
This is an electronic reprint of the original article.
This reprint may differ from the original in pagination and typographic detail.

Author(s): Malik, Aqdas & Amandeep, Dhir & Nieminen, Marko
Title: Facebook Photo Tagging Culture and Practices Among Digital Natives
Year: 2015
Version: Post print

Please cite the original version:

Malik, Aqdas & Amandeep, Dhir & Nieminen, Marko. 2015. Facebook Photo Tagging Culture and Practices Among Digital Natives. CCGIDIS 2015 - Fifth International Symposium on Communicability, Computer Graphics and Innovative Design for Interactive Systems. 15. 978-88-96-471-33-3 (electronic). DOI: 10.978.8896471/333.

Rights: © 2015 Blue Herons. This is the post print version of the following article: Malik, Aqdas & Amandeep, Dhir & Nieminen, Marko. 2015. Facebook Photo Tagging Culture and Practices Among Digital Natives. CCGIDIS 2015 - Fifth International Symposium on Communicability, Computer Graphics and Innovative Design for Interactive Systems. 15. 978-88-96-471-33-3 (electronic). DOI: 10.978.8896471/333. <http://www.blueherons.net/multimedia.html>.

All material supplied via Aaltodoc is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of the repository collections is not permitted, except that material may be duplicated by you for your research use or educational purposes in electronic or print form. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone who is not an authorised user.

Facebook Photo Tagging Culture and Practices Among Digital Natives

Aqdas Malik*, Amandeep Dhir, Marko Nieminen
Strategic Usability Group
Department of Computer Science,
Aalto University, Espoo, Finland
firstnames.lastnames@aalto.fi

**First/corresponding author*

ABSTRACT

Social Networking Services (SNS) have gained immense popularity in developing countries like India, where digital natives are actively communicating on these platforms. Understanding the interaction between technology systems and digital natives, and proposing guidelines and recommendations for the development of better systems is highly valuable. Prior research examining users' motivations and actual usage of photo tagging systems is limited, and predominately focused on Flickr and adult users. In order to understand in detail why, how, and with whom users tag digital photos on Facebook, a qualitative essay-based exploratory study is organized with 67 digital natives in India. The study aims to build understanding of the various gratifications, motivations, experiences, and practices associated with Facebook photo tagging, focusing on technologically savvy Indian digital natives. Our results reveal that photo tagging practices by digital natives vary substantially, especially among gender groups. Facebook photo tagging is popular among Indian boys, and they are more willing to embrace and use it. Meanwhile, involvement of Indian girls is considerably limited, as they tend to avoid Facebook photo tagging, mainly due to privacy concerns, as well as social norms and pressures.

Keywords: Facebook; Social Networking Sites (SNS); Photo tagging; Photo sharing; Digital natives

1. INTRODUCTION

Over the years, digital photography has become more common, mainly due to the availability of low-cost, yet high-quality digital cameras, enhancement in the inbuilt mobile phone camera, and a strong desire to share moments with others online. Online photo sharing services have gained immense popularity in recent years as they offer users ease of sharing and other innovative opportunities to share their photos. Digital photo sharing has been an integral part of most Social networking services (SNS), especially Facebook. Since the launch of the photo-sharing feature on Facebook in October 2005, it has emerged as one of the most popular activities. Users have already shared billions of photos on Facebook (Facebook Newsroom, 2013). The integration of photo sharing within SNS has provided users with unique opportunities, such as communicating, express likings and feelings, and tagging. The photo tagging feature on Facebook allows users to tag their network friends in their digital photos. The reach and popularity of the photo-tagging feature is evident in that within a month of launching this feature, about 85% of Facebook subscribers were tagged at least once (Kirkpatrick, 2010). Furthermore, 100 million photos are tagged daily on Facebook (Pesce et al. 2012).

Social networking sites (SNS) have gained significant popularity across all regions, age groups, and genders, especially youth. A survey of American youth by the Pew Internet and American Life Project found that 41% of 12–13 year olds and 61% of 14–17 year olds use social networking sites (Lenhart and

Madden, 2007). Similarly, another study by the same institute observed that adolescents are highly engaged with SNS; estimating 93% of American teenagers having a Facebook account (Lenhart et al. 2010). Various activities revolving around digital photos on SNS including sharing, commenting, liking, and tagging have been embraced by teenagers, as every nine out of ten teenagers post their photos on SNS, making it the most popular SNS based activity (Madden et al. 2013). Furthermore, on Facebook, which is regarded as one of the most popular and frequently accessed SNS, besides posting on walls and reading content, engaging with digital photos including photo sharing and tagging has been one of the popular pastimes, especially among the adolescents (Bruneel et al. 2013).

Even though mobile phones and ICT use among Indian digital natives have been studied recently (Rangaswamy and Cutrell, 2012; Singh and Goyal, 2009), photo-tagging practices among this age group have not yet been addressed. Anecdotal evidence based on our field studies on the relationship between digital natives and photo-tagging practices suggest that this group of users in India actively engage in photo tagging. Despite the popularity and widespread use of Facebook's photo tagging feature, little is known about users' behaviors and motivations associated with this activity in the course of everyday life. Why do users practice Facebook photo tagging? What are the associated motivations, gratifications, perceived usefulness, and likes and dislikes of digital natives in the context of Facebook photo tagging? We argue that a deeper understanding of these queries will help the design of improved, more efficient photo tagging tools and applications aimed at young digital natives as well as SNS users in general.

The present study is based on social media research and the recent proliferation of photo-tagging-based mechanisms. To address the gap in existing literature, the objective of this study is to examine and determine the factors that predict the use behavior of Facebook tagging activity. The second major gap in the existing literature is that most studies are biased towards understanding the digital photography activities of adults (Klemperer et al. 2012; Weilenmann et al. 2013; Eftekhar et al. 2014), while adolescent users have been rarely studied. Adolescents constitute the largest demographic group of Internet and SNS users (Lenhart et al. 2010; Madden et al. 2013) that makes them imperative subjects to study. For addressing these limitations, this study primarily focuses on adolescent photo tagging users on the Facebook platform. Therefore, the study results provide exclusive insight into photo-tagging-related behavior among adolescents.

