Goals and Perceived Success of Online Enterprise Communities: What Is Important to Leaders & Members?

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ABSTRACT
Online communities are successful only if they achieve their goals, but there has been little direct study of goals. We analyze novel data characterizing the goals of enterprise online communities, assessing the importance of goals for leaders, how goals influence member perceptions of community value, and how goals relate to success measures proposed in the literature. We find that most communities have multiple goals and common goals are learning, reuse of resources, collaboration, networking, influencing change, and innovation. Leaders and members agree that all of these goals are at least moderately important. However, leader and member perceptions of success on goals do not align with each other, or with commonly used behavioral success measures. We conclude that simple behavioral measures and leader perceptions are not good success metrics, and propose alternatives based on specific goals members and leaders judge most important.

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Online communities; community leaders; iterative design; system evaluation; enterprise; workplace.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
Identifying and measuring goals is critical for online communities' success. We define *goals* as the outcomes communities are intended to produce, for their organization, leaders, and members [12,21]. Goals are synonymous with *objectives* [3], *intents* [25], or *purposes* [21], and closely relate to *benefits* [17]. Knowing why employees and organizations build communities, and why employee members participate in them, is important to help designers create better technology, and to guide organizations to support and leaders to foster more valuable communities.

Prior research on Internet communities proposes various goals, such as providing members with information, social support, social interaction, and social network development

[2,8,22,23]. The organizational literature has qualitatively described goals for communities of practice, presenting case studies of small numbers of organizationally-sponsored online communities [5,9,17,25].

However, prior work has not asked leaders and members, across many enterprise online communities of different types, to evaluate the importance of multiple goals. It has also not examined whether leaders and members agree on both goals and their perceptions of progress on goals. Nor has it explored whether leaders' and members' perceptions of progress align with commonly used behavioral success measures for different community types. These questions are timely: enterprise communities are becoming more pervasive as new social media technologies enable employees to easily initiate online communities. Such broad adoption also enables larger-scale study of goals. We aim to identify, characterize, and evaluate metrics for common goals for enterprise online communities. We explore these questions using qualitative and quantitative methods, including interviews, surveys, and log data analysis.

We first contribute novel data and analysis to characterize leader and member goals for enterprise communities, derived from interviews and surveys. We relate these goals to previously defined community types, from communities of practice to teams [18], and explore differences between management and employee led communities [21]. We explore whether member and leader goals align as this has important consequences for how communities are run.

Second, we contribute an improved understanding of how to measure community success against its goals [16]. Understanding the quality of prior success metrics has strong implications for theory and practice. Success metrics are critical because they underpin many research findings and theory. Metrics are also used by practitioners to direct community building efforts (e.g., 'having more members indicates success so we should recruit more'). However, researchers disagree on success metrics. One approach assesses community *behaviors*, i.e. number of members, posts, views, and so on. Proponents argue these metrics are valid and easily measurable [4,8,16,18]. Other researchers instead advocate using *participant perceptions*, i.e. subjective assessments from members or stakeholders [14,23,25]. But perceptions are costly to collect. We compare both types of metrics.

Regarding these contributions, we explore the following:

1. What are the goals of enterprise online communities according to participants?
2. Do leaders and members agree on which community goals are important? If not how do their priorities differ?
3. Do leaders and members agree on how well their community is meeting its goals? If not how do they differ?
4. Do communities focus on one or multiple goals?
5. Do goals differ depending on community type? Do different functional or initiative-based types of communities value different goals?
6. How do behavioral success metrics proposed in prior work relate to participant perceptions of goal progress?

RELATED WORK

Benefits of Online Communities
Goals describe outcomes a community aims to achieve. Researchers often describe these outcomes once realized as the *benefits* of online communities. More attention has been paid in the literature to community benefits than to goals. Benefits can be separated into two categories: *direct* and *indirect*, i.e., direct benefits result from community interaction (e.g., *learning* from content posted, *connections formed* during community events), and indirect benefits occur outside the community (e.g., *increased sales* due to new connections among members, *increased productivity* due to learning from the community). More prior work has focused on direct benefits as they are easier to assess [8]. Likewise, we limit the scope of goals we study to those aimed to achieve direct benefits rather than indirect.

Various researchers have described and a few have measured the benefits of online communities for organizations and for individuals. The Internet communities literature shows three types of direct community benefits: information exchange, social support, and social interaction [2,8,22,23]. More relevant to our work is literature identifying the direct benefits of enterprise communities including improving: employee skills, development, and experience of work [17,25]; efficiency and quality of work [5,17,25]; knowledge sharing and collaboration across organization and geographic barriers [5,17,25]; innovation [5,17]; and customer loyalty [17]. Indirect benefits described in prior work include the ability to retain staff [25] and improved sales [1].

But which of these (and potential other) benefits do leaders aim to achieve with their goals? Are there differences in the benefits aimed at by leaders who are autonomous employees versus those acting under the direction of management? And which benefits do members value? We explore these benefits by examining the goals of employees who initiate and participate in online communities.

