, Zhang et al. [49] identified the ability of staying aware of what others are working on and making new connections as the two main driving forces. Leonardi et al. [32] provide a good summary of the motivations and benefits of social media use within the enterprise.

Literature on the 'like' feature has recently started to emerge. Huang [23] conducted a user survey to examine behavior on Facebook brand pages and found that 'liking' is mostly motivated by sharing information or ideas with friends, endorsing and promoting a post, and interacting with other fans. Brandtzaeg and Haugstveit [8] studied the 'liking' of humanitarian causes on Facebook and highlighted the potential value of the like button for civic engagement and humanitarian support. They found that information-driven liking was much less common than the more socially (and emotionally) motivated reasons for liking. Meier et al. [36] enumerated a variety of motivations for using the Twitter 'favorite' feature, which bears some similarity to the Facebook 'like' button. These can be broadly categorized as responding to a specific tweet, promoting nonverbal, often private, communication with the tweet's author, and marking for later reuse. Many of the studies about the motivations for the use of social media, and 'liking' in particular, made use of the "Uses and Gratifications" theory. In our "why" analysis, we map the reasons and motivations we identify to categories developed on top of this theory.

Recently, a group of researchers conducted various studies exploring the use of the 'like' feature on the mobile photo sharing application Instagram. The first study [27] compared general usage behavior across different age groups and found that teenagers tend to receive more likes for their photos than adults. Another study [21] focused on tag-based 'like' networks and showed that they had different characteristics (size, degree, modularity) for different types of tags. The third work [26] was the most comprehensive and focused on three aspects: network structure, influence, and context. It revealed that while having more followers and adding more photos increased the prospects of receiving likes, following others did not have any influence. The authors state that despite the popularity of 'like' buttons on social media, little research has studied 'like' activities as a main focus.

Several studies described how social buttons such as liking and sharing have become an “economy”, driving people to receive more of them as a symbol of status, affection, and influence [7,17]. Burke et al. [11] showed that directed person-to-person interactions on Facebook, including ‘likes’, were associated with a growth in bridging social capital. According to Hampton et al. [20], Facebook users were more likely to receive a ‘like’ than give one. They attributed this finding to a group of power users, who are disproportionately more active and thus skew the average. Bunker et al. [10] showed how managers are trying to draw ‘likes’ for their companies and product pages on Facebook, in order to develop customer relationships.

The ‘like’ interactions can be used to generate a social graph, on which link analysis techniques can help measure reputation, influence, and content value. Agarwal et al. [2] used ‘liking’ on LinkedIn as one of the features for ranking activities in the homepage feed. Jin et al. [28] built a system called LikeMiner, which used likes to estimate representativeness and influence of objects and users by extracting a topic model from the liking graph. In a study within a large organization, Mark et al. [35] examined a variety of signals for enterprise reputation and found that receiving many likes is one of the strongest. This specific use case further motivates the analysis of enterprise liking provided in this work.

RESEARCH SETTINGS

Enterprise Social Media Platform

This research was performed over a deployment of IBM Connections (IC) [25] within a large global organization. IC is an enterprise social media platform, which includes a variety of social media applications [25,37]. An entity, such as a blog post, a forum entry, or a wiki page, can be created as a “standalone” or as part of enterprise communities, which play a central role in IC [37]. IC users can click on ‘like’ for entities of five applications: blog posts, microblog messages, forum entries, wiki pages, and shared files. In addition, comments on blogs, microblogs, and forums can be liked. The like link, illustrated in Figure 1, may be clicked when viewing the entity’s page. Each user can like an entity at most once; the author of an entity can also like it (‘self like’). An indication of the number of likes an entity received appears on the IC page of the entity. For example, the forum entry on Figure 1 has received 2 likes. Clicking on the number displays the names of the likers. In case the user has already liked the entity, the like option no longer appears, but rather a text saying “You like this”.

The like action triggers an email notification to the entity’s author. Users can change the settings to turn off notifications, or batch them on a daily, weekly, or monthly basis, however this feature is not easily accessible. In addition, the like activity becomes part of the user’s activity stream. The activity stream includes all public activity (creating, commenting, tagging, etc.) that occurs within the different IC applications [19]. Each activity in the stream shows how many likes its related entity received. In the



Figure 1. Liking functionality on a forum entry (top right).



Figure 2. Liking activity in the activity stream.

default view of the stream, available at the main IC homepage, users see activity from their network (explicit connections in the SNS), and from additional users, communities, and entities they follow. In addition to viewing their stream on the IC’s homepage, users get a periodical email digest of activity from their network and followed items (default is daily or weekly, depending on the types of entities). Figure 2 shows a sample like activity in a user’s activity stream.

Data Collection

Liking data was collected by inspecting IC’s activity stream logs along a period of seven months. During this period, 393,720 likes were performed, which account for 7.39% of all activity. These likes were given by 58,644 unique users over 176,515 unique entities. Overall, 15.4% of all entities created during the experiment’s period received likes.

In our analysis, we examined various demographic characteristics of the likers and likees, including job level, managerial status, country, and division. We slightly simplified (and obscured) the level model in the studied organization, to include 10 levels, from 1 (most senior) to 10. Levels 1-4 are executive levels. A total of 12.8% of the organization’s employees are managers, spanning all job levels, with increasing portions for more senior levels. The employees are distributed across many countries around the world, with highest portions in the US (26.75%), India (22.37%), China (9.35%), Brazil (4.95%), and Canada (4.35%). The organization consists of four main divisions: Sales (19.2% of all employees), Services (38.2%), R&D (22.3%; including Software, Systems, and Research), and Corporate (20.3%; including CIO’s office, HR, Finance, Legal, etc.).

User Survey

To complement our evaluation, we crafted a survey for users of the ‘like’ feature. As a preliminary step, we interviewed 7 IC users who used ‘like’ (min: 2 likes, max: 573). Our interviewees originated from 3 countries, 3 divisions, and 3 of them were managers. Interviews were semi-structured, conducted either face-to-face or via phone, and lasted 30-45 minutes. We asked interviewees about their liking habits and motivations and also about their experience as likees. Based on these interviews, we designed our survey, which mostly consisted of multiple-

choice questions, with optional free-text comments per question and at its end. The survey included a total of 20 questions, covering participants' general use of IC, the liking feature, and like receiving; who they give like to; when they receive likes; self-liking; and a key section about different possible motivations for liking, which we composed based on the interviews. Most requested answers were on a 5-point Likert scale, typically including 'Never', 'Rarely', 'Sometimes', 'Often', and 'Always'. In our analysis, we usually converted into a 3-point scale, with 'N/R' for never/rarely; 'S' for sometimes; and 'O/A' for often/always. At the beginning of the survey, we asked participants to focus on their IC experience, and ignore, as much as possible, their experience on other social media sites.