The aim of this exploratory study is not to give definite answers to the questions of "how to design photo tagging solutions aimed at digital natives" or "how future photo tagging systems should look" or other similar design considerations. Instead, we want to explore the tagging practices among digital natives in developing countries like India to understand future expectations and inspire further debate and discussion into this research topic. The results based on our rich qualitative data, propose possible new research themes for the development of enhanced photo-tagging solutions.

2. BACKGROUND LITERATURE

2.1 Photo Tagging

Tagging is defined as the process of associating a term, label, annotation, or simply a "tag" with a piece of information, e.g. textual information, document, digital photo, video, blog, or bookmark (Nov and Ye, 2010). Tags provide additional information about the content, by adding keywords in the form of metadata (Ames and Naaman, 2007; Angus and Thelwall, 2010). Tagging is useful for informational content since it enables effective organization and sharing (Ames and Naaman, 2007; Russo and Nov, 2010). Tagging has been an important feature of number of web services and is used in various ways. Web services including Flickr, Last.fm, YouTube, and Delicious enable users to make use of tags to organize and search content in users collections, as well as the publically available pool of content (Ames and Naaman, 2007). Content owners as well as general users benefit from these social tagging systems to fulfill

their information management, memory aid, self-organization, re-discovery, and attention seeking needs (Angus and Thelwall, 2010; Zollers, 2007).

Prior research on tagging has mostly focused on developing and evaluating new applications and algorithms (Qin et al. 2014; Malik and Nieminen, 2014; Naaman and Nair, 2008). Various aspect of user needs and motivations in relation to tagging has been somewhat confined to collaborative tagging services having limited SNS features, for instance Delicious (Wash and Rader, 2007; Lin and Chen, 2012), and Last.fm (Song et al. 2013; Firan et al. 2007). Similarly, concerning photo tagging systems, limited research has focused on understanding the actual user needs and motivations of these systems. Most of the prior research examining the subject is generally inclined towards collaborative photo tagging, and more specifically around Flickr (Ames and Naaman, 2007; Nov et al. 2009; Angus and Thelwall, 2010; Kipp et al. 2014) with limited SNS features.

It is important to note that the nature of, and motivations for collaborative tagging are different from tagging on SNS, especially on Facebook. Common motivations for performing collaborative photo tagging are easy retrieval of photos, easily searchable digital collections, recall of any event, person, situation or place from the tagged collection, as well as making a contribution to the online community (Ames and Naaman, 2007). However, users carry out Facebook photo tagging mostly for communication, exposure, commenting, entertainment and affection purposes (Vasalou et al. 2010; Park et al. 2011). Aside from the usage and motivational differences between collaborative and Facebook photo tagging, clear differences can be spotted between the factors affecting the adoption of these two systems. In collaborative photo tagging, the users often consider the process tedious and boring and, therefore, do not often practice it diligently (Vennelakanti et al. 2011). Additionally, users often lack the motivation to perform photo tagging on collaborative tagging platforms (Nov et al. 2009; Vennelakanti et al. 2011). On the other hand, privacy, the likelihood of conflicts and general SNS etiquette and norms are some of the factors that restrict usage of Facebook photo tagging features (Damen and Zannone, 2014; McLaughlin and Vitak, 2012).

Finally, the majority of the preceding research on user behavior and photo tagging has been concentrated on adult users (Russo and Nov, 2010; Malik and Nieminen, 2014; Ames and Naaman, 2007) and digital natives have been mostly ignored. The term “digital natives” refers to pre-teens (aged 11-12 years) and teens (aged 13-18 years) that are born as natives to our digital and technologically savvy world (Vodanovich et al. 2010). Digital natives’ understanding and usage of digital technologies is very different from other age groups. This group of Internet users have opened their eyes and spent their childhood interacting with online media environments including SNS, blogs, virtual gaming, and web communities. Social media platforms have been an active part of their lives, and they engage actively in generating and consuming content on these services (Bolton et al. 2013). Percentage wise, this group makes up the highest ratio of Internet users, as 93% of US teenagers are online (Lenhart et al. 2010). Hence, it is imperative to understand various aspects of technology use by this age group that will help to identify and develop new digital services not only for them, but also for other internet users.

2.2 Photo Tagging on SNS and Facebook

Photo tagging is one of the popular features of many SNS including Facebook. Facebook uses tags differently from traditional photo tagging, as users can tag digital photos to identify their friends in the photo. Adding tags to photos subsequently informs the tagged users by an alert message, and their profile gets linked to the tagged photos. In general, photo tagging on Facebook offers limited functionality as compared to a full-blown photo tagging or annotation feature, yet the feature is considered novel, entertaining and used widely. Due to its variations from traditional social tagging practices, Facebook users engage with photo tagging for different motives and intentions. Tagging photos on SNS increases the visibility of the photos, as well as the possibility for further sharing (Besmer and Lipford, 2010). Photos are also tagged for communication, entertainment, and getting feedback and appreciation in the form of comments and likes (Vasalou et al. 2010; Park et al. 2011).

Photo tagging on Facebook has emerged as an important aspect of virtual possessions since it enables users to manage, organize, personalize, and share their digital photos (Hampton et al. 2012). The same study found that around 12% of the observed sample of Facebook users tagged others in their digital photos during one month. On the other hand, 35% of the users identified themselves being tagged in the photos of their Facebook friends (Hampton et al. 2012). These numbers suggest that at least one-third of users are aware of the photo tagging practice, since they get tagged in the photos shared by others. In another study by Madden (2012), it was found that since many platforms have adopted automated photo tagging, an increasing number of users are removing their names from photos that are tagged to identify them. About 37% of Facebook owners have removed their names from tagged photos (Madden, 2012). This figure indicates that more than one-third of the users prefer to disassociate themselves from tagged photos.

Although previous research on digital natives and their photo tagging activity is limited, the findings are very interesting. For instance, one study observed that teenagers make use of the photo tagging function on Facebook to include even those friends who are not present in a specific shared digital photo (Odom et al. 2011). Additionally, new value is created when the tagger tags and shares a photo online, documenting a particular event or experience with a group of friends. Tagged digital photos support reconstruction as well as re-visitation of the shared past experiences with friends and family (Odom et al. 2011). Photo tagging also creates additional value, as the activity is often used for gifting purposes, similar to music sharing among teenagers (Mendelson and Papacharissi, 2010).