Most prior work on enterprise community benefits has relied on case studies of a few, management-initiated communities [5,9,17,25]. However, recent adoption of social software has transformed both the scale and character of enterprise communities, enabling employees to easily initiate communities, giving rise to huge numbers of communities within an organization [16,18]. We need to revisit prior findings regarding benefits and goals within this new organizational context, to determine whether prior results still hold. We now can examine how goals are distributed at scale across both employee- and management-initiated communities.

Assessing Community Success
Prior work has argued that goals are critical to defining community success measures [3,16]. Assessing success is critical for leaders [3,8,25], to identify remedial actions and show the value of their work to justify continuing.

Many success metrics have been proposed, but they are rarely validated and there is little agreement on which are most effective [16]. The most commonly proposed behavioral success metrics are: volume of members' posts [4,8,18,23,26], number of members [8,18,23,26], and quality of member relationships (e.g., measured as the extent of contact among members) [8,18,23,26]. Other common metrics include number of threads [4,26], number of replies [4,26], threads with responses [4,26], and delay in response time [4]. Some researchers have developed algorithms combining multiple behavioral metrics to rate community content [15], community members [19], or the community itself [15]. Other work assesses participant perceptions, e.g. member satisfaction [14,23]. However, most prior work does not explore the relationship between behavioral measures and participant perceptions of their community's success on goals, which we address here.

Community Assessments by Leaders vs. Members
Prior work has addressed various differences between community leaders and members. At the most basic level, leaders and members have different roles and thus enact different activities [2]. Members contribute and read content, and interact with each other [2,9,11]. Effective leaders have many more activities, including organizing and curating content, handling disruptive behavior, and maintaining infrastructure [2,11,23,25]. Differing activities could lead to different perceptions of goals and success.

Several studies have explored these differences for a few aspects of communities. Leimeister et al. [13] compared leader and member views of success factors, such as member data security, website stability, and establishing codes of behavior, in commercial and non-commercial Internet communities. In commercial communities, leaders and members did not agree: leaders thought more of the potential success factors were important whereas members believed a smaller subset were important. Butler et al. [2] described how leader and member motivations to participate differ: members were more motivated to get information than leaders, while leaders were more motivated to help others. We extend this research, exploring how leader and member perceptions of goal importance and success relate in enterprise communities.

Online Community Types

Prior literature proposes multiple ways to classify online communities, and some argue that different types of communities have different goals [12,18,21,25]. For example, Porter [21] argues that source of initiative is a key distinguisher, leading to different goals in organization- vs. member-initiated communities. Muller et al. [18] show that different types, like communities of practice (CoPs), collaborative teams, and technical support communities, show measurable differences in behavior, and argue that they each have distinct goals. We test these assumptions by exploring whether different types of communities prioritize goals differently. Furthermore, prior work argues that different types of communities will require different success measures [3,18,21]. We also relate our findings about goal-based success measures to prior typologies.

METHOD

To understand the goals of enterprise online communities, we interviewed 37 community leaders representing 74 communities and 10 members representing 50 communities. Both leader and member interviews aimed to provide detailed descriptions of which goals were important and why. We then systematically examined these goals by surveying 278 leaders (representing 281 communities) and 1101 members (representing 177 communities). We asked community leaders and members to rank the goals by importance and rate community success against the goals, giving us a measure of *participant perceptions* of goals. As we wanted to explore differences between participant perceptions and *behaviors*, we also collected corresponding behavioral data including, posts, members, contributors, and so forth, for each community that we surveyed.

Research and Organizational Context

This research was conducted in a global enterprise offering technology products and services to businesses. The company widely encouraged employee leadership of, and participation in, internal online communities and made commercial technology, IBM Connections Communities ("Communities"), available to all employees. All communities we studied used this tool, which enabled leaders to easily create a community space with various social tools like forums, blogs, wikis, files, and bookmarks. As a result, there was a proliferation of communities and widespread membership, with 166,000+ communities and 580,000+ distinct members over five years. Communities ranged in size from a couple to tens-of-thousands. Many employees were members of multiple communities.

Leader Interviews to Identify Community Goals

We interviewed 37 community leaders who described the goals of 74 communities. We asked what the goals of their communities were, how they worked to achieve those goals, and how they wanted to measure success on those goals.

The interviews were part of a larger research project with additional research questions. Within a 30-60 minute interview, the first 10-30 minutes were used to discuss community goals, which was the interview portion we analyzed for this paper. Interviews were conducted via phone and detailed notes were taken.

The majority of leaders (28 participants) were recruited from users of an internal metrics tool for community leaders; using that tool indicated they had defined community goals and were actively seeking to achieve those goals. We also sought other leaders to diversify the goals discussed, recruiting leaders via an open call posted in the forum of an online community for community leaders (3 participants), and by recommendation from other leaders (6 participants). All of these participants had clearly defined goals and were actively working to achieve them. We conducted interviews until we reached a point of information saturation [24].

Leaders interviewed represented all the enterprise community types from [18], except "recreational". Thus we interviewed leaders of CoPs, team, technical support, and innovation communities. The communities varied in age and size. Participants held a diverse set of job roles from 6 of the 7 major divisions in the company.

