Co-experience on Twitter: A study of information technology professionals

Bazilah A Talip and Bhuva Narayan

Abstract

Introduction. *This paper presents findings from a study of information technology (IT) professionals' use of Twitter for their professional purposes. The study aimed to understand information technology professionals' co-experience and how it influences professional activities on Twitter.*
Method*. Eleven information technology professionals who currently use Twitter for professional purposes were recruited.*
Analysis*. This study used online observations and interviews to help to distinguish the objective and observable actions of the participants, and to clarify the ways in which information technology professionals experience Twitter for professional purposes. The data were analysed using constructivist grounded theory.*
Results*. The findings of this study yielded an interesting result: social interaction initiates co-experience. The degree of co-experience that occurred on Twitter is greater compared to other multimedia messaging service platforms. This is because Twitter is a public space that enables user-generated content, communication, and engagement much more easily than other mediated communication environments.*
Conclusions*. Information technology professionals experienced Twitter as a real place where they met and socialised with others; however, it was more than just information seeking and sharing – it was also a place where they created a co-experience by choice rather than by simple chance.*

Introduction

Social media phenomena have transformed the way people experience and use information online. Availability and accessibility of information enables users to share information with a wider audience in a much easier and faster manner than before. This scenario has a significant influence on the way people communicate and engage with others on online platforms. Twitter is a popular microblogging platform that allows users to create and curate their online persona. Accessibility of the platform and availability of information are the main reasons why people prefer to use Twitter. It helps the user to share information and communicate with people around the world and this has a significant impact on user experience and information experience.

The objective of this study was to explore the co-experience phenomenon of information technology professionals' use of Twitter and how it enables network development. Co-experience occurs in social contexts, where experiences are created together or shared with others (Forlizzi and Battarbee, 2004). Co-experience is different from user experience and information experience. User experience focuses on the individual experience of technology use, and information experience is the way in which people derive meaning when they engage with information in their everyday lives. On the other hand, co-experience emerges serendipitously when an individual posts updates, and when others share their stories or experiences related to the topic or post. Current literature reveals no existing empirical study of how information technology professionals experience online social media within their professional practice, although they are generally perceived to be in the forefront of social media development and use. This study aims to fill this research gap.

A total of 734 Twitter threads were downloaded to investigate the occurrence of co-experience on Twitter and eleven information technology professionals were interviewed and the interview transcripts were analysed to differentiate between information sharing and co-experience. Twitter data were publicly available during the time of this study, which allowed the researchers to use streaming API to download the tweets at no cost. Twitter has become a popular data source for many researchers. In addition, semi-structured interviews were conducted to understand information technology professionals' personal experience while using Twitter for professional purposes. This study used Twitter data to investigate the impact of such co-experience on the social contexts in Twitter. This study aims to answer the following research question:

How does co-experience help build professional networks on Twitter?

Related works

The following section discusses research related to the current investigation, focused on three areas: Twitter for professional networking, experience perspective in studying microblogging, and the emergence of co-experience.

Twitter for professional networking

The use of Twitter within any given community is unique in their own way, and some uses are more effective than others. Twitter can overcome geographical dispersion and improve collaborative research. The interaction of participants within the Twittersphere has increased the productivity and process of collaboration and accessibility of the information for wider audiences. Twitter is useful for information seeking, and is a powerful tool for disseminating information and enabling collaborative research (Gu and Widen-Wulff, 2011). Gu and Widen-Wulff (2011) argue that Twitter has influenced information behaviour in the context of scholarly communication. This is because social media content induces *'cognitive and arousal-related effects (*e.g*., attention and physiological arousal)'* (Stieglitz and Dang-Xuan, 2016, p. 241) that *'affect [their] sharing behavior in social media communication'* (Stieglitz and Dang-Xuan, 2016, p.241). Twitter acts as a gateway to other social media and social networking applications (Miller, 2008). Murphy (2008) emphasised that the more friends are added or followed by subscribing to others' feeds, the more visible the account will be. This scenario demonstrates how easily information technology professionals can build their professional networks by following their friends' followers and searching for expertrs in their fields. This is also because Twitter enables users to find new or existing contacts through username, email, location and interests in Twitter.