Prior research has also shown significant gender differences in digital photowork practices. Females are more likely to view, share, comment, and tag digital photos than males (Junco, 2013; Mendelson and Papacharissi, 2010). Interestingly, females are more often tagged by others in their photos, resulting in more active engagement and effort in un-tagging themselves than males (Pempek et al. 2009). Females consider displeasure with their appearance in photos as one of the main reasons for un-tagging themselves (Pempek et al. 2009). Privacy is another important factor that leads the users to adopt un-tagging strategies (Klemperer et al. 2012; Besmer and Lipford 2010; Pesce et al. 2012), e.g. requesting the tagger to remove the photo or un-tag manually (Rui and Stefanone, 2013). As females tend to be more concerned about online privacy than male counterparts, they also engage more with un-tagging practices on Facebook (Junco 2013; Pempek et al. 2009).

Despite the popularity of photo sharing on SNS, minimal research has been conducted on the relevant issues, specifically photo tagging in the context of SNS (Besmer and Lipford, 2010). To date, studies on Facebook photo tagging are quite sparse and have mostly addressed the phenomena scantily (Tosun, 2012; Paradise, 2012). While some research has evaluated privacy issues in relation to photo tagging on Facebook (Klemperer et al. 2012, Pesce et al. 2012, Besmer and Lipford 2010), a limited amount of research has explicitly addressed the users' attitudes, behaviors, and adoption of the Facebook photo tagging feature. We argue that most of the studies in the domain have focused on social tagging practices on platforms such as Flickr, almost entirely ignoring Facebook photo tagging. Secondly, the majority of the work has been conducted on adult users or by analyzing various social tagging data-sets. To best of our knowledge, this study is the first qualitative research that aims to build new knowledge by addressing Facebook tagging practices, experiences, and motivations, specifically targeted towards teenagers of a developing country.

3. RESEARCH METHODOLOGY

The current section introduces the research questions, the methodology adopted for the study, general information about the study participants, and details about the study settings.

3.1 Research Questions

The key research aims of the present study are threefold:

- a) To understand various motivations and gratifications of Facebook photo tagging practices.

- b) To examine the perceived usefulness of Facebook photo tagging.
- c) To examine various liking and disliking aspects associated with Facebook photo tagging activity.

3.2 Qualitative Essay

A two-part qualitative essay was designed for the purpose of this study. The first part addressed five main demographic questions, namely age, gender, class-grade, mobile phone and digital camera ownership among respondents. The second part of the essay consisted of eight qualitative tasks, prepared with the specific aim of addressing the main research questions of the study. These eight qualitative tasks included motivations for practicing photo tagging, perceived usefulness of photo tagging, likes and dislikes about photo tagging, attitude when others tag them in digital photos, and type of photos in which one likes and dislikes to get tagged. These qualitative essay tasks were designed based on the objectives of our research, field-level discussions with the target user group, and related literature on the subject.

The qualitative essay-based data collection method offered us the possibility to gain new insights, knowledge, and information about photo tagging and related practices without knowing beforehand about the possible data, insights, and research themes we could explore. The main justifications for practicing a qualitative essay-based research methodology are listed below.

- Our literature review concluded that no prior framework or previous research exists that examines digital photo tagging related practices among digital natives. Therefore, this research topic is expected to be an exploratory study to review and investigate the underlying research theme.
- The exploratory nature of the research enables us to understand better the photo tagging phenomenon, and related practices, habits, likes and dislikes of digital natives. The qualitative essay on photo tagging resulted in a collection of more in-depth and rich exploratory data than other observational methods.
- Past research examining technology preferences of young digital natives shows that young teenage girls remain hesitant to express their opinions and experiences in front of adult researchers (Isomursu et al. 2003). For this reason, focus group discussions and personal interviews were not considered a viable option. Additionally, Indian teenage girls are found to be uncomfortable expressing their views about technology usage for a number of reasons, including parental controls and peer and societal pressure.
- The essays enabled the study respondents to answer the eight qualitative queries anonymously, therefore, we are confident that the richness of the data is not affected by a fear of openly engaging and answering questions about photo tagging, which is considered somewhat anti-social behavior in India.

3.3 Study Participants

A total of 67 Indian digital natives aged 13 to 18 years participated in the questionnaire examining Facebook photo tagging and related behaviors. The study respondents consisted of 35 female and 32 male participants. Less than half of the total respondents owned a personal mobile phone and digital camera. Despite the limited ownership of these devices, all the respondents have regular access to digital cameras as well as mobile phones, e.g. those who do not own these devices are using those of parents or siblings. Detailed description of respondents' demographics is presented in Table 1.

Table 1. Descriptive statistics for the demographic information

Demographic Variable	Category	Percentage (Frequency)
Gender	Male	47.8 (32)
	Female	52.2 (35)

Age	13	14.9 (10)
	14	37.3 (25)
	15	22.4 (15)
	16	16.4 (11)
	17-18	9.0 (6)
Technology availability	Mobile handset ownership	43% (29)
	Digital camera ownership	40% (27)

On average, each respondent contributed 6.1 qualitative statements while the effective response rate for the qualitative essay was 76.3%. A total of 409 qualitative comments and statements were collected from the essay participants. Boys contributed 180 qualitative statements while the girls provided 227 statements. The missing response rate of the eight qualitative tasks ranged between 16.41% and 32.83%. Tasks one and two registered lowest missing response rate, while qualitative task number eight registered highest missing response rate. A possible reason could be fatigue among the respondents, i.e. most respondents were enthusiastic in the beginning but experienced fatigue towards the end of the essay.

3.4 Research Design

The study was organized with two local schools in India's Northwestern state of Punjab in December 2013. English is the primary medium of instruction in both of the participating schools. The qualitative essay study was conducted in English, with respondents fluent in written and spoken English. A brief information session was organized by one of the authors to motivate our target user group to participate in the research. The information sessions were held in the classrooms and lasted for about 10 minutes where target users were informed about the study, research aims and objectives, ethical norms and standards, and other practicalities. This information session was organized at least two days before the actual study so that willing participants could discuss with parents, teachers, and classmates before agreeing to participate. A short pilot study was organized with six teenage students (three male and three female) studying in Grade 8 and 9. The pilot study enabled us to calculate the average time required to complete the essays, difficulties faced by students in interpreting essay tasks, and most importantly, to gauge the richness of the qualitative data generated from each of the eight qualitative tasks. Necessary corrections were included in the final qualitative essay after the pilot study. The pilot study data does not appear in the final data-set. The participating students were given 40 minutes to answer this qualitative essay. The essay answering session was supervised and monitored by one of the authors of the study along with one or two school teachers. Figure 1 (a) presents one of the active session with study participants.