Our analysis was designed to derive a list of goals of enterprise communities. From interviews, we first created a list of all the leaders' descriptions of goals. We coded these by summarizing each distinct goal described. We combined similar codes. The final list of codes became the "sub-goals" in Table 1. We next categorized the sub-goals into different goals (see the "goals" in Table 1). We present a detailed analysis of the interviews in the results section.

Member Interviews to Understand Goal Importance

To add *members'* perspectives, we conducted interviews with 10 members representing 50 distinct communities. Members were less likely to understand high-level goals or attributes of a community, something we learned in interviews with both leaders and members. We therefore focused on the *benefits* members received. Referring to a list of 5 communities they had contributed to, we asked: (1) how membership in each of the 5 communities related to their job; (2) which of the 5 communities was most valuable for their job and why; (3) which of the 5 communities was of least value for their job and why; and (4) what factors affect community value for them, in order of importance. Interviews lasted 30-45 minutes via phone, detailed notes were taken, and they were audio recorded.

To recruit members, we randomly sampled from a pool of members who had contributed to at least 5 of the communities in a dataset of 10,000 communities that had any activity in the two weeks prior to March 28, 2013. These criteria identified moderately active members with a variety of job roles, an average of 19 years at the company (ranging from 1 to 33 years), from across the organization. We completed our interviews when we reached a point of information saturation [24]. Members, whose responses were fairly homogeneous, required fewer interviews to

Goal	Sub-goals
Peer-driven learning: Community members learning from other community members, synchronously or asynchronously. Focus on members gaining new knowledge or awareness through interactive information sharing amongst themselves: members create and consume each others' content and answer each others' questions.	[MN] Answer members' questions. [A] Enable members to learn from the experiences of their peers. Help members to be more aware of what their peers are doing. [NC] Help members feel informed on a topic of interest to them.
Leader-driven learning: Community members learning from community leaders or core team, synchronously or asynchronously. Focus on members gaining new knowledge or awareness from informational content created by leaders.	[ALC] Provide informational materials (how-to's, solutions, etc.) that help members. [MAL] Improve members' knowledge or expertise. Make members more aware of management perspective, strategy, or news.
Reuse: Increase the productivity of members by producing and distributing assets, methodologies, best practices, and how-to's that members can use in their jobs. This is closely related to learning goals, but the focus here is on the reuse of some artifact, rather than the process of a members gaining new knowledge.	[C] Provide members with assets they can use in their jobs. [L] Enable members with best practices they can use in their jobs.
Collaboration: Facilitate a group working together to produce a collective output. This includes project teams, committees, task forces, customer account teams, product groups, and service-line groups.	[M] Support collaboration on shared deliverables. Enable members to keep track of their team's progress on shared deliverables.
Professional network building: Help members build new connections. Increase connectivity of the community's professional network, with the hopes that new connections improve information flow, collaboration, employee satisfaction, or other benefits.	Enable members to meet new people of interest to them. Connect members with new people who need their help. [N] Connect members with experts who can help.
Strengthening ties: Help members strengthen existing connections with each other. Foster rich social interaction among peers, with the hopes that stronger connections improve collaboration, employee satisfaction, or opportunities for information sharing.	Provide members with a place to interact socially and professionally with workplace friends. Include a group of people in which members feel they belong.
Influence & change: Influence members to change their perspectives and/or practices. Focus on persuading and educating members to think and/or act in a new way.	Convince members to try a new way of working. Convince members to think about some aspect of their job differently.
Innovation: Produce new ideas or solve a new problem. May involve brainstorming, gathering feedback or opinions, or research. Might be applied to new or existing products, services, or processes.	Inspire members to think of new ideas. Provide a place for members to share new ideas or feedback.

Table 1. Goals and sub-goals of enterprise communities derived from interviews. Three most important sub-goals to [M]members. Three most important sub-goals to leaders of [A]all goals groups, [L]leader-led learning groups, [N]networking groups, and [C]collaborative groups.

reach saturation than leaders, who had more detailed understandings of their communities' goals and more complex roles. We analyzed our notes using open coding, and then analyzed the concepts and categories from our initial coding for themes, which we report.

Survey to Characterize Goals Across the Organization
While our interviews gave us in-depth information about what goals were important to a small number of active leaders, we also conducted a survey to understand leader goals broadly across the organization. A second survey examined how members evaluated these same goals.

We used the leader interviews to frame our leader survey using familiar terminology. Interviews also identified other relevant information that we targeted in the survey, e.g. how leadership related to their formal job responsibilities as this might affect their goals. During interviews with our last six leaders, we explicitly piloted a draft of the survey. This enabled us to ensure our list of goals was complete and their definitions were clear. The resulting *leader survey* asked leaders to rate the importance of all goals and sub-goals (listed in Table 1) and to characterize various attributes of their role and the community. We asked

leaders to rate each goal separately instead of ranking all goals in order, because our interviews had revealed that community leaders often considered multiple goals equally important, but a ranking scheme would force leaders to choose between these goals. The rating scheme in our survey allowed us to test this result in a larger population and across multiple community types (e.g. CoP vs. Team).