Power (2015) states that people's decision to follow a profile or not will be based on the profile and bio that is created and shared on Twitter. It is important for information technology professionals to create an online persona that reflects their professional context by describing their areas of interest and/or expertise (Power, 2015). Creating online personas that reveals one's personality will help professionals build a network of people with common interests. The key benefits of Twitter are information, connectivity and mobility (Torrente, Martí and Escarrabill, 2012). In order to reduce information overload on Twitter, Power (2015) argues that hashtags are used to categorise or signpost tweets and organise Twitter feeds, which subsequently helps professionals to facilitate engagement with an intended audience. This situation shows that Twitter offers a sense of place and a sense of belonging by enabling information technology professionals to keep in touch with experts and to keep them up-to-date with information (Tian and Lo, 2014). The information they share on Twitter has led to affordances of collaboration and professional network development. Twitter provides a place for knowledge or information sharing and a way to successfully create and establish collaborative work and professional networks (Farwell and Waters, 2011). Power (2015) highlights that the use of Twitter can enhance professional networking it enablesby enabling professionals to create their professional online persona and reach global audiences.

Experience perspectives in studying Twitter

Information experience is defined as the way in which people experience or derive meaning when they engage with information in their everyday lives (Bruce, Davis, Hughes, Partridge, and Stoodley, 2014). Yates and Partridge (2015) highlight that studying information experience provides valuable insights into the ways in which people relate to their information worlds. For example, Shklovski, Palen and Sutton (2008) investigated people's information seeking practices using information and communication technology during the Southern California wildfires in October 2007. They discovered that the creation of an online community during the disaster occurred by connecting people who shared their concern for the locale threatened by the hazard. People's information experiences within social media during natural disasters are rich, complex and dynamic (Yates and Partridge, 2015). It was evident that these information experiences have a significant impact on disaster management.

Propagation and re-use of information are also a part of the information experience on Twitter. Marwick and Boyd (2011) point out that tweets can be spread further when users repost them on their Twitter accounts, known as retweeting. Retweeting helps introduce content to new audiences and using @username to cite the original author acknowledges the person who originated the message (Boyd, Golder and Lotan, 2010). Starbird, Palen, Hughes and Vieweg (2010) found that retweets during the 2009 Red River Valley flood threat in the United States and Canada influenced the extent of new information. Retweeting brings together tweets and creates a valuable conversational infrastructure, such as actively commenting on tweets or acknowledging that they're listening (Boyd *et al.*, 2010). This demonstrates that retweet behaviour allows the users to be part of the conversation, and influences individual information experience.

Harlan (2014) highlighted that the experiences of creating and sharing information conceptualised as a multifaceted phenomenon. Therefore, the ways in which information is experienced shapes individuals' information action (or information behaviour) and these actions are informed by the ways information was experienced (Harlan, 2014). People's information experience using social media is complex and dynamic, and helps people easily and quickly create and share information (Yates and Partridge, 2015). Social media helps professionals to form connections with people, ideas and knowledge, just as it enables information technology professionals to connect and to develop a personal learning network (Howlett, 2011). Social media also functions as an online information ground, where people use it and experience it the same way as they experience physical information grounds (Narayan, 2013).

The emergence of co-experience

People use social media to share their day-to-day activities, allowing them to socialise and share their experience in virtual environments (Narayan, Talip, Watson and Edwards, 2013), which in turn creates the co-experience. (Battarbee, 2003) argued that co-experience is driven by individuals' social needs of communication. Forlizzi and Battarbee (2004) highlight that *'co-experience reveals how the experiences an individual has and the interpretations that are made of them are influenced by the physical or virtual presence of others'* (Forlizzi and Battarbee, 2004, p. 263). Co-experience in physical locations can take the form of interaction with others, such as at a conference (Forlizzi and Battarbee, 2004), whereas in virtual environments it can be commenting on a friend's conference paper on Twitter or playing mobile or online games with friends (Talip, 2015).