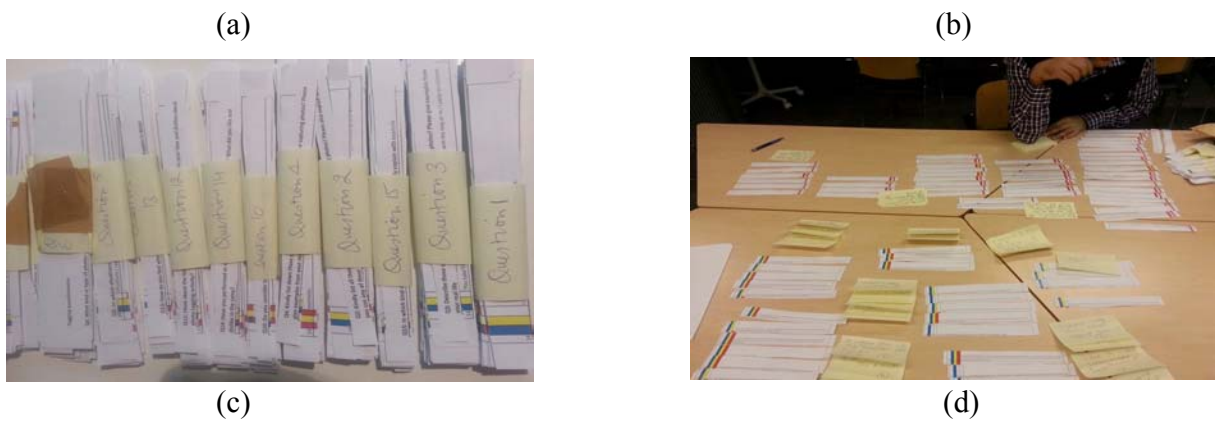


Figure 1. (a) Study respondents answering qualitative essay in classrooms (b) Collected data is color-coded and transcripts are prepared (c) Data-clips for each question is ready for the affinity diagramming (d) Researcher performing grounded theory based analysis

Students were informed that study participation is voluntary in nature, so they can withdraw their participation anytime while answering the essay. Additionally, participants were asked not to write any identification except age, gender, and grade in which they are currently enrolled. The researcher read aloud each of the eight qualitative tasks on digital photo tagging in order to explain the purpose of the tasks. No compensation, gift or reward was given to the respondents. The collected qualitative data was later processed, and certain corrections were made, namely spelling mistakes and expanding abbreviations for clearer understanding during the analysis phase. The data was analyzed first using affinity diagramming, and later by practicing a grounded theory based data analysis approach. Afterward, the findings and themes generated from affinity diagramming and grounded theory based analysis were compared and discussed by two researchers independently.

4. EMPIRICAL RESULTS

The analysis of eight qualitative tasks on photo tagging shows that teenage boys are much more engaged and engrossed in Facebook photo tagging related practices than teenage girls. More than half of the boys explicitly mentioned that they are either practicing tagging of digital photos on a regular basis or possess expert level experience in performing photo tagging. On the contrary, few teenage girls mentioned their active involvement in the tagging practice. Around two-thirds of the girls stated that they do not perform tagging, do not know about tagging, or do not like photo tagging in general. It is worth mentioning that while conducting the study, we also found strong negative attitudes among the teachers regarding photo tagging and particularly about social media. Teachers usually referred to social media and Facebook as anti-social activities. Photo tagging is considered a time wastage and not useful for young children by teachers so it might be possible that teenage girls are also influenced by this belief. Additionally, teenage girls are also found hesitant to discuss photo tagging or openly admit engagement in photo tagging. A thorough analysis of the qualitative comments of the gender groups shows that qualitative comments of teenage boys are more detailed, thorough, and often explained with examples. The descriptions provided by adolescent girls are more concise, short, and to the point. A possible reason could be the very nature of the research topic. Because photo tagging is considered anti-social among girls, they may be hesitant to discuss the subject in detail.

The qualitative data also sheds light on the different photo tagging practices on popular social media platforms. Facebook is considered the most popular SNS among Indian young children. Both genders

classified two broad categories of photo tagging on Facebook: "group tagging" and "cause tagging". Group photo tagging is usually performed with close friends, family, classmates, and relatives. Photos that are taken on planned events are more often used for group photo tagging. Some of the common examples of group tagged photos are birthdays, weddings, picnics, religious visits, and outdoor school tours. The second form of classification is when photos are tagged to create awareness among masses on various social and noble causes. In this type of tagging, mostly photos shared by other users are forwarded to the selected contacts by tagging them in the photo. Some of the notable examples are expressing solidarity with earthquake victims, people suffering damages during the tsunami, victims of child labor; and educating about traffic rules. The respondents believe that tagging photos of social and noble causes enables them to express their feelings and opinions about a topic or subject that might bring awareness to their contacts and society as a whole.

4.1 Motivations for Photo Tagging

Significant differences are identified among gender with respect to factors that motivate Facebook photo tagging practices. The motivations of teenage boys are more practical and tangible than the girls. Summary of these motivations among gender groups is presented in Table 2. One of the most common motivations for tagging photos among the majority of boys is to receive likes and comments by tagged friends and family in their digital photos. The overwhelming majority of the teenage boys argue that photo tagging is an easy way to seek attention, gain prestige, and earn social status within their online and offline social circles. These three gratifications are in direct relationship with the number of likes and comments received for any tagged photos. The boys also consider getting appreciation and applaud from classmates and friends in the form of more likes and comments on their tagged photos a prestige symbol. One of the participants stated "If I don't tag photos, then only a few likes and comments are received for the shared photo, but last time, I tagged some of my pictures and found so many likes and comments by friends and family." Similarly, another boy asserted "I received 32 likes through tagging one of my pictures..." Therefore, the more appreciation one receives in the form of likes and comments; the higher will be one's prestige among the peer group.