The *member survey* evaluated the same goals, but did so by focusing on how well the community supported the sub-goals (in Table 1) for each member respondent. The leader and member surveys differed because our interviews revealed that members knew less about high-level community goals, but did know what benefits they received from the community. Together, a set of multiple member responses assessed the community's goal progress and was comparable to leader assessments of goal progress. We describe specific survey questions in the results section.

We administered the surveys via a web tool that enabled us to name a specific community in a recruitment email and survey questions. Participants logged in with their intranet credentials to take the survey, so we associated all their corporate directory demographics with their responses.

Survey Sampling

Our research required communities with clear goals that were known to leaders. We therefore targeted actively managed communities. Thus we selected communities whose leaders had signed up as of March 2013 for Community Insights [16], a tool to help leaders enhance their community. 666 communities met this criterion.

We first wanted to identify *leaders*. To do this, we sampled the two most active "owners" for each community. Owner is a role designated in the Communities system with administrative control over the Community space. Formal community leaders are always designated as owners, though not all owners are formal leaders. Thus we sampled the two most active owners, sending them an email asking them to take our survey, but included only those who told us they knew the community's defined goals (assessed by the first survey question). We removed some owners from our sample to ensure that no one received more than 3 survey requests (since some led multiple communities).

For the *member* survey, we aimed for responses from at least 3 members per community and expected a 15-20% response rate. Thus we removed communities with fewer than 20 members (resulting in 478 communities included) and sampled 20-26 members (depending on community size). We also wanted to survey different types of members. One important distinction is between members who actively post (contributors) and those who simply read others' posts (consumers) [22]. We expected contributors (who were fewer in number) to be more likely to respond, but also wanted to poll consumers. Thus we used a stratified sampling method to balance selection of contributors and consumers to approximately half and half (the exact balance depended on whether each community had enough contributors and consumers to each add up to half the sample). Each member received just one survey request.

Survey Analysis

The response rates were 29% for leaders and 19% for members. We averaged responses for the same community. Responses from a total of 278 leaders representing 281 communities were analyzed for the *leader* dataset (one leader could respond for multiple communities). To create a dataset of *member* responses, we started with these 281 communities and then removed any communities that had fewer than 3 members respond. This resulted in a dataset of 1101 members representing 177 communities.

Demographically, *leader* respondents represented a range of geographies (52% N. America, 26% Europe, 16% Asia, 3% S. America, 1.6% Oceania, 1.9% unknown), business divisions (44% Services, 20% Internal (HR, CIO, etc.), 16% Software, 15% Sales, 3% Hardware, 2% Research), and roles (80% non-managers, 20% managers). 95% were contributors and 5% were consumers.

Likewise, *members* who responded also represented a range of geographies (32% Europe, 24% Asia, 24% N. America,

8% S. America, 1.6% Oceania, 0.3% Africa, 9% unknown), business divisions (48% Services, 19% Internal, 15% Sales, 9% Software, 2% Hardware, 2% Research, 6% unknown), and roles (81% non-managers, 13% managers, 6% unknown). 56% were contributors and 44% were consumers.

We characterize the communities in our dataset based on leaders' self-reported type of the community, as defined in [18]. Our leader-rated data included 53% CoPs, 37% teams, 3% technical support communities, 2% innovation communities, and 1% recreational communities (similar proportions to those reported in [18]).

Behavioral Data

For each of the communities whose leaders and/or members participated in our survey, we also collected behavioral data from their online community in March 2013. We collected the most common behavioral "success measures" proposed in prior literature, relating to: membership, contribution, consumption, and member recommendations [8]. While there are other potential behavioral metrics, a major goal was to evaluate the most commonly used success metrics

- Membership: # of members, # of contributors.
- Contribution: # of wiki pages, wiki edits, file uploads, blog posts, blog comments, forum posts, forum replies, bookmarks, activity posts [18].
- Consumption: # of wiki and blog views, file downloads.
- Recommendations: total # of recommendations of all types of posts (similar to "like" in Facebook).

For the 281 communities where leaders responded, the *average* and *standard deviation* values for the metric categories were as follows: # members (1225, 2387), # contributors (80, 157), total # posts of all types (530, 706), total wiki+blog+file views (31932, 64940), total # recommendations (115, 314).

RESULTS

We first present results from leader interviews describing enterprise community goals. Then we characterize the goals in detail using results from the surveys and behavioral data. We go on to explore perceptions of community progress on goals and their relation to behavioral success metrics.