Co-experience on social media is also not limited to a certain number of people or to geographical areas. Instead, it provides public spaces that allow many people to communicate and engage at the same time and participate in the conversation or to access conversations and information. Mutual understanding and context play a significant role in shaping the flow and construction of experience, especially when interacting and engaging with technology (Narayan *et al.*, 2013). Collectively, existing research provides evidence that co-experience in online environments influences the creation and sharing of experiences using mediated communication channels, such as WhatsApp groups. This study aims to investigate such co-experience on Twitter.

Research method

Digital ethnography was one of the techniques used for data collection in this research. Digital ethnography enabled the researcher to use online observation techniques to follow the participants' behaviours and interactions on Twitter. Digital ethnography refers to the practice of observing a community in online spaces over a period of time. Traditional ethnography defines a field site as a space, *'the stage on which the social processes under study take place'* (Burrell, 2009, p.182);therefore, the study of a community that is bounded in online places such as Second Life (Boellstorff, 2010) can be termed digital ethnography. However, studying Twitter is still challenging because it is difficult for researchers to determine the boundaries and scope of the study, as it is a large public space. Burrell (2009) proposed that a networked field site approach is an appropriate technique to reframe Twitter as one part of a *'network composed of fixed and moving points including spaces, people, and objects'* (Burrell, 2009, p.189). Marwick (2013) adopted digital ethnography to investigate Twitter as one node in a network of field sites, and stated that Twitter is a rich site for analysis as it has various groups of users, multiple language communities and a diversity of subcultures, and suggests that it can also be used as the primary place to observe interactions between people over a period of time.

This study used Twitter for data collection to study the online interactions of information technology professionals. Twitter was selected for a number of reasons, including its ability to create dynamic social interaction and its ability to augment other social media channels (Kreitzberg, 2009). Twitter has widely been used for social media research. However, there is limited research on co-experience on Twitter and its influences on professional networking. In this study, a snowball sampling method was used to recruit participants. The researcher identified the first set of participant volunteers by following them for a period of two weeks through online observation and analysis of their tweets prior to interviews. Subsequently, the researcher engaged in interviews and analysed the interview data. Both sets of data were constantly compared to each other as well as to existing theory to look for any emergent patterns. This process was repeated using a snowball sampling technique until a saturation point was reached. The participants were interviewed in order to explore more open, qualitative questions based on their interactions, based on the grounded theory method, where saturation occurs when no new findings emerge from the data and one gets the same codes over and over again. Fifteen participants from around the globe originally agreed to participate in this study; however, only eleven participants agreed to participate in both the observation and the interviews. Table 1 provides a summary the participant demographics.

Total Recruited	Gender	Country of Origin
11 information technology Professionals	Male: 6 Female: 5	Australia: 8
		Malaysia: 2
		Italy: 1

Table 1: Summary of research participant demographics

The research participants in this study are referred to as P1, P2, through to P11. The researcher has maintained the voice of the participants by quoting parts of their interviews verbatim as needed. The study paraphrases participants' tweets to avoid identity disclosure. However, great care was taken so that paraphrasing did not change the meaning of the actual tweets. McKechnie, Julien, Pecoskie and Dixon (2006) argue that it is important for researchers to bring greater consciousness to constructing and interpreting the relationship between the researcher and participants through the writing and presentation processes (Birks and Mills, 2011). The researcher was mindful of these processes.

This study defined an information technology professional as any person who develops, manages, uses, interacts with, or works with information technologies in relation to their jobs or interests on a regular basis. The criteria for selecting the population of this study were that the individuals identified themselves on Twitter as information technology professionals. The selection criteria used were as follows:

1. The participants must have used Twitter for a period at least six months for professional purposes.
2. The participants must have tweeted something that is relevant to his or her research of interest or work, *i.e.*, participants whose accounts consisted exclusively of personal tweets were excluded.
3. The participants must work in an information technology or information technology-related field and currently use Twitter for professional purposes more than for personal use.
4. The participants must use her or his own personal Twitter account for professional purposes, *i.e.*, participants who tweet exclusively on behalf of their organisations were excluded.