Photo tagging is also regarded as a symbol of socialization among most of the teenage boys. Anyone tagging a boy in his or her photo is displaying that he is cared about, valued, and considered important and by others. Attaining prestige and social status through photo tagging is achieved by selectivity and regularity. Some of the boys mentioned that they are highly selective in tagging photos, and they tag their contacts not too frequently. They carefully consider the photos as well as people to be tagged before the tagging activity. They pointed out that tagging only a few photos per month or over a given period is better than tagging frequently. Practicing selectivity in photo tagging is also considered a tactic for maintaining prestige and status among their social circle. If the tagging is carried out too frequently and regularly, it possibly poses adverse effects on the reputes of tagger. Another most common motivation pointed out by many teenage boys is to identify all the people in the photo by tagging them. Identification is considered important since other contacts can easily recognize and know everyone tagged in the photo often resulting in more likes and comments. Therefore, the element of identification is also related to the elements of seeking attention, gaining prestige and social status. On the other hand, all the gratifications pointed out by boys are missing in case of teenage girls.

Table 2. Photo tagging motivations among gender groups

Motivation	Males	Females
Getting likes and comments	<input type="checkbox"/>	
Prestige symbol	<input type="checkbox"/>	
Socialization	<input type="checkbox"/>	
Fun and happiness	<input type="checkbox"/>	<input type="checkbox"/>

Self-expression	<input type="checkbox"/>	<input type="checkbox"/>
Communication	<input type="checkbox"/>	<input type="checkbox"/>
Notify and informant	<input type="checkbox"/>	<input type="checkbox"/>
Fashion symbol		<input type="checkbox"/>
Gifting and appreciation	<input type="checkbox"/>	

Both genders display some similar gratifications including happiness, fun, self-expression, and informational purposes. They consider the practice a symbol of happiness, expressing that tagging others in their photos is a means to share happy feelings with friends and family. The respondents stated that they engage with photo tagging as it is a fun activity that offers them joy and entertainment. Photo tagging is also carried out sometimes for self-expression purposes as they can express their feelings of gratitude in the form of gifting others by tagging them in their photos. Finally, photo tagging for informational purposes is performed to inform easily or notify friends and family about a new photo shared online which they might have missed viewing otherwise. Both boys and girls appreciate getting tagged in photos representing special events, such as weddings and festival celebrations. Usually, on these special events, many group photos are captured and shared online. Both genders possess high motivation towards getting tagged in group photos. Boys appreciate getting tagged in a group photo especially with a group of friends together since it brings prestige, honor and a means to attain gratitude from friends in front of the entire social circle. Teenage girls also prefer to get tagged in group photos. However, they did not mention any relationship between motivation for getting tagged in a group photo and social status, prestige, or honor. Teenage girls prefer to be tagged in group photos especially with family, relatives, and close friends. Most of the girls specifically stated that they would never tag or like to get tagged in their self-portraits. One possible justification for this behavior can be privacy concerns and parental influence.

Similarly, gender differences also exist in the preferences for being tagged in group photos. Boys strongly prefer to be tagged in a group photo where they have a personal presence. The boys expressed strong reservations against someone tagging them in a photo where they are not present in the photo. Interestingly, personal importance in the form of presence in the tagged photo is highly valued among the teenage boys. Similar to personal importance, the boys are also concerned about their personal appearance in the tagged photos. Boys like getting tagged in photos if they appear nice, cool and funny, for instance one of the respondents stated: "If I am looking nice then I don't mind being tagged in a photo." Additionally, boys appreciate getting tagged in photos on nature, wildlife, TV celebrities, and a group of friends together. On the contrary, girls do not have concerns if they are tagged in a group photo in which they do not have a personal presence. However, the girls preferred to be tagged in photos that are meaningful and possess some value for them. Unexpectedly, teenage girls do not display any reservations for personal importance and personal appearance in the tagged photos as boys do.

4.2 Perceived Usefulness of Photo Tagging

The study results also reveal significant gender differences on the perceived usefulness of photo tagging. Most of the girls expressed that photo tagging and particularly tagging personal photos was not very useful. The majority of the teenage girls are of the opinion that photo tagging is unnecessary, not useful, time wasting and intrudes personal space and privacy. However, a few girls perceive photo tagging as a useful activity because it enables them to communicate, express themselves and inform friends and family about any recently shared photos. A few girls also pointed out fashion and peer influence as other factors associated with the usefulness of photo tagging. The girls consider the activity a fashion symbol because tagging is a common activity among friends and classmates, and they keep hearing quite a lot about Facebook tagging from various sources. Similarly, peer influence also plays a significant role, as their friends and family members, especially siblings and cousins engaged in the activity, persuade them by briefing them on the importance and benefits of the activity.

Besides the perceived usefulness of tagging activity among a few girls, many girls reveal common reasons for the lower perceived usefulness of the activity. Most of them exhibit fear of losing their privacy and personal space through tagging. The girls are hesitant towards tagging their photos with others since they firmly believe that tagged photos will be accessible by even those people who are not among their friend list. Due to social, cultural, and family norms, girls do not wish their photos to end up in the hands of strangers. Based on these concerns, girls are extra cautious while tagging or sharing any of their personal photos, even with close friends. Lack of online privacy literacy, potential for misuse of personal photos, and the need for own personal space are some of the other reasons for uneasiness with tagging activity. The reasons mentioned above clearly demonstrate the potentially negative perceived usefulness of Facebook photo tagging. Similar to teachers, some parents also possess a negative attitude towards social media that lead to a lower perceived usefulness of the activity. The girls are also pessimistic about the activity due to the strict parental control of ICT usage including mobile phones and Internet as well as their low endorsement of new technologies. Finally, as discussed earlier, photo tagging is considered an anti-social activity by elders especially teachers and parents. This common belief among teenage girls makes them perceive the activity as useless and unproductive.

In comparison to girls, boys are found emotionally as well as technically inclined towards photo tagging. An overwhelming majority of teenage boys perceive photo tagging as a useful activity. Some of the common reasons and justifications for the higher perceived usefulness of photo tagging among boys are similar to the usage motivations described in the previous section. The boys consider the activity useful, as it can be used to gain prestige and appreciation, gauge personalities, and for gifting. According to boys, tagging a number of friends in a shared photo helps them to gain more visibility among their network, which eventually results in more likes and comments, especially from those tagged in the photo. The number of comments and likes received against a tagged photo defines the tagger's social status and prestige. As a rule of thumb, higher the number of comments and likes, the higher is one's prestige and status in the social network. The respondents consider the activity useful, as it also helps them to gain appreciation and importance from others. Similar to the previous gratification, a higher number of comments and likes is one way of gaining and judging appreciation and importance. Participants describe how gaining positive comments and likes against their photos ultimately gives them a feeling of happiness and contentment. Tagging is also considered a useful activity as it can be used to gauge the personality of network members, especially friends and classmates. Many respondents argued that by looking at the nature of comments and likes, one can gauge the personality of classmates and friends. Lastly, the boys consider the activity useful because it enables them to participate in the online gifting culture by tagging others in their Facebook photos, and their friends doing the same in return.