Goals of Enterprise Communities

Our leader interviews identified common goals and sub-goals that communities were intended to achieve, summarized in Table 1. Leaders discussed *learning*, both from peers and leaders; *reuse* of resources; *collaboration*; *networking*, both in terms of building new connections and strengthening existing connections; *influence and change*; and *innovation*. From the frequency of mentions by leaders, it was clear that *learning* (discussed by 26 out of 37 interviewees) was by far the most prominent goal. As shown in Table 1, the *learning* goals involved the most diverse set of sub-goals, partly because learning was discussed by more leaders for more communities. The remaining goals were discussed with similar frequency: *innovation* (8 interviewees), *collaboration* (7 interviewees),

Goal	All goals groups (N=186)	Leader-led learning groups (N=60)	Networking groups (N=26)	Collabora-tive groups (N=6)	Overall avg. (SD) (N=278)
Peer learning	4.59	3.84	2.83	1.17	4.11 (1.17)
Leader learning	4.05	4.47	3.63	2.88	3.96 (1.17)
Reuse	4.62	4.34	2.40	4.67	4.27 (1.08)
Collaboration	4.75	3.14	2.42	4.33	4.10 (1.28)
Prof. net. build.	4.20	2.88	3.96	1.17	3.76 (1.24)
Strengthen ties	4.33	2.87	3.54	2.00	3.81 (1.15)
Influence	4.26	3.63	3.56	1.42	3.92 (1.15)
Innovation	4.38	3.04	2.75	3.00	3.84 (1.20)

Table 2. Importance of leader goals for different groups. Evaluations range from '5' (very important) to '1' (unimportant). The left 4 columns show different communities grouped by cluster analysis, with gray cells showing key goals for each group. The right-most column is overall averages and SDs.

networking (7 interviewees), *reuse* (5 interviewees), and *influence and change* (4 interviewees). We next present interview analysis from which we generated the learning goals and list of relevant sub-goals summarized in Table 1.

Learning: From leaders' descriptions, it was clear that learning sub-goals depended on whether leaders or members were the primary creators of the educational materials. Some sub-goals fall primarily into one type, e.g., *learning from peer experiences* contributes to peer-driven learning, while *awareness of management perspectives* contributes to leader-driven learning. Some sub-goals overlap between leader and member learning objectives. Leader-driven learning could be carried out by a core team, an executive and his/her staff, or a single leader. E.g.:

> *(SL on leader-driven learning) "The main goal is to serve as a vehicle to share the messages that the Chairwoman wants [employees] to learn and understand, and engage in conversations about those messages."*

> *(KR on peer-driven learning) "[Our goal is to] create avenues where people can learn... We try to instigate our people managers to come in there and participate... Every time somebody asks, I do not jump in to respond... to allow the members to see it and respond, if possible... From a strategic perspective, we look at a sustainable model of learning."*

Reuse: While learning focuses on members *gaining new knowledge*, reuse focuses on *creating assets* that improve members' effectiveness. For example, reuse helped employees build directly on precedent each time they installed products for customers, as CF described:

> *"We describe what assets are we creating that are jump-starting the organization and who's using those. So being able to show... here's the VMware image and instructions for how to download and use it, that are being used and have been downloaded 1000 times. That's pretty significant in terms of the number of people we're impacting, in terms of helping."*

Collaboration: Collectively working together to produce an output, a classic workplace goal, is now taking place in community spaces. E.g.:

> *"This is initiative or project based work... These guys are actually doing work and sharing stuff with one another, but it's*

not just a community of practice. It is a community that has a very specific set of goals that they are working toward." (JO)

Networking: Participants described several networking sub-goals, as outlined in Table 1. These divide into *professional network building* and *strengthening ties* with existing contacts, which would require different measures:

> *(JT on network building) "Being able to find out who the community experts are is important."*

> *(TS on strengthening ties) "Our cost model is not going to allow us to continue to travel the way we travel... We've got to open up and use these community tools... We have to create an in-office feeling using community... it's that water-cooler."*

Influence and change: This goal, as outlined in Table 1, is about persuading people to change, convincing employees to adopt new technologies or modify their work practices to cut out wasteful time, as described by EP:

> *"This community is about trying to change the culture. And so part of this is trying to inspire people. By letting them know what's possible, by letting them know there's support for this."*

Innovation: The final goal, as outlined in Table 1, is about crowdsourcing new ideas or feedback, e.g., TB described:

> *"We had four questions we wanted people to answer all across the world. And they were on subjects like... what the trends were in your particular part of the world... The ultimate aim was to produce a report that we could send out to all areas, any learning solutions consultants around the globe, to actually inform them better on how we can do our jobs."*

From interviews, we learned that leaders sometimes set up a community with one of these goals as their main pursuit, but more often they targeted *multiple goals*. For example, LK talked about how her two main community goals— *influencing change* and *learning*—were intertwined:

> *"I would say learning is a specific action or a sub-set of the change. The change is getting people to be aware of something happening, which... involves them understanding what they should do differently... and that sometimes involves learning and education. And it involves action, actually... changing how they're doing those behaviors."*

We next used the survey data to explore whether communities weighed some goals more highly than others.

How Important are the Goals to Different Communities?
Our leader survey examined how goals were prioritized across different communities. We asked leaders to "rate each of the following goals according to how important or unimportant it is for your community to accomplish," (1=unimportant to 5=very important). Table 2 shows, to our surprise and contradicting prior work [12,18,21,25], most leaders thought *all* the goals were important.

