

User Experience of Enterprise Social Networks and Collaboration

Emergent Research Forum Short Paper

John Wyatt

EMC, WPI

john.wyatt@emc.com

Soussan Djamasbi

WPI

djamasbi@wpi.edu

Mark Traietti

EMC

mark.traietti@emc.com

Abstract

Collaborative activities enabled through technology are an essential element in the modern work day. Thus, examining factors that can impact the efficiency and effectiveness of collaboration are of great importance to companies. As the first step in a larger project, in this paper, we explore the connection between employees' experience of a collaboration technology (CT) and their evaluation of collaboration quality. Our investigation was conducted via an experiment in a Fortune 500 company.

Keywords:

Enterprise Social Network (ESN), User Experience, Business Value, Collaboration Index (CI), Collaboration Technologies (CT), System Usability Scale (SUS), Satisfaction

Introduction

Over the past decade, the time employees spend in collaborative activities has increased by over 50%. This has meant that for employees at many companies, about 80% of their time is devoted to such activities. Furthermore, research has shown that 20-35% of any value-added collaboration only comes from 3-5% of employees. With so much time devoted to these collaborative activities, many employees are forced to work outside of business hours just to complete the basic requirements of their jobs. This can have severe impacts on employee morale, productivity, and can lead to burnout (Cross, Rebele, & Grant, 2016). To support these activities, many organizations utilize Collaborative Technologies (CT) to facilitate group decision making. These technologies help employees across time zones to connect and collaborate. As these technologies increase in popularity, it is increasingly imperative that companies and CT providers examine how well these technologies support collaborative activities, in order to enable employees to better connect and collaborate with a higher level of productivity and decision accuracy.

Research provides ample evidence that users' perception of a technology has significant impact on their willingness to use voluntary systems (Davis 1989). Consequently, paying attention to employees experience has become increasingly important in deploying internal systems that are used voluntarily in companies (Djamasbi, et al., 2011). For example, a recent study showed a significantly strong relationship between employees' experience of an internal IT website and the growth of that website (Djamasbi, et al., 2015). Little work has been done, however, to examine the relationship between user experience and user evaluation of an organizational collaboration system. This paper reports a first step towards a larger project, conducted in a Fortune 500 Company, which attempts to investigate factors that have a significant impact on acceptance, use, and group decision making of an Enterprise Social Network (ESN). In this paper, we explored the connection between User Experience (UX) and employees' perception of the quality of collaboration.

Background

Despite the popularity of CT within organizations, little IS research has been conducted to develop an understanding of the relationship between the usability and effectiveness of CT within a team. Such an

understanding can serve as an invaluable tool for companies employing CT within their organization by 1) Equipping them with qualifying criteria for decisions between CT providers and 2) Understanding the influences to employee collaboration, productiveness, morale, satisfaction and retention. We are working on a large scale project that attempts to investigate factors that can improve collaboration and group decision making of employees. For a first step toward this longitudinal investigation, we examine the relation between user experience of CTs and the level of collaboration enabled by these technologies.

User Experience

We used the System Usability Scale (SUS) (Brooke, 1996) for our study because this measure is one of the most widely used tools for measuring user experience in industry research. SUS uses 10 questions to measure subjective reactions to a product. The composite score, which can range from zero to 100, provides a simple and yet powerful tool for companies to express the subjective reactions of users to their products and services (Albert and Tullis, 2013). While SUS provides items that measure ease of use of a system, it does not capture whether a technology is considered useful, which is an important factor for an organizational CT. Thus, we used Perceived Usefulness (PU) (Davis 1989) to capture this utilitarian aspect of experience. SUS, also does not measure satisfaction directly, e.g., by asking users to rate their level of satisfaction, which indicates whether user expectation is met or not (Hassenzahl 2003). Thus, we used Customer Satisfaction (CSAT) instrument (Goldstein, 2009) which was measured on a scale of 0 (Totally Unsatisfied) – 7 (Totally Satisfied). Responses above a score of “5” were considered as satisfied. The final CSAT score was then calculated by taking the percentage of participants who gave a satisfied score.