We sent invitations to participate in the survey to IC users who used the liking feature at least twice during the experiment's period. Invitations were sent via email and included a link to an intranet page with the survey. 571 out of 2000 invitees (28.55%) completed the survey. Participants originated from 60 countries (5 continents), spanning all divisions in the studied organization: 35.9% were from Services, 22.6% R&D, 21.7% Sales, and 19.8% Corporate. 20.1% of the participants were managers. Most participants (68%) indicated that they use IC daily (additional 25.5% weekly); almost 90% indicated they create content in IC, most of them on either a weekly or a monthly basis.

RESULTS

Our results are organized in three sections: (1) *What*: focuses on the liked entities, their originating applications, and effects of belonging to a community; (2) *Why*: examines the reasons, motivations, and holdbacks for likes; and (3) *Who*: explores the likers and likees, their characteristics, and the relationships between them.

What?

Application Source

Throughout the experiment's period, the vast majority of microblogs created (96.5%) did not belong to a community, as their user experience is not conceptually integrated inside communities. On the other hand, most created blogs (82%), forums (86.1%), files (65.5%), and wikis (62.8%) did belong to a community. Figure 3 shows the distribution of likes by the five application types and the portions of those that were performed within a community. Blogs and microblogs received the lion's share of likes, probably as they reflect a more personal and subjective perspective that attracts more reaction from the readers. 56.54% of the likes were performed within a community, over a total of 82,354 distinct entities. For all types other than microblogs, over 75% of the likes were received for entities that were part of a community. For microblogs, over 95% of the likes were received on standalone entities.

Figure 4 shows the ratio between the number of likes for each of the 5 entity types and the number of entities of this type that were created during the experiment's period. This

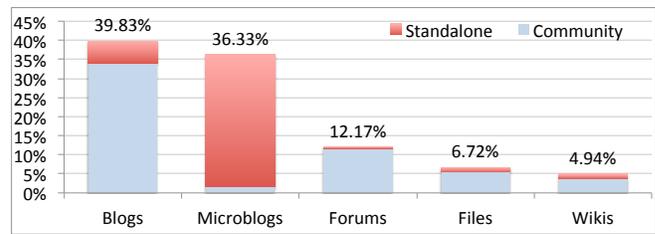


Figure 3. Distribution of likes across application types.

like-per-entity ratio gives an indication of the entity's prospect to receive likes. It can be seen that blogs do not only receive the larger portion of likes, but they actually receive, on average, more than 1 like per entity. It can also be seen, consistently across all application types, that belonging to a community increases the likelihood of receiving likes.

Inspecting comments, 19.42% of the total likes for blogs and 16.75% for microblogs were performed over comments. For forums, the portion of likes over comments was much higher – 56.19%. One-tailed unpaired t-test showed that the like-per-entity ratio for comments compared to posts was significantly lower for blogs (0.47 vs. 1.59, respectively) and for microblogs (0.27 vs. 0.34), but insignificantly lower for forums (0.16 vs. 0.19). Comments in forums often contain replies to a question or an issue posted in the entry, and apparently attract likes as much as the entry itself.

Liked Entities

We inspected the top-10 most-liked entities of each of the five applications. Interestingly, they were quite different in nature for each application: the top blog posts were mostly from executives (three from the CEO), sharing news or announcing events, often with accompanying videos. Forum entries were mostly from non-managerial employees, several focused on a Chinese internal song contest (with shared videos) and others were protesting against various organizational processes. Files were either about company strategy or guidelines for enterprise social media. Top wiki pages shared guides and tips about different topics. Half of the microblog messages were from executives, sharing news, videos, or quotes, and half from non-managerial employees, proposing ideas in a brainstorm contest that used a special hashtag.

In our survey, we asked the participants if they noticed for what type of content they receive more likes (open

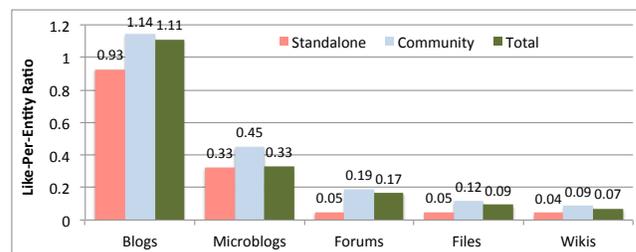


Figure 4. Like-per-entity ratio across application types.

question). Participants mentioned customer/industry posts, product announcements, company policy and programs, knowledge sharing, education and training, and professional recognition (awards and promotions). Participants also pointed out different characteristics of likely-to-be-liked content, many of them previously highlighted in our analysis: blog and microblog posts, blogs or forums posted in large communities, good/helpful answers in forums, posts that mention people, posts that relate to the CEO, humorous posts, topics in which they have special expertise, step-by-step guidelines, non-controversial topics of broad consensus (interestingly, controversy is not perceived as like-pulling), time-sensitive information, or such that helps others do their job better or faster, and concise text with graphics (e.g., “*photos of my team in <company> events always receive many likes*”).

Why?

Our interviews revealed a variety of possible reasons that influence the decision to click on like, which are listed in Table 1. In our survey, participants were asked: “When I encounter a post, how likely is it that I press ‘like’ for it, if <reason>”, with each entry of the table appearing as a possible reason. For each reason, participants were asked to provide an answer on a 5-point Likert scale, from ‘Never’ to ‘Always’. The right column of Table 1 shows the percentage of survey participants who chose ‘Often’ or ‘Always’ (‘O/A’) for the suggested reason.

The vast majority of the studies on social media motivation, and ‘liking’ in particular, built on the theory of Uses & Gratifications (U&G) [5,8,26,29,30,40], which is used to identify and explain why people choose to use specific media. The U&G theory focuses on intrinsic psychological needs and user anticipation of what they will gain by consuming a medium [8]. When discussing the different motivations for liking use in the enterprise, we tie to the relevant categories developed in previous work and reference the corresponding studies.

