Docs.com: Social File Sharing in Facebook

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Abstract

Social networking sites provide a unique opportunity for users to engage in broadcast online file sharing and collaboration. In this study we examine the usage of Docs.com, which integrates Microsoft Office web documents with Facebook. In reviewing the content of Docs.com documents, we found they were equally created and shared for work, personal productivity, and play. Users actively employed relationship levels in their Facebook networks to define access to their documents. However, we also found the most viewed documents were those shared to the entire public, with Facebook notifications driving most of the traffic to these public documents. Finally, through a factor analysis of user activity four primary types of usage emerged – sharing, creating, collaborating, and consuming. Those who created and collaborated around documents had higher levels of engagement than those who just shared or consumed documents, interacting with more documents and returning on more unique days.

Introduction

Social networking sites (SNSs) are increasingly prominent tools for maintaining both close and distant social relationships. A recent Pew Internet and American Life report found that 59% of Internet users have at least one SNS, out of which 92% have a Facebook account (Hampton et al., 2011). Facebook users have friended 48% of their real world extended networks, including friends, coworkers, family, neighbors, and old classmates.

SNS features such as broadcast updates, news feeds, and activity notifications enable a more lightweight, passive form of interaction than found in other forms of computer-mediated communication such as email (Farnham, 2008; Hampton et al, 2008; Wohn et al, 2011). In the following note we explore the extent to which users will leverage this more passive context for social file sharing and online collaboration. In particular, we examine a system called Docs.com, which provides tools for sharing and collaborating with Microsoft Office documents such as Word, Excel, and Powerpoint in the context of Facebook.

Social file sharing systems that enable public or broadcast file sharing have been examined in the enterprise space. For example, a study of the file sharing system Cattail deployed internally at IBM found that adding sociality to file sharing improved document reach and discoverability (Shami, Muller and Millen, 2011). Users employed the social aspects of the system to upload and publicize their files, annotate and track other people's files, and discover and share new files (Muller, Millen, and Feinberg, 2010).

However, the use of personal SNSs for file sharing has yet to be studied. We might expect that users would not care to share Microsoft Office documents in personal SNSs, because they tend to be used for more productivity-oriented activities. Further, users may prefer to not share to their whole network, but rather only to a few friends, for which other tools such as email would suffice. To examine these issues we analyze the content of documents users choose to share in Docs.com, how they use SNS settings to define sharing and editing levels, and what impact such social file sharing has on engagement and document reach.

Docs.com

Docs.com is a web application that allows users to create or upload Microsoft Office documents online and then share them with friends using Facebook. Docs.com was released in June of 2010, and through steady linear growth over the course of 15 months has accrued 945,000 authenticated users and 298,000 documents. The primary document types it supports are Microsoft Word, Excel, Powerpoint, and PDFs. Users sign in to Docs.com using Facebook's registration and login system (Facebook Registration API, 2011). Once signed in, users may see, read and comment on either public documents in the document gallery or any documents their Facebook friends have shared. More importantly, users may create or upload their own online documents. They may edit these documents directly online, or open them in a local client to edit. When viewed online in Docs.com, the document is framed in the context of social sharing features. See Figure 1. The user may set sharing and editing levels within the Facebook network, including

a) "Individual friends", where the user specifies which Facebook friends have access, b) "All my friends", which includes all of the user's Facebook friends, c) "Group", or any member of a Facebook group to which the user belongs, d) "Everyone", the entire Internet, and e) "Only me", viewable only by the user. At the time of sharing a document, a notification with a link to the document is sent to the news feeds of appropriate friends or groups. The user may also add tags to the document, and viewers or editors may add comments on the document's wall.
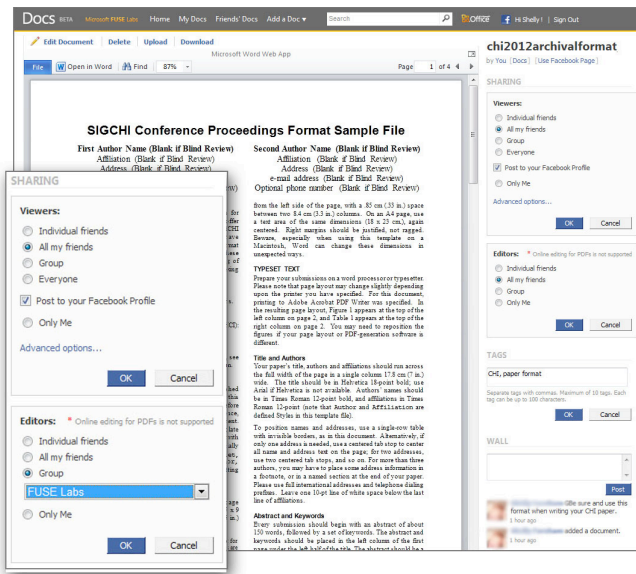

Figure 1. A document in Docs.com may be viewed and edited online, and then shared with Facebook friends.