4.3 Photo Tagging Liking and Disliking

Compared to girls, teenage boys more expressively informed about their preferences and choices in the context of their liking or disliking photo tagging activity. As stated earlier, an overwhelming majority of teenage boys like photo tagging and related practices. On the other hand, the vast majority of teenage girls disapprove of photo tagging. Most of the reasons and justifications for strong attraction to photo tagging, especially by boys, have been covered extensively in the previous section. A quick overview of photo tagging disliking among gender groups is presented in Table 3. A large number of boys are of the opinion that tagging photos is a fun and entertaining activity that provides them good feelings after they tag or get tagged by friends and family. One of the respondents stated, "... when I tag my friends, then I receive more likes and comments on the tagged photo, hence I feel good." According to another respondent "Last Sunday, one of my friend tagged me in a funny photo and I like it." Teenage boys like the activity because it is often considered as a gifting phenomenon. One of the boys expressed, "When my friends tag me in their photos it shows that my friends care for me, and in return I do the same." Hence, tagging is considered a means of online gifting that offers special meaning and importance to the tagger, as well as to the persons tagged in the photo. Teenage boys like tagging as they can express their opinions and feelings

in the form of a photo to a broader audience. The boys also cherish tagging photos as it offers them an opportunity to express themselves and raise their voice for various social causes and activities with a broad audience effortlessly. For example, one of the participants mentioned, “I tagged my friends in a candlelight march photo to register my protest against the recent Delhi rape incident.” The respondents feel empowered with photo tagging because the activity acts as a tool to support various social causes and generate awareness among people.

Even though the majority of the boys like photo tagging, they expressed some dislike, mostly focused on being tagged by others. They dislike being tagged in a photo that is not meaningful or somewhat against social and cultural norms. For instance, they would strongly object to being tagged in abusive language or terms used against any person, religion, or ethnicity. Being tagged in an objectionable photo causes irritation, and might also generate a negative impression about the tagged person in his social circle. They stated that in such situations, they will simply hide that activity from their timeline or un-tag themselves manually from the photo. Additionally, the boys also disliked being tagged in boring photos containing no element of fun or intuitiveness. Interestingly, the majority of teenage boys are quite watchful on receiving any negative criticism from classmates and friends on tagged photos. They believe that negative public criticism on their online activity might have a negative effect on their social status in their social circle and their self-esteem. The comments also suggest that if a tagged photo receives negative criticism, then it is likely that the person will actively engage in measures for disassociating from that photo. Similarly, a tagged photo that carries negative or derogatory comments about the family and very close friends will be quickly untagged or deleted. A few respondents also stated that though the activity is fun and cool, sometimes it takes extra effort and time to think carefully about which photos to tag their friends with and to select appropriate and relevant friends for tagging. The tagging activity does not end after one is done tagging others in photos; sometimes the tagger has to follow the discussion emerging around the tagged photos actively.

Table 3. Photo tagging disliking among gender groups

Males	Females
Being tagged in abusive, unethical photos	Privacy concerns
Possibility of negative criticism	Against social/cultural/family norms
Being tagged in group photos without personal presence	Being tagged in self-portraits
	Being tagged in abusive, unethical photos
	Potential for photos misuse

As mentioned earlier, in contrast to boys, photo tagging among girls is not popular and considered an unattractive activity. The majority of the girls specifically stated that they do not like tagging photos or being tagged in photos shared by others. Most of the girls consider the activity useless and time wasting. Low involvement and appeal of photo tagging among girls can also be attributed to the fact that most of them do not prefer to share their personal photo with others. In general, girls feel uncomfortable if someone tags them in their photos, as one of the respondent stated, “I don’t want to get tagged in someone else’s photo, I am seriously unhappy when someone tags me in their own photos.” Privacy concerns, social norms, and parental control and influence are some of the other reasons that lead the girls to dislike photo tagging.

5. DISCUSSION AND IMPLICATIONS

This study explores various motivations, experiences, likes and dislikes, and practices of Indian digital natives in the context of photo tagging. The aim of this exploratory research is to investigate the

concept of Facebook photo tagging, and related motivations and practices among digital natives of a developing country. The knowledge gained from the qualitative research enables us to gain a better understanding of our target group and gain insight that will allow us to prepare a preliminary framework and inform future research on the subject. The study contributes information about the practices and associated needs of digital natives from technology use, particularly Facebook photo tagging. The results provide insight into the potential gratifications and motivations of boys and girls for practicing photo tagging in their daily routine.

In line with previous research, the current results show clear differences in usage of and motivations for photo tagging between the gender groups (Rui and Stefanone, 2013; Junco, 2013; Pempek et al. 2009). The results suggest that teenage boys see photo tagging as a prestige symbol, socialization icon, and a tool for receiving more likes and comments. They use Facebook photo tagging to honor and pay regard to other members of their network, especially friends. Teenage boys also engage with the tagging activity to gain social status and attention among their peers. Interestingly, personal appearance, which is usually an important consideration for females, is considered paramount for teenage boys (Pempek et al. 2009). Meanwhile, teenage Indian girls are gratified with Facebook photo tagging mainly for self-expression and fun.

The results also suggest significant gender differences in the perceived usefulness of Facebook photo tagging between boys and girls. The overwhelming majority of the boys perceive photo tagging as highly useful, in contrast to girls who marginally perceive the activity useful. Teenage boys perceive photo tagging useful due to its direct impact on their social status, prestige, and self-expression. On the contrary, teenage girls expressed the high perceived usefulness of Facebook photo tagging mainly due to evolving peer influence and fashion symbolism. Teenage girls often perceive the activity useful as it empowers them to communicate with others. The girls also provided information about the reasons for lower perceived usefulness of Facebook photo tagging. Parental control and influence is considered one of the main cause of this perception. Cultural norms and attitudes are one possible explanation for this perception because in India girls more often face strict parental control over technology usage than boys. Additionally, privacy concerns and intrusion of personal space are some of the other reasons for the lower perceived usefulness of Facebook photo tagging. This finding strongly aligns with previous studies that point out stronger online privacy concerns among females (Rui and Stefanone, 2013; Pempek et al. 2009).