We wanted to know whether there were consistent patterns in the importance of different goals and how these mapped

Goal	Management-initiated (N=84)	Mixed (N=128)	Employee-initiated (N=47)
Peer learning	4.36	4.18	4.13
Leader learning	4.36	3.95	3.65
Reuse	4.48	4.39	4.12
Collaboration	4.21	4.21	3.99
Prof. net. build.	3.92	4.11	4.34
Strengthen ties	3.93	4.08	4.10
Influence	4.22	3.90	3.89
Innovation	4.10	3.83	3.82

Table 3. Importance of leader goals in management- vs. mixed vs. employee-initiated communities. Gray shading shows significant differences between management- and employee-initiated.

to different community types. Thus we ran a cluster analysis using the K-means algorithm on leader ratings for each goal. We experimented with various values for the number of clusters, from 2 to 10, and picked the optimal number of clusters based on the Silhouette coefficient [10].

The largest cluster (186 communities) was one in which leaders found *all goals highly important* (Table 2, column 2). This is important because prior work suggests different types of communities focus on specific goals while de-emphasizing others [12,18,21,25]. But the majority of communities did not focus on a single goal, e.g.:

> *"The objective of that community is really to drive knowledge sharing and engagement between the people, the members of the community… to drive connections and collaboration globally between people in that group." (SH)*

However, the cluster analysis revealed a second smaller set of communities that focused on just one or two goals. Sixty communities mainly addressed *leader-led learning* and *reuse* (Table 2, column 3). Our interviews revealed that this combination typically meant that leadership teams were creating and encouraging members to use leader-created materials both for enablement and reuse. For example, LK described various materials her team had created for reuse:

> *"There is a toolkit for radical simplification for transformation teams. And there are rapid business change techniques and an approach for anybody in [the company] to learn how to drive business change. And also some simple messaging and questions people can ask to say, 'is what I'm doing, does it make sense, is it worthwhile.'" (LK)*

The final two smaller clusters emphasized professional network building (26) or collaboration (6). For collaborative groups, reuse was a major component, as a primary affordance of the community space was resource sharing.

We next analyzed different clusters' sub-goals. Table 1 denotes the top three rated sub-goals per cluster. First, a notable similarity was that all clusters prioritized *learning* sub-goals in their three most important. The most popular learning sub-goals were "improve members' knowledge or expertise" and "provide informational materials (how-to's, solutions, etc.) that help members." There were also interesting differences between clusters: (1) Leader-led learning and collaborative groups each had one *reuse* sub-

goal in their top-three, but the other clusters did not: "enable members with best practices they can use in their jobs," and "provide members assets they can use in their jobs," respectively. (2) Uniquely, networking groups had one *professional network building* sub-goal in their top-three: "connect members with experts who can help."

How do Goal Priorities Differ in Management- vs. Employee-initiated Communities?
New social media tools mean that communities are no longer primarily initiated by management. We wanted to understand how leader goals differ between employee- and management-initiated communities.

In the survey, we asked leaders how community leadership relates to their formal job, with multiple choice options: (a) "not directly related: I volunteered to lead this community," which we call *employee-initiated*; (b) "a means to an end: I volunteered to lead this community as a way of accomplishing my job responsibilities, though leading a community was not explicitly mandated by management," which we call *mixed*; and (c) "mandatory: leading this community is an explicit job responsibility," or *management-initiated*.

Mixed communities were most common (N=128), then management-initiated (N=84), then employee-initiated (N=47). These three classes had different goals (see Table 3). Leaders of management-initiated communities cared significantly more about *leader-driven learning* (mean diff. = -.71, t(129)=-4.35, p<.001) and *reuse* (mean diff. = -.36, t(129)=-2.13, p=.035) than leaders of employee-initiated communities, while leaders of employee-initiated communities cared significantly more about *professional network building* than leaders of management-initiated communities (mean diff. = -.42, t(129)=2.29, p<.024). Leaders of mixed communities sat in between.

We also tested whether communities of the functional types from Muller et al. [18] that were most common in our dataset—CoPs and teams—had different goals. There were no statistically significant differences between their goals.

Member Perceptions of Goal Importance
So far, our results regarding community goal importance and perceptions of success have been from the perspective of leaders. Now, we present results about which goals are important to members and how members assess progress.

To examine members' perceptions of goal success, we asked members of each community to rate overall "how well this community is meeting your needs" and for each sub-goal in Table 1, "how well or poorly the community did at helping you" with the sub-goal (both questions were on a scale of 1=very poorly to 5=very well). We refer to these two ratings as *overall value* and *sub-goal values*, respectively. To assess *sub-goal importance*, we calculated how well each *sub-goal value* predicted *overall value*.

Note that the methods we used for measuring leaders' and members' perspectives were different: we asked leaders

explicitly to rate the importance of, and progress on, goals and sub-goals; we asked members to explicitly rate progress on sub-goals and inferred importance. The reason for this difference is that leaders and members have different roles and thus know different information about the community.

Survey results: Members believed all sub-goals were at least moderately important. Specifically, their ratings of *overall value* and *sub-goal values* generally agreed: the 20 sub-goal values, taken together, predicted the overall value with R^2=45%. This suggests that how well a community helps members with all sub-goals has a large influence on whether members consider the community valuable overall.