Method

To analyze Docs.com usage, instrumentation data was collected from May 28 to August 7, 2011. The system logged discrete user actions around documents as listed in Table 1. For each action, we collected who performed the action, what document the action was performed upon, the owner of the document, and attributes specific to each action. For example, for sharing a document, the system logged whether it was shared only with friends or publicly. When users viewed a document, the system only logged when the user first opened the document, not any subsequent clicking.

Results

Over the 72-day time span of our data collection period there were 86,897 authenticated users interacting with 104,199 unique documents. 72% of the documents were new to Docs.com during this time span, with 54% being newly created online, and 46% being uploaded. 52% of all

documents were Word, 18% PDFs, 15% Powerpoint, and 15% Excel. Amongst the top 2000 most viewed documents, PDFs were more popular at 35%, with Word at 35%, Powerpoint at 15%, and Excel at 15%.

User Action	N	Percent
Join the system	75803	9.6%
Create document	41856	5.3%
Upload document	35339	4.5%
Start editing document	79140	10.1%
Save while editing document	56506	7.2%
Finish editing document	60571	7.7%
Share document	14758	1.9%
View document	322656	41.0%
Download document	86787	11.0%
Delete document	12784	1.6%
Total	**786200**	**100.0%**

Table 1. User actions collected during data collection period.

Types of Content Shared

In order to assess the types of documents users were sharing in the context of Facebook, we performed a content analysis of 400 public documents. Note 32% of all the documents used were public. We excluded documents that had extremely high numbers of views and thus were not representative of the population (with z-scores over 5.0). We included for analysis 200 of the most viewed documents, and 200 documents selected using a random number generator. All documents were reviewed twice, first to code for specific, descriptive types of use (e.g., recipe, or political essay), and then to categorize them into the more general types of content sharing that emerged. As can be seen from Table 2, the most prominent category of content was fun and entertainment (44%), with work-related documents a close second (38.7%). A third category was personal productivity (11.3), which contained content relevant to accomplishing non-work life tasks such as organizing finances or finding a health clinic. The top viewed documents were less fun and had more advertisements than those of our random sample.

Use of Sharing Levels

We examined the sharing levels of the 74,671 documents that were initially created or uploaded during our data collection period. About 45% of these documents were shared for viewing, and 18% were shared for editing, meaning 55% remained private. The most popular form of sharing is to everyone, followed by sharing to groups and sharing to all friends. This suggests that if users share their documents in Facebook, they are casting a fairly broad net. See

Table 3. If documents are shared to all friends, they are shared to an average of 236 friends in the user's network. If they are shared to specific people, they are shared to an average of 1.6 people, out of a maximum of five.

Content Categories	Content Examples	Percent in Random Sample	Percent in Top 200 Viewed
Fun and entertainment	recipes, sports statistics, writing, hobby how-tos	44.0%	21.4%
Work	presentations, resumes, homework, schedules	38.7%	41.7%
Personal productivity	computer safety tips, health information, forms	11.3%	16.5%
Civic participation	call to actions, political opinion articles	4.2%	4.9%
Advertisement	hotel flyers, product information	1.8%	12.6%
Religious	written essays	0.0%	2.9%

Table 2. Types of content in public documents.

Sharing Level	To View	To Edit
Everyone	12.7%	
Group	14.0%	6.2%
Only friends	12.4%	1.2%
Specific people	4.2%	2.2%
Page admin	1.1%	7.7%
Only Me	55.6%	82.7%

Table 3. Percentage of sharing levels across documents for both sharing for others to view, and sharing for others to edit.

Sharing Level and Document Reach

Document reach was measured as number views by the self, friends, and unauthenticated public persons. Sharing levels had a meaningful impact on document reach, as can be seen from Figure 3. Documents shared with the user's entire network (only friends) or a group had higher levels of views from friends. Documents generated much higher page views on average when shared to the entire Internet (Everyone). In order to examine whether the page views for these public documents came from Facebook notifications, we examined the referring site for each document view. As

can be seen from Figure 3, the majority of these document views are generated from Facebook. Thus even the public documents are leveraging the Facebook network to drive traffic through notifications in users' news feeds.
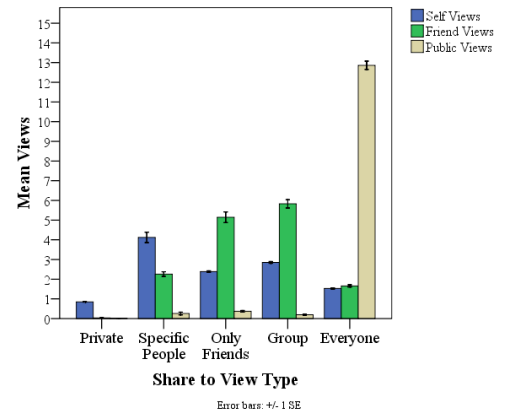