As Table 1 shows, learning something from the post tops the list of reasons by a clear margin. One participant noted: “*We all learn from each other [...] liking signals it was useful for me and I believe others can also benefit.*” Learning corresponds to the **information** category in the U&G theory. Different studies have shown that social media is often used as a source of information and knowledge [8,29,30,40]. Another aspect of this category is the purposive value [30], or the use of like as a function or a tool [36]. Specifically, marking a post for later recollection was fourth on the list with 50% O/A. One participant wrote: “*[I use like] so I can remember the content I like or liked some time back*”. Another participant mentioned an even more creative use: “*Sometimes I use likes as a ‘receipt return’: please like to show me that you have read this info.*” Another participant wrote: “*Simply to mark that I read it, both for myself and others.*” Overall, we see that information need is a dominant reason for liking use in the enterprise.

I learn something from it	77%
I agree with it	65%
I would like to signal my network what’s worth reading	53%
I want to mark it for later use	50%
I want to support a cause someone is promoting	48%
It amuses me	43%
Like is quicker and safer than writing a text comment	34%
I want to support someone who praised another employee	32%
I want to participate in the item’s activity	31%
I want to encourage newbie authors to do more social activity	31%
I want to be part of the social community	30%
I was mentioned in it	27%
I would like to create social activity so people will notice me	14%
I want the content author to notice me	11%
I feel obligated to do so because of my job role	9%
I want to raise the chances other people will like my own content	9%
I want to raise the chances the authors will like my own content	7%
I feel obligated to do so because the author expects it	7%
I feel obligated to do so because of the author’s job position	7%

Table 1. Reasons for liking and their ‘O/A’ portion in the survey.

Agreeing and supporting are also high on the list. One participant elaborated: “*transmit to the other person that what was posted is good and encourage to keep doing it.*” Studies of Facebook liking and Twitter ‘favoriting’ mentioned **supporting** as a key motivating factor [8,23,36]. This category also ties to self-presentation in the workplace, as support often serves to disclose opinions and interests [8,23]. A few comments we received referred to this aspect. One participant wrote: “*liking reflects the types of ideas I subscribe to*” and another noted: “*I must be careful with my reputation, it’s like references – don’t give [a like] if you can’t stand behind it.*”

Social interaction [8,23], also referred to as social connection [29], social signaling [5], and simply socializing [40], is another prominent U&G category for like use in the enterprise. One aspect of socializing is information providing: using the like for sharing with the network received 53% O/A, indicating users understand that their likes generate an activity stream item for their network. One wrote: “*I started leveraging ‘likes’ when I saw that it amplified this content to my network.*” Providing information, in addition to consuming, has been mentioned as a motivating factor for online community participation [30] and brand liking [23]. Other reasons in this category, which all received around 30% O/A, include joining the conversation or activity around an item, taking part in the social community, and encouraging others to join. One participant commented: “*using like is a cheap/easy way to start collaborating and contributing.*” Brandtzaeg and Haugstveit [8] defined “socially-responsible liking” as reflecting a desire to actively help and contribute.

Amusement of the post received 43% O/A, pointing at an enjoyment factor that has been shown to be of particular importance in SNS participation [29,30,40], corresponding to the **entertainment** category in the U&G theory.

Using likes as a fast form of feedback instead of comments received 34% O/A. Brandtzaeg and Haugstveit [8] referred to this as **low-cost** liking – a type of low-commitment engagement performed through Facebook likes. One participant noted: “I think it’s quite meaningless to write ‘Great’, ‘I agree’, or ‘Good idea’, so I simply use like” and another wrote: “I ‘like’ content when I don’t have more to add, and only add comments when I believe there is value. I do not like ‘cheerleading’ comments that just clutter up the system.” Another participant described: “Liking helps spreading positive energy in a quick and easy way even when I’m busy.” Previous work has found that feedback receiving plays a key factor in the decision of users, especially new ones, to continue contributing to enterprise social media [9]. Liking can take part in this process as it provides a particularly simple feedback mechanism.

Lower on the list are reasons that include **attention** and **social enhancement** [8,23,30]. Being mentioned in the post received 27% O/A. Some participants indicated they use liking to increase their visibility, attract attention, and raise the prospect of receiving a like. One admitted: “I play the silly game, hope others will do the same for me.” The O/A rates for these reasons were higher for employees from Asia and South America, salespeople, and non-managerial employees. Variants of this category have been extensively discussed by web studies: Park et al. [40] termed it social status seeking [40]; Lampe et al. [30] tied social enhancement to the status the user has within a community; Jan et al. [26] showed that specialists, whose posts are focused on narrower topics, were more busy with self promotion; and Brandtzaeg and Haugstveit [8] referred to it as social performative liking, which is used for “enhancing one’s social status and portraying a better self.”

Finally, admitted only by a small portion of the population, feeling obligated due to personal relationships or position in the company may also be a reason for liking. One participant wrote: “I feel my third line manager expects me to be involved in strategic stuff that comes from certain executives. ‘Liking’ is a simple way to show support and involvement” and another noted: “Sometimes my teammates ask me to like an idea or a project they want to advertise.” This does not directly correspond to categories defined in previous studies, but is perhaps most closely related to **organizational commitment**, discussed in the context of online community participation [30], as the “sense of affinity that members have with the ‘brand’ or identity of the organization to which they belong.”

Overall, we see that most of the categories for enterprise liking motivations can be mapped to uses and gratifications that have been suggested in the context of liking and social media on the web. This suggests that even when at work, where they may have different goals and social etiquette, humans are ultimately driven by similar intrinsic psychological needs. Still, some differences for the use of enterprise liking emerge, especially the sense of corporate obligation, and the importance of information needs relative

to enjoyment and social needs, which were shown to dominate in web studies [8,34].

Participants also mentioned reasons that hold them back from giving likes. Its vagueness was often mentioned, e.g., one wrote: “‘Like’ is pretty meaningless, because without further elaboration, it’s anyone’s guess as to why one likes the post [...] for example, I may not agree with it, but think it’s a useful read for my colleagues.” Another participant noted: “Comments can add value if they provide more insights. ‘Like’ seems an easy escape in a business context.” Some participants questioned the integrity behind likes, e.g.: “I think people often like your post due to some kind of a social obligation. Often it’s just to create appearance [...] I prefer less likes but honest ones than a lot of likes just to impress my manager with how ‘social’ and ‘visible’ I am” or “likes should be based on the content not on the person. I find liking executive statements or announcements just because they are execs extremely slimy. That kills my motivation to like.” One of the participants revealed another aspect: “I feel that if I give a like to one person, others would expect me to give them a like too [...] I don’t want to offend anyone in the workplace”.

We also asked survey participants about their perspective as likees. Results are summarized in Table 2. Over 40% of the participants indicated they often or always check who liked their content and nearly 50% often or always check out the profile page of a stranger who gave them a like. About a third of the participants indicated that likes often or always encourage them to create more social media content, and another third indicated it sometimes does.