Participant ID	Job Title
Participant 1 (P1)	IT developer
Participant 2 (P2)	IT consultant & CEO
Participant 3 (P3)	IT researcher
Participant 4 (P4)	IT librarian
Participant 5 (P5)	IT support manager
Participant 6 (P6)	IT security analyst
Participant 7 (P7)	IT lecturer
Participant 8 (P8)	IT support officer & researcher
Participant 9 (P9)	CEO in Business Process Management
Participant 10 (P10)	Australian e-health researcher & IT lecturer
Participant 11 (P11)	Website malware analyst

Table 2: Participants' job titles

The unit of analysis in this study was the observable actions and patterns of actions (or behaviours) of how the participants interacted on Twitter, and their experiences of use as gathered through the interviews. Although this study did not analyse participants' demographics, their job titles are reported in Table 1 and Table 2 for transparency purposes. This was in line with the grounded theory method in which the unit of analysis refers to the incident and not the person or the research subject (Glaser and Strauss, 1967).

Online observations and interviews were used in this study. The online observation helped the researcher to discern the observable actions of the participants (including frequency of posts, interactions, and type of content) in the way they use Twitter. This was followed up by the interviews in order to gain an in-depth understanding of the participants' thoughts, feelings, and motivations about using Twitter. The participants were interviewed one by one until saturation was reached based on grounded theory methods (Charmaz, 2006). Figure 1 shows the example of interview questions that have been developed for theoretical sampling.

How does this experience compare with professional interactions in physical spaces?	What mediums do you now use for professional communication? Why? • Professional association • Conferences • Workshops • Public lecture/talk How do you compare your experience between physical and online interactions? What sort of professional interactions do you have in physical environments? • What sort of professional interactions do you have on Twitter? • Do you prefer one or both? Do you avoid certain types of people or information on Twitter? Do you browse information using hashtag? Do you do other things at the same while you are using Twitter?

Figure 1: Interview questions for theoretical sampling

Saturation is achieved when new data no longer generates new properties or theoretical insights of core categories (Dey, 2004). Saturation occurs when the data no longer has the ability to generate new ideas or the emerged data already provides evidence to support the conceptual ideas of the study (Charmaz, 2006). The researchers knew that the data collection reached saturation when the researchers interviewed PP9 but included two more participants just to be sure. It is important for the researcher to remain open in data collection and analysis (Charmaz, 2006), but doing grounded theory often requires the researcher to go back and recode earlier data. The researcher coded interviews and Twitter data (tweets) numerous times in order to build conceptual categories around experiences of the use of Twitter for professional purposes.

After following the participants on Twitter for two weeks between September 1st and December 31st 2013, each participant was contacted for a one-on-one interview via Skype or in-person. Interviews lasted between thirty and sixty minutes each. The interview questions for each participant were tailored to the activities or information they shared on Twitter. The participants were asked to have their Twitter accounts open and online in front of them during the interview session to clarify their tweets and to understand the ways that they used Twitter. This study adopted a semi-structured interview approach, as it encouraged the participants to talk freely and share their experiences of using social media for both personal and professional purposes.

A total of 734 tweets were downloaded and eleven interview transcripts were analysed using the constructivist grounded theory approach (Charmaz, 2006). The researcher used the constructivist grounded theory by manually coding the downloaded tweets and the interview transcripts. This research used a constructivist grounded theory (CGT) (Charmaz, 2006) that enables researchers to write the literature review after the analysis, after letting all patterns and theories emerge from the data without any preconceived limitations. Strauss and Corbin (1998) argue that it is impossible for a researcher not to know all the literature in their area. It is possible that even if the social media environment turns out to be incompatible with any theories in the existing literature, there may be other new frameworks that may emerge. Such new frameworks can emerge more easily with the use of a constructive grounded theory (Charmaz, 2006) than with the use of content analysis, which only aims to map the data to predetermined theoretical frameworks. The grounded theory also aids serendipity in the discovery of theory.