Intention to Recommend

Intention to recommend is yet another major instrument that is used widely in industry (Albert and Tullis 2013). This measure, which is known as the Net Promotor Score (NPS), estimates the degree to which customers will promote and recommend a product. Research indicates a strong relationship between the growth of a product and its NPS score (Reichheld, 2003). NPS is expressed via a single score on a 0-10 scale indicating the willingness of an individual to recommend a product to his/her friend or colleague. Ratings with “9” or “10” are considered as promoters, while those “6” and below are detractors. Research suggests that User Experience, measured via SUS, has a strong impact on NPS (Djamasbi, et al., 2015) as when people have a positive interaction with a product, they are likely to recommend it to others.

Collaboration

Assessing the quality of a collaboration technology (CT) from the point of view of a user is grounded in task technology fit theory (Dishaw and Strong, 1999) because it requires the user’s evaluation of the fit between the requirements of a collaborative task and the support provided by a CT in terms of collaboration (Lee, Hahn, & Salvendy, 2010). This fit can be determined by Collaboration Index (CI), which similar to SUS produces a single score calculated from the responses to a question-based instrument. The values of CI can range from 0-1; higher CI values indicate higher perceptions of collaboration quality (Lee, Hahn, & Salvendy, 2010).

Method

We used a laboratory experiment to examine the relationship between user experience and perceived collaboration quality. The experiment, which took place at a Fortune 500 company, was set up to evaluate collaboration for 2 different Enterprise Social Network (ESN) tools by measuring the impact to the level of experience each tool delivered to its users. Users across the company were using a variety of licensed and unlicensed instances of cloud based ESNs to persistently chat and communicate over multiple devices (both managed and unmanaged). The IT department was pursuing the technology brokerage of a common ESN to enable the scale and support of these tools. This UX research and findings were intended to examine a set of factors that could possibility affect perception of collaboration by comparing employees’ reactions to two popular ESNs.

To address this, participants in our study were randomly assigned to one of the two conditions each using a different ESN. Each participant was required to evaluate the desktop experience of each ESN by completing a set of primary tasks which were intended to simulate a collaborative exercise where each participant would need to work with another user in order to accomplish a goal. The tasks also required

participants to individually create a new team within the specific ESN. During each test, the experimenters observed users as they interact with the tool and noted any difficulties they had accomplishing specified tasks.

The experiment was conducted in groups of two, where each group of 2 participants used the same tool of the 2 respective ESN tools. Paired participants were placed in separate rooms with identical office settings. Each of these two participants was provided with a digital copy of an image located on his or her desktop. These digital copies appeared to be identical, but they had several subtle differences. Participants were asked to open the ESN tool, find their ‘partner’ (the other participant), upload the image from their desktop to the ESN. When an image was uploaded, each participant was able to view it in the ESN. Once both images were added to the ESN, the participants were asked to collaborate with their partner to spot all the differences between the two images. Each test took about 30 minutes. For each tool, 5 participants ran through these exercises, totaling in n=10. While this is a low sample size, this was conducted for preliminary analysis and more data will be collected in future tests. In cases where a participant was scheduled, but was unable to attend, the respective moderator filled in for the other participant. This happened twice, once for each tool. After the test, each participant was then given a survey to gather information for CI, SUS, NPS, PU, and CSAT.

Preliminary Results

The quantitative results for each measure evaluated in this study can be found in Table 1. As shown in Table 1, the mean values for User Experience and Satisfaction are quite low for Tool A. Similarly, the mean values for NPS show that the ratio of promoter vs. detractors was %17 for tool B while the same ratio was in the negative range (-%33) for Tool A. Perceived Usefulness was rated in the middle range (4.33) for Tool A, while it was closer to top range for Tool B (5.8). The collaboration index was also rated higher for Tool B. Finally, Total Success Rate, an objective measure of task performance, was also better for Tool B. These results show that overall Tool B scored higher than Tool A.

	Tool A		Tool B	
	Mean	STDev	Mean	STDev
User Experience (SUS)	53.5	10.60	71.5	15.90
Collaboration (CI)	.84	.18	.92	.05
Intention to Recommend (NPS)	-33.3%	3.70	16.7%	1.58
Perceived Usefulness (PU)	4.33	2.05	5.8	1.01
Satisfaction (CSAT)	0%	1.73	60%	.89
Success Rates (Total)	75%	N/A	90%	N/A

Table 1

Exploratory Analysis

In order to understand what relation (if any) existed between the levels of user experience and collaboration enabled by the CT, we used regression analyses to investigate the impact of user experience on perceived quality of collaboration. To start, we looked at the relationship between each of the quantitative measures against the CI scores. We found significant positive relationships between CI and user experience, intention to recommend, perceived usefulness, and satisfaction all with p-values less than .05. Success rates were not significant. These results indicate that user experience measured as SUS, PU, CSAT were all significantly and positively correlated with CI.