Who?

Likes originated from 58,644 likers towards only 44,291 likees. Hampton et al. [20] argued, based on a sample of Facebook data, that “it is more common to be liked than to like others”. In contrast, we see that in the enterprise it is more common to be a liker than a likee. Figure 5 (left plot) shows the distribution of the number of given likes per liker, which follows a power-law with slope $\alpha=-1.68$. The two upper rows of Table 3 summarize the statistics for the number of likes and number of likees per liker (average, standard deviation, median, max, and portions greater than 2, 5, and 10). The right plot of Figure 5 shows the distribution of number of received likes per likee, which follows a power-law with slope $\alpha=-1.47$. The statistics is summarized on the two lower rows of Table 3. It can be seen that the average number of likes received by a likee is higher than the average number of likes given by a liker.

	N/R	S	O/A
Do you check who liked your content?	28.5%	31.1%	40.4%
Does receiving a like lead you to look up the profile of an unfamiliar person who liked your item?	21.4%	29.1%	49.5%
Does receiving a like drive you to create more Connections content?	34.8%	31.4%	33.8%

Table 2. Likee-related questions and distribution of answers.

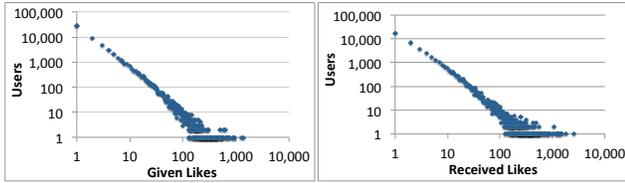


Figure 5. Distribution of (Left:) given likes over users and (Right:) received likes over users

From Table 3, it is evident that likers sometimes give multiple likes to the same person and that likees sometimes receive multiple likes from the same person. To further explore this, we define a *repeated like* as a like for which the liker has already given a like to the likee. Overall, 30.22% of the likes were repeated likes within the inspected period. Inspecting likers who gave at least 5 likes, 77.4% gave at least one repeated like. For likees who received at least 5 likes, 73.52% received a repeated like. Inspecting the top 100 likers, their average ratio between number of likes and number of distinct likees was 2.22 (stdev: 0.57, median: 2.07, max: 4.39), indicating that over 50% of the heaviest likers' likes were repeated likes. Similarly, for the top 100 likees, the average ratio between the number of likes they received and their number of distinct likers was 2.11 (stdev: 0.97, median: 1.89, max: 7.9). The high portion of repeated likes suggests that the likee's identity plays a role in the like decision, which further motivates the analysis in the rest of this section.

Demographics

In this sub-section, we analyze various demographic characteristics of the likers and likees, including job level, country, and division. Figure 6 shows the portion of total employees in each job level who gave at least one like, and the portion of those who received at least one like. It also indicates the *'liking ratio'* for each level, defined as the number of likes received by employees with this level normalized by the number of likes given by employees with this level. In brackets is the portion of employees with each level out of all employees in the company. Naturally, more senior levels have less associated employees. The trend as could be observed from the figure is very clear: employees with more senior job levels are more likely to use the liking feature – nearly 30% of level-1 employees gave at least 1 like, while only 1.18% of level-10 employees did so. Even more sharply, senior employees are more likely to receive likes: 36.5% of level-1 employees received at least one like, while only 0.56% of level-10 employees did. This is reflected in an evident decrease in the liking ratio – from 8.27 for level-1 to 0.68 for level-10. Overall, nearly 25% of

	Avg	Stdev	Med	Max	≥2	≥5	≥10
Likes per liker	6.72	24.96	2	1408	52.42%	23.64%	12.91%
Likees per liker	4.92	13.17	2	549	50.19%	21.4%	10.81%
Likes per likee	9.47	58.47	2	2827	59.55%	28.43%	15.82%
Likers per likee	6.52	38.96	2	2332	56.15%	24.63%	12.58%

Table 3. Like statistics for likers and likees.

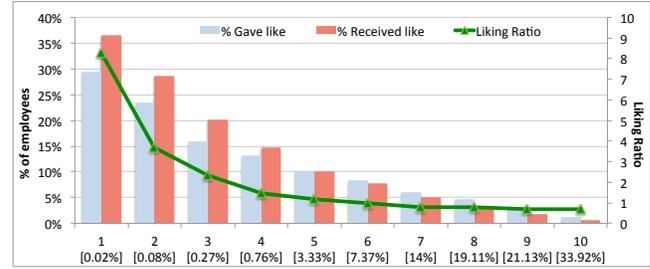


Figure 6. Portions of users who gave and received likes and liking ratio across seniority level

the likes were given to executives (levels 1-4), even though they account for only 1.1% of the employee population. Executives also gave a substantially higher portion of the likes – 9.06%. As we will see, there is indeed some reciprocity between giving and receiving likes. But it could also be that executives hold a stronger need to give a positive feedback as representatives of the organization. Additionally, high-level executives are likely to be known by more employees and discuss topics with impact on many employees, and therefore receive many likes. One of our survey participants noted: “*The bosses seem to value the ‘likes’ a lot*” and another wrote: “*There is some pressure to like and comment for executives that are measured on their social adoption.*”

Brzozowski et al. [9] found that manager participation is a key motivator in getting employees to take part in enterprise social media. The portion of likes given by a manager was 29.82%, a substantially higher portion than the general portion of managers out of all employees (12.8%). An even higher portion of the likes was given to managers: 43.52%. Overall, for managers, the liking ratio was highly positive at 1.47, while for non-managerial employees it was 0.81. Managers gave a particularly higher portion of their likes to other managers at 59.84%, while non-managerial employees gave 36.55% of their likes to managers.

Likers originated from 84 different countries, while likees originated from 77 different countries. 57.57% of the likes were given within the same country, while only 42.43% were cross-country. Calculating the liking ratio per country (total number of likes received by its employees divided by total number of likes given by its employees), for countries with at least 100 given or received likes, revealed that the US had a substantially higher ratio than any other country at 1.47. The UAE, at second place, had 1.15, and only three other countries (Nigeria, Belgium, and the UK) had a positive liking ratio. The strong bias towards US employees can be explained by the fact that the organization's headquarters are located in the US and many senior job levels are held by US employees.