Findings

The findings from the study are presented under four themes: Twitter as a backchannel, Twitter for professional networking, Twitter as information streaming, and the dynamics of information sharing on Twitter.

Twitter as a backchannel

Traditionally, information sharing is one of the main activities in physical information grounds, where it is limited and restricted to a certain number of people, such as at a professional conference.

Participants in this study regularly attended conferences or professional networks, as the P7 said in the interview:

> *I have always done a lot of like going to events and networking, you know, professional events and conferences and things like that. (P7)*

This was similar for the P2 who attended professional events, in which he *'just shows at network events for networking'* and followed by P4 who went to trainings, conferences, or library events for professional networking:

> *I guess we go to a lot of training sessions, we go to conferences, and we go to events, sort of library events, so you do meet people there. (P4)*

They found that sometimes it was difficult to engage with people during professional events because the time wasn't right for making conversation. As P4 stated in the interview:

> *Often when you meet people, you don't get the chance to talk even if you do see them. It's a professional event and it's not the right place and you don't think of the right questions. (P4)*

In contrast, Twitter provides a sense of place that enables information technology professionals to share their knowledge with a wider audience, as P4 said, '*I think when you have microblogs it [encourages] you to just say it out.'* Below is an example of tweets, wherein P10 shared his perspectives within his area of expertise (tweets have been paraphrased for participant privacy):

- A vision of big data in health is to find correlations and links between patients and population sets in anonymised data
- Healthcare industry provides many systems & schemas that are highly nested & heterogeneous #xoxo #xxxx
- In healthcare, much data is qualitative & is free text compared to quantitative: sparse, coarse, phenotype #xoxo #xxxx

Twitter enables the participant to create and engage with their communities of practice or professional networks *'because you can sort of see what's happening in a lot of people's lives to some extent and [engage with them] professionally to some extent.' (P4)*

P10 pointed out that, in his experience of attending conferences or networking events, communicating or engaging with many people was difficult. He used Twitter to post about the presenter or papers presented in real time at a conference and some of his tweets are as follows (tweets have been paraphrased for participant privacy):

- RT @Conference: @PresenterA is delivering his keynote at #xoxo http://t.co/kAIvSsrU3N
- RT@Conference: now at #xoxo Efficient Top-K Retrieval with Signatures
- RT @Conference: at last @PresenterA reveals the mystery of complex cost functions in accounting
- RT @Conference: @PresenterA discusses various types of models for Interactive IR #xoxo between conceptual VS formal & mathematical
- RT @Conference: @PresenterA keynote at #xoxo about Economic Models of Search
- RT @Conference: @PresenterA and @PresenterB discuss the theory of information foraging at #xoxo

As P10 also indicated:

> *I go to a conference, you know, really over 3 or 4-days, I really can talk to maybe 20 different people. You know, although, you interact with hundreds of them, the real conversation is down to 20 people and the real message gets only to about 20. (P10)*

Twitter, however, has successfully helped overcome this limitation of conferences:

> *I find that [Twitter] is useful and it actually is quite a good way of networking with other people in the conference as well. (P4)*

Participants often live-tweeted at a conference creating or using hashtags to indicate their attendance, amplify speakers' messages, connect with their own or others' work, and so on. This is often also called a "backchannel" where participants simultaneously communicate with a digital audience even as they are attending a talk or an event (McCarthy & boyd, 2005). Twitter provides a sense of place and a sense of belonging, thus enabling IT professionals to build their professional networks and create their own communities of practice. Twitter allows IT professionals to use it as a digital backchannel that allows the "spontaneous co-construction of digital artefacts" through enabling note-taking, information sharing and real-time engagement in events, including conference presentations and social activities (Ross, Terras, Warwick, & Welsh, 2012). This scenario demonstrates that Twitter acts as a backchannel that enables user to extend their professional connections and reach wider audiences. Over time, the use of Twitter has changed in that it is no longer primarily about sharing information or being present online; rather, the use of Twitter is more focused on the networks themselves.