Gender differences are also spotted in potential liking, disliking, and usage frequency of Facebook photo tagging. In comparison to teenage girls, an overwhelming majority of teen boys cherish Facebook photo tagging. Boys mostly dislike the tagging activity due to fear of criticism that can lead to a negative reputation within the network. They also dislike being tagged in objectionable and abusive content shared by others. Embracing the activity by boys is mainly centered on previously expressed gratifications, motivations, and reasons for higher perceived usefulness. On the contrary, teen girls like Facebook photo tagging if the activity is performed on group photos containing family and friends. Most of the girls consider photo tagging as a time wasting activity and feel uncomfortable due to family pressure and social norms. Interestingly, most of the above findings are inconsistent with previous studies that point out higher engagement of females than males with overall digital photowork activities on SNS (Junco, 2013). On the other hand, our results perfectly align with the findings by Pesce et al. (2012), indicating that Indian and Brazilian males are comparatively more engaged with Facebook photo tagging (Pesce et al. 2012). The differing results can be explained by the fact that the study by Junco (2013) was conducted with American participants, while ours and Pesce's et al. (2012) studies were carried out with Indian participants.

We believe that better understanding of potential gratifications, perceived usefulness, and potential liking and disliking of photo tagging could inspire novel and useful photo tagging solutions. These topics mentioned above, namely gratifications for photo tagging and possible reasons for dislike, are opposite sides of the same coin. Designers and relevant stakeholders must take them into consideration while designing future photo tagging solutions. These topics will certainly benefit from more attention and future research investigations. Future work can aim to prepare a potential framework for a causal relationship

between perceived usefulness and gratifications, and various challenges and constraints in practicing photo tagging. Additionally such a theoretical framework could be tested via a controlled quantitative survey with a similar target user group from India. For digital nativity and associated research, our rich qualitative data provide some definite answers about different motivations, practices, likes and dislikes, and valuable experiences on photo tagging systems among digital natives. In line with Kinnula et al. (2012), we also agree that it might be that digital natives do not differ from adults in terms of how they make use of or access photo tagging. However, significant differences might exist in terms of what digital natives use photo tagging for, what needs, expectations, experiences, and assumptions digital natives satisfy with photo tagging systems.

6. CONCLUSION

This qualitative study extends new knowledge to the practices of digital natives in the context of photo tagging in the developing world. The previous research examining user behavior, habits, and practices in relation to photo tagging systems has mostly studied adult users' behavior while young digital natives are mostly ignored. Additionally, most studies examining digital natives are organized in the developed world, with a strong focus on the technology needs and practices of digital natives dwelling in western countries, ignoring digital natives in developing countries. The possible cause for this imbalance could be the popular belief that digital natives only dwell in industrialized economies. However in reality, young children from developing world are also quickly transforming themselves into digital natives and are becoming on par with their counterparts in developed world in terms of ICT usage and ownership.

Similar to other recent work examining digital natives and technology use (Vodanovich et al. 2010; Kinnula et al. 2012), we also believe that digital natives should be considered distinct from adult users and this research should be pursued further. The increase in broadband connectivity, easy accessibility of the low-cost yet high-quality digital media and ICT have changed the current practices, motivations and behaviors of digital natives, even in the developing world. This development has not only affected the technology needs, expectations and requirements of today's digital natives, but is also going to influence the design of the potential technology systems in the near future.

Qualitative essays were solely designed for the purpose of this study since we faced different practical challenges in safely organizing this research with young digital natives in India. It is found that qualitative essays are effective in gathering rich qualitative data on a given controversial theme (SNS and photo tagging being conceived as anti-social, timewasting and not useful) in a shorter time span. The qualitative essay method enabled our respondents to register their opinions and experiences around photo tagging activity anonymously. However, on the negative side, we found that since qualitative essays are a non-guiding research data collection tool, it is difficult for the researchers to know the reasons and possible justifications for some of the underlying themes.

ACKNOWLEDGEMENTS

This research has been funded by DIGILLE, Data to Intelligence (D2I) program. The researchers would like to thank all the affiliated companies for their financial support.

REFERENCES

- Ames, M., & Naaman, M. (2007). Why we tag: motivations for annotation in mobile and online media. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 971-980). ACM.
- Angus, E., & Thelwall, M. (2010). Motivations for image publishing and tagging on Flickr. In *Proceedings of the 14th International Conference on Electronic Publishing, Hanken School of Economics, Helsinki* (pp. 189-204).
- Besmer, A., & Richter Lipford, H. (2010). Moving beyond untagging: photo privacy in a tagged world. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1563-1572). ACM.