While all of the sub-goals carried some weight with members, some appeared to be more important. When we conducted the regression predicting overall value in a step-wise fashion, the most predictive sub-goals were (a) "answered my questions" ($t(171)$=10.1, p<.001), (b) "improved my knowledge or expertise" ($t(170)$=3.37, p<.01), and (c) "supported collaboration on shared deliverables" ($t(169)$=2.68, p<.01). We refer to these three sub-goals as "Q&A," "learning," and "collaboration." Together these 3 sub-goal value ratings had almost the same R^2 for predicting the overall value rating as did *all the sub-goal value ratings combined*. This result indicates that when measuring the value of communities to members, the success on these sub-goals—Q&A, learning, and collaboration—largely outweighs the success on others.

As a validity check, we ensured that members of the same community generally agreed with each other on the questions above: we computed the intra-class correlation coefficient (ICC) for members per community. Members' ICC when rating the overall community value was 0.63, and the ICC for the 20 sub-goals ranged from 0.45 to 0.70, which are considered fair to good agreement.

Interview results: Our member interviews largely confirm these results. Members told us their most important outcome was that the community enabled them to *get and share information they needed in their job*. All participants echoed this theme, by discussing various *learning* sub-goals related to information sharing. Notably, five participants explicitly discussed getting their *questions answered* as critical. For four participants, *collaborating with a team* was their other highest priority goal for communities. They described both of these main goals as being directly related to and driven by their daily work. E.g.:

> *"Sharing information… That's the biggest thing that a community succeeds in. You are working on a particular project or a tool or a product or whatever, and you discover something, and you post it on the community… I think that's the real value of community. Where people can share ideas for that group." (AS on information sharing)*

> *"We all have similar experiences. So if I ever have… something tough come out, I can always reach out to them and say, 'Hey, do you guys have any suggestions? Have you guys been through this before and what did you do?'" (CH on Q&A)*

> *"It's mainly what I'm working on, and my ability to find information or share information with other team members. So it's the information and the other people from the team collaborating on it." (JW on sharing with a collaborative team)*

The results above help us understand what enterprise community goals are important to members and leaders—whether directed by employees, management, or a mixture. Now we explore how progress on these goals might be measured by comparing leader perceptions, member perceptions, and behavioral measures.

Do Leaders and Members Agree on Goal Progress?

We assessed *members'* perceptions of progress using both *overall value* and *sub-goal value* ratings (these rating types are described in the previous section). Again, these questions asked *members* directly how well the community was providing value overall and achieving its sub-goals. To examine *leaders'* perceptions of success on the goals in Table 1, we asked them to rate "how much progress has your community made at accomplishing each of the goals," (1=planning, 3=halfway toward achieving, 5=already achieved, or N/A= not a goal of our community).

Leaders' and members' perceptions of how well a community was doing did *not align* with each other. As shown in Table 4, for all of the goals, leader-reported progress did not correlate well with members' perceived overall community value or sub-goal values aggregated by goal. Furthermore, a regression predicting the member-reported overall value from the leader-reported progress on the 8 goals had an R^2 of only 11%.

Do Behavioral Measures Predict Progress on Goals?

Next, we wanted to understand if simple behavioral measures often proposed in the literature—including the number of members, volume of contributions and views, and proportion of contributors—predict success on any of the goals, either from leaders' perspectives (goal progress ratings) or members' perspectives (overall value rating). Our aim was to see if we could predict leader or member goal assessments from these behavioral measures. To evaluate the 15 metrics listed in the method section as predictors of member and leader ratings, we entered them as independent variables in linear regressions. We tried

Goal	Correlation: leader goal progress & member overall value	Correlation: leader goal progress & member sub-goal values
Peer & Leader learn.	.04	-.06
Reuse	.06	.02
Collaboration	.00	.05
Prof. net. build.	.03	-.01
Strengthen ties	.08	-.01
Influence	.03	.02
Innovation	-.15	-.16

Table 4. Correlation between leader perceived progress across all goals and member perceived overall community value (left) and sub-goal values aggregated by goal (right). These low correlations show the lack of agreement between leaders' and members' perception on community success.

many variations in our analyses. Since prior literature has proposed using total, per member, and log-transformed counts for these measures, we experimented with all three variants. We also experimented with which set of communities we analyzed, including all of them and only those where both leaders and members responded.

Linear regressions showed few relations. Despite including a wide range of commonly used behavior metrics, they did not predict either the leader goal progress ratings or member overall value ratings, collectively or individually. The highest adjusted R^2 we were able to achieve for leader ratings was 8%, while the highest adjusted R^2 we were able to achieve for member ratings was 0.6%.

Our results show that our three sources for predicting goal progress—leaders, members, and behavioral data—did not correlate with each other. However, both leaders and members did agree these goals are important, with members particularly focused on Q&A, learning, and collaboration. Assuming members are in the best position to assess goal progress, these are critical findings since they strongly suggest that simple behavioral metrics may not effectively assess community success. Instead we need analytics combining multiple measures to assess particular sub-goals.