Almost two thirds of the likes (65.57%) were given within the same division. Corporate employees gave the highest portion of intra-division likes (72.73%), while Sales gave the highest portion to other divisions (56.28% intra-division likes). Corporate employees also had the highest liking ratio

(1.14). R&D also had a positive ratio (1.1), while Sales (0.95) and Services (0.86) had a negative ratio. This suggests that employees may favor posts from internal or technical employees over customer-facing employees.

Top 10 Likees and Likers

Table 4 shows the top 10 employees who received the highest number of total likes. It also shows the employee's country, job level, and managerial status ('M' for manager, 'E' for non-managerial employee); the total number of likes they received; and their LpE ratio (likes they received divided by entities they created). The CEO received the highest number of likes and also has the highest LpE ratio. At close second in terms of total number of likes is another senior general manager. 9 of the top 10 are from the US, 6 of the 10 are executives, with 5 of them holding the most senior level of 1 (only 0.02% of the employees hold this level). The non-managerial individuals on the list are employees with a special role in promoting social media or collaboration within the organization. The 5 level-1's on the list all have higher LpE than the other 5 on the list.

Table 5 shows the top 10 employees who gave the highest number of likes. Here the characteristics are quite different: only 1 executive on the list (who is also on the top likee list), no level-1's at all, most levels are 7's and 8's, which is closer to the distribution of levels across all the organization's employees. 4 of the 10 are managers, still higher than the general portion. The distribution of countries is more diverse, with only 3 from the US and 7 different countries represented. Overall, we see that while the top likee list is strongly biased towards US, high-level, managerial employees, the top liker list is more diverse and represents broader parts of the employee population.

Self-Liking

Overall, 4,822 users (8.23% of all likers) gave at least one self-like to a total of 9,432 likes (2.4% of all likes). For these users, the average number of self-likes was 1.96 (stdev: 3.34, median: 1, max: 86). Relatively to general likes, self-liking was less common for microblogs, but more common for forums and files. In addition, self-liking was very uncommon for comments and more common for employees in Asia and South America.

In our survey, 24.1% of the participants indicated they used self-liking (answered 'yes' to 'have you ever liked some of your own content?'). Some of those who answered 'no' used harsh words to explain why they did not use self-liking, including arrogant, narcissistic, unfair, embarrassing, ridiculous, tacky, pathetic, and unethical. Other reasons mentioned were obviousness ("If I didn't like it, I wouldn't post it"), the lack of perceived value ("I feel it would be pointless"), cultural aspects ("In my culture you would not self-promote or praise yourself"), and unawareness of the feature ("I actually did not even realize this snobbish vanity was technically possible"). Cultural differences were reflected in the distribution of answers: more participants from Asia (34.8%) and South America (32.3%) indicated

Role	Country	Level	M/E	#Likes	LpE
CEO	USA	1	M	2827	314.11
GM, Integrated Supply Chain	USA	1	M	2605	7.02
Social Business Leader	USA	5	E	1448	5.79
Collaboration Energizer	Japan	8	E	1401	1.48
Connections Sr. Product Manager	USA	5	E	1342	0.99
SVP, Systems & Technologies	USA	1	M	1303	22.86
SVP, Services	USA	1	M	1254	57
Director, HR Talent	USA	4	M	1236	1.65
VP, Financial Services Sector	USA	1	M	1190	11.12
Workforce Enablement Catalyst	USA	7	E	1126	3.15

Table 4. Top 10 likees by total number of likes received.

Role	Country	Level	M/E	#Likes
Engagement Leader – Client First	USA	7	E	1408
Social Business Transformation	Brazil	8	E	1256
Services Finance Transformation	Germany	6	M	939
Director, HR Talent	USA	4	M	901
FTSS for Power Systems	Japan	7	E	888
Business Intelligence Analyst	Slovakia	9	E	839
HR Professional Development	Spain	7	E	758
Payroll Operations Manager	UK	8	M	745
Global Incentives Manager	Slovakia	7	M	730
Software Product Support	USA	8	E	655

Table 5. Top 10 likers by total number of likes given.

they used self-liking, compared to North America (18%) and Europe (16.5%).

Those who indicated they used self-liking explained they did it in order to bring the content up to their network's attention ("want to make my followers aware that it is really worth reading" or "sometimes the content I have published becomes very useful for my workmates and then I like my own published content"), really liking it ("It was really good ;-)", to encourage other likes ("solicitation is power" and "I did not want it to have zero likes"), promote it again after some time ("time had lapsed, so was a form of re-sharing"), and without full intentions ("for testing", "for fun", or "by accident lol"). The average number of non-self likes for entities that received a self-like was significantly higher than for entities without a self-like at 2.47 vs. 2.16 (one-tailed, unpaired t-test, $p < .001$), indicating that self-liking may indeed serve as a catalyst for other likes.

Reciprocity

During our experiment's period, 56.36% of the likers (33,048 in total) did not receive any like, while 42.22% of the likees (18,695) did not give any like. That left 25,596 users who were both likers and likees. Of these, a clear majority at 59.57% gave a like before receiving a like.

Out of all non-self likes, 22.91% were given as part of a "reciprocity pair", where both users gave at least one like to each other. 14.68% of all non-self likes were reciprocated during our experiment's period, i.e., the likee liked an entity by the liker at a later date. A similar level of reciprocity (16.5% to 22%) was reported for like networks of the same tag on Instagram [21]. As we already saw, some likers

admitted that part of their liking motivation is the hope to receive a like from the other person. We also asked our participants whether receiving a like makes them feel more obligated to give a like to that person in the future. While 67.9% replied 'N/R', almost a third admitted they may feel committed: 21.1% answered 'S' and 11% chose 'O/A'.

Liker-Likee Relationship

Inspecting more closely the liker-likee relationships, we found that 6.9% of the likers gave a like to their direct manager; 17.76% gave it to some manager in their up-line management chain; 19.08% gave a like to one of their peers (an employee with whom they share a direct manager); and 9.77% of the managers gave a like to one (or more) of their direct reportees. As already mentioned, in our survey employees indicated they may be explicitly asked by their managers or peers to like their posts, as part of a "team effort" to promote some goal.

The IC enterprise SNS covers 47.54% of the IC's active employees with an average of 57.55 connections per user (stdev: 252.56, median: 18, max: 9375). Inspecting the likes, a large portion of them (41.57%) were between pairs who were already connected on the enterprise SNS. Analogously, Jan et al. [26] found that about half of the likes on Instagram were given by followers. Generally, likes were performed between 263,949 unique "liking pairs" – unordered pairs of employees where at least one of them gave a like to the other. Out of these, 28.83% were already connected on the enterprise SNS before the "first like"; they had significantly more likes between them than non-connected pairs at 2.13 vs. 1.23 on average (one-tailed unpaired t-test, $p < .001$).