- Bolton, R. N., Parasuraman, A., Hoefnagels, A., Migchels, N., Kabadayi, S., Gruber, T., Loureiro, Y., & Solnet, D. (2013). Understanding Generation Y and their use of social media: a review and research agenda. *Journal of Service Management*, 24(3), 245-267.
- Bruneel, S., De Wit, K., Verhoeven, J. C., & Elen, J. (2013). Facebook: when education meets privacy. *Interdisciplinary Journal of E-Learning and Learning Objects*, 9, 125-148.
- Damen, S., & Zannone, N. (2014). Privacy implications of privacy settings and tagging in facebook. In *Secure Data Management* (pp. 121-138). Springer International Publishing.
- Eftekhari, A., Fullwood, C., & Morris, N. (2014). Capturing personality from Facebook photos and photo-related activities: How much exposure do you need?. *Computers in Human Behavior*, 37, 162-170.
- Facebook Newsroom (2013). <http://newsroom.fb.com/>
- Firan, C. S., Nejdil, W., & Paiu, R. (2007). The benefit of using tag-based profiles. In *Web Conference, 2007. LA-WEB 2007. Latin American* (pp. 32-41). IEEE.
- Hampton, K. N., Goulet, L. S., Marlow, C., & Rainie, L. (2012). Why most Facebook users get more than they give. *Pew Internet & American Life Project*, 3.
- Isomursu, M., Isomursu, P., & Still, K. (2003). Involving young girls in product concept design. In *ACM SIGCAPH Computers and the Physically Handicapped* (No. 73-74, pp. 98-105). ACM.
- Junco, R. (2013). Comparing actual and self-reported measures of Facebook use. *Computers in Human Behavior*, 29(3), 626-631.
- Kinnula, M., Moilanen, K., & Kinnula, A. (2012). It would be handy if it had pictures, if you can't read: young digital natives as mobile phone users. In *Proceedings of the 11th International Conference on Mobile and Ubiquitous Multimedia* (p. 40). ACM.
- Kipp, M. E., Choi, I., Beak, J., Buchel, O., & Rasmussen, D. (2014). User Motivations for Contributing Tags and Local Knowledge to the Library of Congress Flickr Collection. In *Proceedings of the Annual Conference of the Canadian Association for Information Science*.
- Kirkpatrick, D. (2011). *The Facebook effect: The inside story of the company that is connecting the world*. Simon and Schuster.
- Klemperer, P., Liang, Y., Mazurek, M., Sleeper, M., Ur, B., Bauer, L., ... & Reiter, M. (2012). Tag, you can see it!: using tags for access control in photo sharing. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 377-386). ACM.
- Lenhart, A., & Madden, M. (2007). *Teens, privacy & online social networks: How teens manage their online identities and personal information in the age of MySpace*. Pew Internet & American Life Project.
- Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Social Media & Mobile Internet Use among Teens and Young Adults. Millennials. *Pew Internet & American Life Project*.
- Lin, C. S., & Chen, Y. F. (2012). Examining social tagging behaviour and the construction of an online folksonomy from the perspectives of cultural capital and social capital. *Journal of Information Science*, 38(6), 540-557.
- Madden, M. (2012). Privacy management on social media sites. *Pew Internet Report*, 1-20.
- Madden, M., Lenhart, A., Cortesi, S., Gasser, U., Duggan, M., Smith, A., & Beaton, M. (2013). Teens, social media, and privacy. *Pew Internet & American Life Project*.
- Malik, A., & Nieminen, M. (2014). "Understanding the Usage and Requirements of the Photo Tagging System." *Human IT* 12.3: 117-161.
- McLaughlin, C., & Vitak, J. (2012). Norm evolution and violation on Facebook. *New Media & Society*, 14(2), 299-315.
- Mendelson, A. L., & Papacharissi, Z. (2010). Look At Us Collective Narcissism in College. *A networked self: Identity, community, and culture on social network sites*, 251.
- Naaman, M., & Nair, R. (2008). ZoneTag's collaborative tag suggestions: What is this person doing in my phone?. *MultiMedia, IEEE*, 15(3), 34-40.
- Nov, O., & Ye, C. (2010). Why do people tag?: motivations for photo tagging. *Communications of the ACM*, 53(7), 128-131.

- Nov, O., Naaman, M., & Ye, C. (2009). Motivational, Structural and Tenure Factors that Impact Online Community Photo Sharing. In *ICWSM*.
- Odom, W., Zimmerman, J., & Forlizzi, J. (2011). Teenagers and their virtual possessions: design opportunities and issues. In *Proceedings of the SIGCHI conference on Human Factors in computing systems* (pp. 1491-1500). ACM.
- Paradise, A. (2012). Picture Perfect? College Students' Experiences and Attitudes Regarding their Photo-Related Behaviors on Facebook. *Cutting-edge Technologies in Higher Education*, 5, 261-292.
- Park, N., Jin, B., & Annie Jin, S. A. (2011). Effects of self-disclosure on relational intimacy in Facebook. *Computers in Human Behavior*, 27(5), 1974-1983.
- Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students' social networking experiences on Facebook. *Journal of Applied Developmental Psychology*, 30(3), 227-238.
- Pesce, J. P., Casas, D. L., Rauber, G., & Almeida, V. (2012). Privacy attacks in social media using photo tagging networks: a case study with Facebook. In *Proceedings of the 1st Workshop on Privacy and Security in Online Social Media* (p. 4). ACM.
- Qin, C., Bao, X., Choudhury, R. R., & Nelakuditi, S. (2014). TagSense: Leveraging Smartphones for Automatic Image Tagging. *Mobile Computing, IEEE Transactions on*, 13(1), 61-74.
- Rangaswamy, N., & Cutrell, E. (2012). Anthropology, development and ICTs: slums, youth and the mobile internet in urban India. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development* (pp. 85-93). ACM.
- Rui, J., & Stefanone, M. A. (2013). Strategic self-presentation online: A cross-cultural study. *Computers in Human Behavior*, 29(1), 110-118.
- Russo, P., & Nov, O. (2010). Photo tagging over time: A longitudinal study of the role of attention, network density, and motivations. In *Fourth International AAI Conference on Weblogs and Social Media*.
- Singh, J., & Goyal, B. B. (2009). Mobile handset buying behavior of different age and gender groups. *International Journal of Business and Management*, 4(5), P179.
- Song, Y., Dixon, S., Pearce, M., & Fazekas, G. (2013). Using tags to select stimuli in the study of music and emotion. In *Proceedings of the 3rd International Conference on Music & Emotion (ICME3)*, Jyväskylä, Finland.
- Tosun, L. P. (2012). Motives for Facebook use and expressing "true self" on the Internet. *Computers in Human Behavior*, 28(4), 1510-1517.
- Vasalou, A., Joinson, A. N., & Courvoisier, D. (2010). Cultural differences, experience with social networks and the nature of "true commitment" in Facebook. *International journal of human-computer studies*, 68(10), 719-728.
- Vennelakanti, R., Dey, P., Shekhawat, A., & Pisupati, P. (2011). The picture says it all!: multimodal interactions and interaction metadata. In *Proceedings of the 13th international conference on multimodal interfaces* (pp. 89-96). ACM.
- Vodanovich, S., Sundaram, D., & Myers, M. (2010). Digital Natives and Ubiquitous Information Systems. *Information Systems Research*, 21(4), 711-723.
- Wash, R., & Rader, E. (2007). Public bookmarks and private benefits: An analysis of incentives in social computing. *Proceedings of the American Society for Information Science and Technology*, 44(1), 1-13.
- Weilenmann, A., Hillman, T., & Jungselius, B. (2013). Instagram at the museum: communicating the museum experience through social photo sharing. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1843-1852). ACM.
- Zollers, A. (2007). Emerging motivations for tagging: Expression, performance, and activism. In *Workshop on Tagging and Metadata for Social Information Organization, held at the 16th International World Wide Web Conference*.