Figure 3. More document views are generated if the document is shared more broadly in the network.
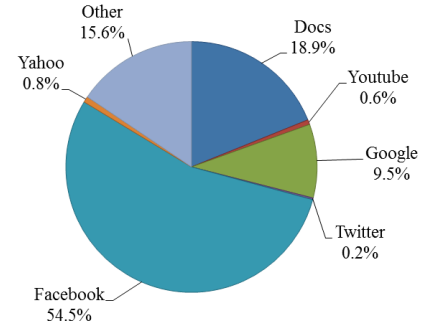

Figure 4. Most document views for public documents are generated from links within Facebook notifications.

Types of Usage

To enable comparisons with Muller, Millen and Feinberg (2010) who examined social file sharing in the enterprise, we performed the same factor analysis method to reduce our various activity measures to the most important types of use, first aggregating the data at the level of the user. As can be seen from Table 4, four factors emerged. Prominent types of usage tended to be either a) **sharing**, uploading documents to share them, b) **creating**, creating and editing their own documents online, c) **collaborating,** viewing and editing others' documents, or d) **consuming**, viewing and downloading public documents. Distinct from the findings of Muller, Millen, and Feinberg (2010), creating and collaborating were important components of Docs.com usage patterns.

Individual scores were then saved for each factor to assess which types of usage had the most impact on two measures

of engagement: the number of unique days the user was in the system, and how many documents they interacted with. As can be seen from Table 5, users who were more engaged with sharing content interacted with more documents, whereas those who created content and collaborated returned for more days. In other words, the use of the more collaborative features corresponds with more engagement.

	Factor			
Eigenvalue	2.4	2.3	1.3	1.1
% Variance	23.0%	22.9%	12.8%	11.1%
Measure	**Sharing**	**Creating**	**Collaborating**	**Consuming**
Created doc	.032	.783	.046	.037
Uploaded doc	.940	.121	.018	.015
Edited own doc	.035	.922	.044	-.016
Edited others' doc	-.006	-.085	.887	-.130
Shared doc to edit	.721	.023	.011	-.016
Shared doc to view	.942	.153	.021	.016
Viewed friends doc	.061	.317	.694	.275
Viewed own doc	.240	.826	.054	.000
Viewed public doc	-.024	-.003	.039	.755
Downloaded doc	.024	.012	-.001	.668

Table 4. Factor loadings for types of usage. Sharing, creating, collaborating, and consuming emerged as four types using principal component analysis with Varimax rotation. We considered any cell with a value > .40, as shaded.

	Unique Days Active	Number of docs
Type of Usage	*r*	*r*
Sharing	.20	.64
Creating	.50	.38
Collaborating	.44	.29
Consuming	.13	.23

Table 5. Correlations between primary types of usage and measures of engagement. Due to the large N, all r values are significant at p < .001, and should be interpreted as effect sizes where .2 = weak, .5 = moderate, and .7 = strong.

Conclusion and Discussion

In this analysis we examined the usage patterns of Docs.com to assess whether people will leverage its integration with Facebook to engage in broadcast, social file sharing and online collaboration. We found that Docs.com is well-used and continues to grow, that users actively used the network-based access levels to passively share their documents to all their friends and groups within Facebook, and that notifications within Facebook drove most of the traffic to users' documents, especially for documents shared to the public. We found four primary types of usage – sharing, creating, collaborating, and consuming – and that those who created and collaborated around documents had higher levels of engagement.

Although we might expect Microsoft Office documents to be more productivity-oriented, we did find that a substantial percentage of Docs.com documents had fun and entertaining content, as might be expected from sharing within a friend-oriented network such as Facebook. Nonetheless, we also found many documents were focused on work and personal productivity. All documents, whether for fun or work, tended to be focused on sharing information. Unfortunately for this study we were only able to examine public documents, and in the future expect to pursue a comparison with private documents through questionnaires or interviews.

Our results show that users who effectively use social media sharing tools can drive increased engagement with their online content, and that SNSs provide a unique context for a form of lightweight micropublishing – to the user's extended network.

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