DISCUSSION

Characterizing and Measuring Community Goals
An important contribution is showing exactly which goals and sub-goals are valuable to members and leaders (Table 1) across different community types. It is frequently posited in the literature that communities with different goals need different success measures [3,18,21]. We were surprised to find that most community leaders found *all* of the goals important. Far fewer communities fell into clusters that emphasized only one or two goals. Thus, metrics of progress on *any or all* of these goals would be valuable. Also, we found that members appreciated getting multi-faceted value from their communities, though they did prioritize Q&A, learning, and collaboration sub-goals. For communities with differing goals—such as employee- and management-initiated communities, or the right-three clusters in Table 2—practitioners, analysts, and tool designers should emphasize metrics of their specific goals.

Our research also highlights new goals not previously stressed in the literature. Prior work on communities of practice focuses on *social learning* [25], which is equivalent to our *peer-driven learning*. However, we found that, for enterprises at least, *leader-driven learning* was just as important and would require different success metrics. In this case, learning materials are developed by a core team and sanctioned by management, and members' primary role is to consume and discuss that content. Other new community goals relate to organizational change: we have not seen it previously discussed that communities play an important role in influencing employees to adopt new technology or work practices.

Importance of Goals Across Community Types
Our work presents a new understanding of how communities of different types prioritize different goals, which has implications for theory. Multiple authors argue that measures of goal progress are effective to measure success [3,16]. Various community typologies have claimed that different community types require different success metrics [3,18,21]. Our results suggest goals may cut across types in some typologies. In particular, the types proposed by Muller et al. [18] that were most common in our dataset—CoPs and teams—had no statistically significant differences in their goals. That members learn, reuse materials, network, collaborate, and so on, were all important across these functional types. Thus, we expect their success metrics, at least for progress on these goals, to be the same. However, a different typology proposes a distinction between member- and organization-initiated communities [21]. We compared employee- versus management-initiated communities—and found that they prioritize different goals. Thus these two types require different success measures. From this it follows that goals may be a good way to define success measures across some community types, and in the case of types with shared goals, it may reduce the complexity of an analyst's job.

A related theoretical contribution is in showing that employee- and management-initiated communities focus on different goals. It is relatively new in enterprises that any employee can easily initiate a community space and invite his/her colleagues, and this may be a bottom-up way for them to ensure the organization is satisfying their needs. Our results show that employee initiators value professional network building much more than management initiators, and find less value in leader-driven learning and reuse.

Perceptions of Leaders vs. Members
A surprise was that leaders and members agreed that all the goals were at least moderately important, though members emphasized Q&A, learning and collaboration. Their relative agreement is contrary to our expectation based on prior work that highlights differences between leaders' and members' perceived success factors [13] and motivations [2]. This result may be due to leaders' work to create alignment between stakeholder and member goals as recommended in community design guidebooks [11,25].

In contrast, we found that leader and member *perceptions of progress did not align* (see Table 4). Prior literature assumes member feedback to be the "gold standard" for assessing a community [14,23,25], since most of the goals center around some value—learning, networking, etc.—*derived by members*. Our demonstration that members have a different perspective from leaders implies that leaders do not have a very good sense of how well their community is doing to achieve its goals according to members. This poses a challenge to approaches based around leader-led community design [11] that technology designers may be able to overcome through tools aimed at leaders [16].

One implication of this finding is that leaders need better ways to assess whether they are meeting member needs, since their intuition fails. Are most questions being answered? Is member expertise broadly growing? Analytics can answer these questions [19,20], providing an objective assessment of the goal both leaders and members value.

Community Success Measures

Assuming that member perceptions are the "gold standard" assessment of community success, our results show that simple behavioral measures that are standard in the literature do not predict progress on the goals and sub-goals in Table 1. This indicates that it is critical to develop more sophisticated measures that better capture these goals and sub-goals. Members viewed as particularly valuable communities that *answered their questions*, *improved their knowledge or expertise*, or *supported collaboration on shared deliverables*. These would be good starting points for community success measures. We know from prior work that questions and answers can be detected [20], expertise can be assessed [19], and informational content can be recognized [7]. To assess collaboration, shared deliverables could be detected using machine learning techniques, and a Gini index [6] could assess how equally members contributed to the deliverable. Future research applying known and novel techniques to measure these sub-goals would greatly help community success assessments.

Limitations

We studied communities in one company and thus our results may be subject to this context. That said, there are multiple contributions that generalize. First, there is no reason to believe that, when assessing goal progress, the disagreement between leaders, members, and behavioral metrics depends on the context. Also, the goals observed in this company would be a good starting point for researchers to explore in others. The finding that goals can both differ and cut across community types is not likely to depend on the company context. Differences between employee- and management-initiated communities may also generalize. The interview and survey questions provided in our paper also offer a way for researchers in other organizations to replicate and verify our findings.

A second potential limitation of this work is with the member survey methodology. Respondents were asked to answer the questions given their own personal experience. It is possible that the members who responded to the survey were not representative of the community membership as a whole. This is important to consider when comparing to behavioral measures and leader responses, which assessed the community as a whole. However, we believe this concern is limited because our member respondents agreed with each other per community (see the high intra-class correlation coefficients noted above).

CONCLUSION

Using multiple methods, this research identifies, describes, and proposes how to measure common goals of enterprise online communities. Future work is needed to develop analytics to assess progress on the goals identified here.

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