Among the above variables, SUS, is the most widely used measure of user experience in industry research. Thus, in this initial work, we were particularly interested in examining potential relationship between SUS and the 8 factors that comprise the CI (Table 3). We therefore ran additional regression tests against SUS as the independent variable and each of the CI factors as dependent variables. We found positive

significant relationships between SUS and communication efficiency, communication effectiveness, coordination history, and cooperation efficiency with p-values less than .05.

Variable	R ²	P-Value	Unstandardized Coefficient
User Experience (SUS)	0.503	0.023	0.006
Intention to Recommend (NPS)	0.608	0.007	0.039
Perceived Usefulness (PU)	0.670	0.004	0.074
Satisfaction (CSAT)	0.738	0.002	0.088
Success Rates (Total)	0.018	0.704	-0.157

Table 2

Collaboration Index Factor	User Experience (SUS)		
	R ²	P-Value	Unstandardized Coefficient
Communication efficiency (CM-EFY)	0.325	0.085	0.004
Communication effectiveness (CM-EFT)	0.662	0.004	0.004
Sender awareness (CM-SND)	0.005	0.843	< 0.0005
Coordination efficiency (CD-EFY)	0.280	0.116	0.280
Coordination history (CD-HIST)	0.514	0.020	0.514
Member role awareness (CP-MBR)	0.314	0.092	0.314
Cooperation efficiency (CP-EFY)	0.463	0.030	0.010
Cooperation effectiveness (CP-EFT)	0.202	0.193	0.008

Table 3

Discussion

Despite low User Experience and Satisfaction scores for tool A, the results show that both tools provided a reasonable collaboration platform as indicated by relatively high Collaboration (CI) index (0.84 vs. 0.92) and Success Rates (75% vs. 90%). This could be cost saving news for organizations because it could indicate that companies may be able to achieve reasonable collaborations with an “unsatisfactory” existing tool without having to invest in acquiring newer more user-friendly technologies. Given the social nature of collaborations, however, the low NPS could indicate less participation and engagement. Because of the strong positive relationship between NPS and SUS (Djamasbi et al., 2015), this in turn could indicate that collaboration may be promoted through fostering positive user experiences. Our post hoc analyses provide support for this argument as they show a significant relationship between CI and NPS as well as between CI and overall experience. In particular, our results showed that 50.3% of variation in the level of collaboration enabled by a CT was explained by the user experience of that CT as measured by SUS. This relationship was further examined, showing that a good portion of variance in communication efficiency, communication effectiveness, coordination history, and cooperation efficiency was explained by the user experience of the CT.

Our results have important theoretical implications as they provide a rationale for including usability/UX measures (e.g., PU, SUS, CSAT) in theoretical models that predict perceived collaboration. The inclusion of usability/UX measure in collaboration research may provide insight for improving the number of employees that serve as useful collaborators in a company. Value-added collaborations is often attributed to only a small number of employees (3% to 5%) (Cross et al., 2016). Our results suggest that usability/UX measures may affect communication effectiveness and cooperation efficiency. This in turn, may encourage more people to engage in collaboration and enable them to be more effective in generating value-added teamwork. From a practical point of view, this research once fully completed, can help organizations evaluate potential CT solutions to select solutions that best enable their employees to

collaborate, thus helping to manage the overwhelming demands of collaborative activities within the workplace.

Limitations and Future Studies

Like any scientific investigation, our exploration is not without limitations. We tested internal employees of one organization, using 2 CT ESN solutions, and with a limited number of tasks. We however minimized threats to external validity by using fully functional instances of each tool, and focusing on common primary activities of ESN CTs. Nevertheless, future studies should include other CT solutions in addition to ESNs, include participants from various companies, and include additional tasks. Furthermore, research with larger sample sizes is needed to validate and confirm our findings with higher statistical significance. Additionally more research is needed to examine the relation between each CI factor and various aspects of user experience.

Conclusion

Our findings suggest that user experience is a strong indicator of the level of perceived collaboration enabled by a CT. This result can serve as an invaluable practice tool for the development, support and brokerage, and selection of collaborative technologies for both CT providers and for companies wanting to better manage the level of collaboration efficiency and effectiveness of their employees.

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