To examine whether the liking action may have a role in creating new connections, we set out to explore how many of the pairs connected after their first like and before the end of the experiment's period. We found 16,173 such pairs (6.13% of all liking pairs; 8.61% of the non-connected pairs). This may suggest that the like operation can sometimes be the beginning of a richer relationship. Truly, in some cases the connection might be due to other reasons, for example, when one of the employees is a newcomer. Yet, out of these 16,173 connections, 11.49% occurred within one day of their first like and 24.44% connected within a week of the first like. In addition, as previously discussed, according to the survey likees are interested in their likers and many of them check out the profile page of a liker they are not familiar with.

DISCUSSION AND FUTURE WORK

Result Summary and Discussion

We presented a broad set of results regarding what, why, and who employees like in the organization. We found distinctions in 'like' patterns among different social applications and different types of posts. We observed that employees use 'like' for a diverse set of reasons, tied to the U&G theory. Our results also revealed different types of bias towards whom employees give their likes. We further discuss our findings below.

We found that blogs and microblogs tend to receive more likes than forums, files, and wikis. Guy et al. [18] distinguished between "socializing" and "collaborating" social media applications. The former are more focused on interacting, while the latter are geared towards working to achieve a mutual goal. Our findings indicate that socializing applications attract more likes. A closer inspection of the top-liked entities in each application, revealed more differences: in socializing applications, top-liked posts often share news or an interesting link, make an organizational statement, or announce a new product or tool. Many of them are published by executives and include a photo or a video. In collaborating applications, top-liked posts are mostly published by "regular" employees and include guides and tutorials, or employee initiatives, such as brainstorming or complaining about an organizational policy. We also found that entities that belong to communities receive more likes. It appears that since communities are focused on a specific topic or domain, they attract a more committed audience that gets more engaged in liking posted items [37].

Despite the simplicity of the like action, we found there may be a variety of reasons behind a decision to perform it. These include the four well-known U&G categories for SNS use [40]: socializing, entertainment, self-seeking, and information. In addition, we pointed out three more categories: support, low-cost feedback, and commitment. Our findings suggest that in the context of a workplace, information needs exceed entertainment and social factors, which were identified as the top motivations for Facebook 'liking' [8,23]. As half of the participants indicated they often use 'liking' for a bookmarking purpose, designers may consider adding a dedicated feature to enable users to view and search their liked items.

While the 'like' functionality satisfies a diverse set of liker needs, it is not clear that likees can always understand the exact meaning of a like. A few of our participants expressed a need for a more elaborated like feature, to avoid the ambiguity, e.g.: "Like should allow to distinguish between 'I agree', 'useful', 'worth reading', and 'fun'."

In our survey, we encountered negativity towards the like feature, which is sometimes perceived as too simplistic, or abused for self-promotion. Brandtzaeg and Haugstveit [8] pointed out that due to its simplicity, liking is sometimes associated with the negative term 'slacktivism'. They also noted, however, that research has found that slacktivism does not replace, but rather can reinforce, more active forms of engagement. On the other hand, some employees take 'liking' within the workplace very seriously and expressed other types of concerns, such as the need to account for every like you give within the enterprise – both to the person you gave (or did not give) a like, and to the other colleagues who see it.

Self-liking was used by a rather small population of likers for a variety of reasons, from a desire to draw more likes, to

appreciating a special aspect in their own post. We found that entities with a self-like had significantly more non-self likes. Yet, many participants, especially from Europe and North America, expressed antagonism towards self-liking, suggesting it should not be used or at all enabled.

Our results indicate that the identity of the author plays a key role in the like decision. We observed a strong tendency towards liking posts from friends in the enterprise SNS. Furthermore, we found a considerable amount of cases in which a like was followed, at a later stage, by a connection on the SNS, hinting that a like may serve as an interaction starter. Likes were more common not only between friends on the enterprise network, but also along the organizational chart, e.g., for peers, managers, or reportees. Additionally, we observed a clear bias towards people from the same country, business unit, and managerial status, in accordance with the known role of homophily (“love of the same”) in social media [4].

Among likers who gave multiple likes, it was quite common to see repetitions of the same likee (and vice versa), giving another indication that the author plays an important role when liking. Employees from internal or technical divisions tend to receive more likes than they give, while employees from customer-facing divisions give more likes than they receive. Furthermore, likes are highly biased towards senior employees: the more senior the level, the higher is the ratio between received and given likes, as well as their absolute values. Managers give more likes and to an even larger extent receive more likes than non-managerial employees. Executives are especially likely to collect likes: in a way they are the “celebrities” of the enterprise, known by and influencing many individuals. A few employees, however, expressed their unease about the way likes are being solicited and used by executives.

We found several points of common and different between web and enterprise liking. Similarly to the web, we observed a variety of motivations for liking. We also found a similar level of reciprocity and similar portion of likes given by strangers. While web liking is biased towards celebrities, enterprise liking favors executives. We saw that in the enterprise, it is more common to be a liker than a likee. We also found that information gratifications are more prevalent in the enterprise and that motivations may be driven by a sense of organizational commitment and along the organizational hierarchy.

Limitations and Directions for Future Work

In this work, we did not attempt to measure the tie between the number of likes and exposure level of an entity, as we did not have access to this kind of information. Obviously, the number of likes depends on the entity’s exposure: an item that appears in more users’ feeds or email digests has higher likelihood of receiving more likes. On the other hand, as we have seen, the like action itself has a role in propagating and increasing exposure. Future research should explore this mutual connection between exposure

and ‘likes’, for example by closely inspecting their involvement over time.

Much of our “why” analysis is based on a survey of users, which is prone to social desirability effects, i.e., the tendency of survey respondents to answer in a way that will be favorably viewed or socially acceptable by others [16]. The bias becomes a major issue when the scope of the study involves socially sensitive issues such as politics, religion, or personal issues such as drug use or cheating. In our case, some of the rated reasons for liking may be sensitive to such bias: on the one hand, reasons that relate to organizational obligation or self-promotion are likely to be under-represented, while on the other hand, needs such as “learning something”, might be over-rated as they fit people’s expectation within a corporate environment. Our quantitative results imply that such bias might indeed exist: we observed a tendency to like posts from where the power lies in the organization – executives, corporate, and US employees – in spite of the fact that obligation due to the author’s job position was mentioned only by a few participants as a frequent reason for liking. Future research should explore other methods to assess motivations for enterprise liking, for example by applying a bias scale or by asking users why people give likes to others.

Liking can play an even more extensive role in the future enterprise. Its ease of use can decrease the barrier of entry to social media participation and create an organizational culture where employees feel more involved and authors are more motivated to create high-quality content. Several participants in our survey requested a daily or weekly digest with the top-liked entities, so they can keep track with the trends. On the organizational level, recent studies have demonstrated how social media could be used to drive Human Resources decisions [42] and help Sales and IT people in their everyday job [19]. Liking can take a key part in such applications, for example it can help disseminate HR messages or IT tools, measure employee engagement, or identify valuable feedback about the company’s programs, products, or business directions. Outside the firewall, search engines and recommender systems already take advantage of likes [31]. Analogously, likes can be used to enhance enterprise search and recommendation, which often suffer from issues of user feedback sparsity [22].

Our study was conducted within one organization and the results are naturally affected by the characteristics and culture of this organization. We believe, however, that the breadth of the study, both in terms of like usage and number of survey participants, make many of the results applicable for other organizations deploying social media behind their firewall. In the future, we hope to see more studies on enterprise liking in other organizations, which can further validate and extend our results, as liking continues to gain popularity and as younger populations, more accustomed to the use of ‘like’, are joining the workforce.

REFERENCES

1. About the +1 button. Retrieved January 3, 2016 from <http://support.google.com/plus/answer/1047397>
2. Deepak Agarwal, Bee-Chung Chen, Rupesh Gupta, Joshua Hartman, Qi He, Anand Iyer, Sumanth Kolar, Yiming Ma, Pannagadatta Shivaswamy, Ajit Singh, and Liang Zhang. 2014. Activity ranking in LinkedIn feed. In *Proceedings of the 20th ACM SIGKDD international conference on Knowledge discovery and data mining (KDD '14)*. 1603-1612. <http://doi.acm.org/10.1145/2623330.2623362>
3. Eugene Agichtein, Carlos Castillo, Debora Donato, Aristides Gionis, and Gilad Mishne. 2008. Finding high-quality content in social media. In *Proceedings of the 2008 International Conference on Web Search and Data Mining (WSDM '08)*, 183-194. <http://doi.acm.org/10.1145/1341531.1341557>
4. Luca Maria Aiello, Alain Barrat, Rossano Schifanella, Ciro Cattuto, Benjamin Markines, and Filippo Menczer. 2012. Friendship prediction and homophily in social media. *ACM Trans. Web* 6, 2, Article 9 (June 2012), 33 pages. <http://doi.acm.org/10.1145/2180861.2180866>
5. Morgan Ames and Mor Naaman. 2007. Why we tag: motivations for annotation in mobile and online media. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '07)*, 971-980. <http://doi.acm.org/10.1145/1240624.1240772>
6. Kanghui Baek, Avery Holton, Dustin Harp, and Carolyn Yaschur. 2011. The links that bind: Uncovering novel motivations for linking on Facebook. *Comput Hum Behav*, 27(6), 2243-2248.
7. Nancy Baym. 2013. Data not seen: The uses and shortcomings of social media metrics. *First Monday*, 18(10).
8. Petter Bae Brandtzaeg and Ida Maria Haugstveit. 2014. Facebook likes: a study of liking practices for humanitarian causes. *Int. J. Web Based Communities* 10, 3 (June 2014), 258-279. <http://dx.doi.org/10.1504/IJWBC.2014.062942>
9. Michael J. Brzozowski, Thomas Sandholm, and Tad Hogg. 2009. Effects of feedback and peer pressure on contributions to enterprise social media. In *Proceedings of the ACM 2009 international conference on Supporting group work (GROUP '09)*, 61-70. <http://doi.acm.org/10.1145/1531674.1531684>
10. Matthew P. Bunker, K.N. Rajendran, Steven B. Corbin, and Ciara Pearce. Understanding 'likers' on Facebook: differences between customer and non-customer situations. *Int. J. of Business Information Systems*, 12(2), 163-176.
11. Moira Burke, Robert Kraut, and Cameron Marlow. 2011. Social capital on facebook: differentiating uses and users. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '11)*, 571-580. <http://doi.acm.org/10.1145/1978942.1979023>
12. Jin Cao, Hongyu Gao, Li, L.E., and Friedman, B. 2013. Enterprise social network analysis and modeling: a tale of two graphs. In *Proceedings of IEEE INFOCOM '13*, 2382-2390. doi: 10.1109/INFCOM.2013.6567043
13. Joan DiMicco, David R. Millen, Werner Geyer, Casey Dugan, Beth Brownholtz, and Michael Muller. 2008. Motivations for social networking at work. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work (CSCW '08)*, 711-720. <http://doi.acm.org/10.1145/1460563.1460674>
14. Chad Edwards, Patric R. Spence, Christina J. Gentile, America Edwards, and Autumn Edwards. 2013. How much Klout do you have... a test of system generated cues on source credibility. *Comput Hum Behav*, 29(5), A12-A16.
15. Facebook growth since IPO in 12 big numbers. Retrieved January 3, 2016 from <http://techcrunch.com/2013/05/17/facebook-growth/>
16. Robert J. Fisher. 1993. Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research*, 20(2), 303-315.
17. Carolin Gerlitz and Anne Helmond. 2013. The Like economy: social buttons and the data-intensive web. *New Media & Society*.
18. Ido Guy, Michal Jacovi, Noga Meshulam, Inbal Ronen, and Elad Shahar. 2008. Public vs. private: comparing public social network information with email. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work (CSCW '08)*, 393-402. <http://doi.acm.org/10.1145/1460563.1460627>
19. Ido Guy, Tal Steier, Maya Barnea, Inbal Ronen, and Tal Daniel. 2013. Finger on the pulse: the value of the activity stream in the enterprise. In *Proceedings of Human Computer Interaction - INTERACT '13*, 411-428. http://dx.doi.org/10.1007/978-3-642-40498-6_32
20. Keith Hampton, K.N., Lauren Session Goulet, Cameron Marlow, and Lee Rainie. 2012. Why most Facebook users get more than they give. *Pew Internet & American Life Project*, 3.
21. Kyungsik Han, Jin Yea Jang, and Dongwon Lee. 2015. Exploring tag-based like networks. In *Proceedings of the 33rd ACM Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '15)*, 1941-1946. <http://doi.acm.org/10.1145/2702613.2732908>

22. David Hawking. 2004. Challenges in enterprise search. In *Proceedings of the 15th Australasian database conference - Volume 27* (ADC '04), 15-24.
23. Fei-Hui Huang. 2013. Motivations of Facebook users for responding to posts on a community page. In *Online Communities and Social Computing*, 33-39.
24. "I like this". Retrieved January 3, 2016 from <https://www.facebook.com/notes/facebook/i-like-this/53024537130>
25. IBM Connections – social software for business. Retrieved January 3, 2016 from <http://www-03.ibm.com/software/products/us/en/conn/>
26. Jin Yea Jang, Kyungsik Han, and Dongwon Lee. 2015. No reciprocity in "liking" photos: analyzing like activities in Instagram. In *Proceedings of the 26th ACM Conference on Hypertext & Social Media* (HT '15), 273-282. <http://doi.acm.org/10.1145/2700171.2791043>
27. Jin Yea Jang, Kyungsik Han, Patrick C. Shih, and Dongwon Lee. 2015. Generation like: comparative characteristics in Instagram. In *Proceedings of the 33rd ACM Conference on Human Factors in Computing Systems* (CHI '15), 4039-4042. <http://doi.acm.org/10.1145/2702123.2702555>
28. Xin Jin, Chi Wang, Jiebo Luo, Xiao Yu, and Jiawei Han. 2011. LikeMiner: a system for mining the power of 'like' in social media networks. In *Proceedings of the 17th ACM SIGKDD international conference on Knowledge discovery and data mining* (KDD '11), 753-756. <http://doi.acm.org/10.1145/2020408.2020528>
29. Adam N. Joinson. 2008. Looking at, looking up or keeping up with people? motives and use of Facebook. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '08), 1027-1036. <http://doi.acm.org/10.1145/1357054.1357213>
30. Cliff Lampe, Rick Wash, Alcides Velasquez, and Elif Ozkaya. 2010. Motivations to participate in online communities. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '10), 1927-1936. <http://doi.acm.org/10.1145/1753326.1753616>
31. Dongwon Lee and Huan Liu. 2015. LIKE and recommendation in social media. In *Proceedings of the 24th International Conference on World Wide Web* (WWW '15 Companion), 1539-1540. <http://dx.doi.org/10.1145/2740908.2741981>
32. Paul M. Leonardi, MArleen Huysman, and Charles Steinfield. 2013. Enterprise social media: definition, history, and prospects for study of social technologies in organizations. *J. Com-Med Comm*, 19(1), 1-19.
33. Kristina Lerman. 2007. Social networks and social information filtering on Digg. In *Proceedings of the AAAI international conference on Weblog and social media* (ICWSM '07).
34. Kuan-Yu Lin and Hsi-Peng Lu. 2011. Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Comput. Hum. Behav.* 27, 3 (May 2011), 1152-1161. <http://dx.doi.org/10.1016/j.chb.2010.12.009>
35. Gloria Mark, Ido Guy, Shiri Kremer-Davidson, and Michal Jacovi. 2014. Most liked, fewest friends: patterns of enterprise social media use. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing* (CSCW '14), 393-404. <http://doi.acm.org/10.1145/2531602.2531662>
36. Florian Meier, David Carig Elswailer, and Max L. Wilson. 2014. More than liking and bookmarking? towards understanding twitter favouriting behaviour. In *Proceedings of the eighth international AAAI conference on Weblogs and social media* (ICWSM '14).
37. Michael Muller, Kate Ehrlich, Tara Matthews, Adam Perer, Inbal Ronen, and Ido Guy. 2012. Diversity among enterprise online communities: collaborating, teaming, and innovating through social media. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '12), 2815-2824. <http://doi.acm.org/10.1145/2207676.2208685>
38. News Feed FYI: A Window Into News Feed. Retrieved January 3, 2016 from <http://www.facebook.com/business/news/News-Feed-FYI-A-Window-Into-News-Feed>
39. Tim Paek, Michael Gamon, Scott Counts, David Maxwell Chickering, and Adam Dhesi. 2010. Predicting the Importance of Newsfeed Posts and Social Network Friends. In *Proceedings of the AAAI conference on Artificial intelligence* (AAAI '10), 1419-1424.
40. Namsu Park, Kerk F. Kee, and Sebastián Valenzuela. 2009. Being immersed in social networking environment: Facebook groups, uses and gratifications, and social Outcomes. *Cyber Psychology & Behavior*, 12(6): 729-733.
41. Kai Riemer, Paul Scifleet, and Ruwen Reddig. 2012. Powercrowd: enterprise social networking in professional service work: a case study of Yammer at Deloitte Australia. *Business and Information Systems* (May 2012), 1738-1744.
42. N. Sadat Shami et al. 2014. Understanding employee social media chatter with enterprise social pulse. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing* (CSCW '14), 379-392. <http://doi.acm.org/10.1145/2531602.2531650>
43. Andrew D. Smock, Nicole B. Ellison, Cliff Lampe, and Donghee Yvette Wohn. 2011. Facebook as a toolkit: A uses and gratification approach to unbundling feature

- use. *Comput. Hum. Behav.* 27, 6 (November 2011), 2322-2329.
<http://dx.doi.org/10.1016/j.chb.2011.07.011>
44. Charles Steinfield, Joan M. DiMicco, Nicole B. Ellison, and Cliff Lampe. 2009. Bowling online: social networking and social capital within the organization. In *Proceedings of the fourth international conference on Communities and technologies (C&T '09)*, 245-254.
<http://doi.acm.org/10.1145/1556460.1556496>
45. Bongwon Suh, Lichan Hong, Peter Pirolli, and Ed H. Chi. 2010. Want to be Retweeted? Large Scale Analytics on Factors Impacting Retweet in Twitter Network. In *Proceedings of the 2010 IEEE Second International Conference on Social Computing (SOCIALCOM '10)*, 177-184.
<http://dx.doi.org/10.1109/SocialCom.2010.33>
46. The Value of a Liker. Retrieved January 3, 2016 from https://www.facebook.com/note.php?note_id=150630338305797
47. Jeffrey W. Treem and Paul M. Leonardi. 2012. Social media use in organizations: exploring the affordances of visibility, editability, persistence, and association. *Commun yearbook*, 36, 143-189.
48. Anna K. Zarkada and Christina Polydorou. 2013. You might be reputable but are you “liked”? Orchestrating corporate reputation co-creation on Facebook. *Advanced Series in Management*, 11, 87-113.
49. Jun Zhang, Yan Qu, Jane Cody, and Yulingling Wu. 2010. A case study of micro-blogging in the enterprise: use, value, and related issues. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*, 123-132.
<http://doi.acm.org/10.1145/1753326.1753346>