Twitter for professional networking

Since Twitter enables asynchronous communication, it does not require participants to be present all the time, since they can catch up on what they have missed at anytime. As P1 described: '*"It is okay if you missed things on Twitter, it's just an option.' (P1)* They can always trace back to the information they may have missed and easily contact their connections on Twitter. Thus, Twitter provides temporal settings that influence the way information technology professionals use this medium as a place for communication. The temporal setting is not just a place; rather, in Twitter, the information acts as a temporal anchor, which has had a significant influence on the development of professional networks. Gaining more followers substantially expands the professional networks of IT professionals and helps them be perceived as experts in their field. Moreover, the information flows also facilitate interaction between information technology professionals face-to-face, because Twitter enables connections that subsequently lead to the establishment of human networks. As P4 said*: 'It actually is quite a good way of networking with other people in the conference as well.' (P4).* Hence, it is not just a way of disseminating information to followers, but also a way of making new networks by introducing themselves via their Twitter identities.

This study found that information technology professionals use Twitter to establish professional networks rather than just for gathering or sharing information. Information sharing via Twitter occurs dynamically, as it allows the user to search, share, like, or store the information they have found. P6 explained the reason behind the decision to follow experts on microblogging sites because of their knowledge:

> *Most of them I never met. I just follow [them] because of their work and their contribution. (P6)*

The findings highlight that microblogging is beneficial for networking and knowledge sharing. According to P5:

> *Twitter is very popular with the library community and with the humanities community. So, it was a way to kind of keep in touch with people who I met at conferences. (P5)*

The networking that begins on Twitter remains intact and the relationships continue in a closed network platform due to issues of privacy and confidentiality. P11 described this as follows:

> *The communication that we put on Twitter is more general information. But, if we need more information about the details, we will use direct message on Twitter or we will use Skype or email. Then, we will continue the conversation using email because we don't want that information to be published publicly on the Internet. (P11)*

In summary, Twitter eliminates the geographical limitations that have a significant impact on the ease of information sharing in a physical setting.

Twitter as an information streaming

The participants engaged, communicated, sought and shared information via microblogging, and this can be classified as an information streaming application based on the nature of the tool itself, where you can scroll infinitely and follow hashtags in real-time though their top posts and latest posts tabs.

> *Twitter lets me be social and highly connected and really engaged with people and information without the same kind of energy drain that comes from doing things face-to-face. […] most of the important content anyway will come to me through Twitter. (P7)*

Traditionally, the Internet, electronic mail, blog or short message system (SMS) have been widely used for communication and information sharing. In contrast, Twitter is not only about information sharing, but also about the creation of professional networks. As P11 stated:

> *I follow all the information security practitioners around the globe sharing all about malware on Twitter. If I've seen them before, I can just skip them, but if it's new to me, I can just communicate back with them, asking for more information. (P11)*

Twitter has changed and transformed the way people communicate, whether it is personal or professional related. The participants in the present study used Twitter as an ad-hoc communication tool and any tweets they missed are traceable if needed, which does not require them to be present at all times on Twitter for information or for communication.

> *I don't have a Twitter client running all the time. And I get [latest information], if somebody sends me a direct message or if they, you know, retweet something, then my phone kind of makes a little noise. And I can also ignore that because it just means that so if I happen to have a spare moment, I can look at it but otherwise I could just ignore it. (P5)*

They can go to this information stream any time they want and be able to still get information in their area of interest. They can search for the information that they are interested in, look at the tweets just of the people they are interested in at the time, or simply look at trending topics.

> *I do not really care what I see because it so much. I just scroll to the top and see the default messages, and if I'm interested in anything in particular or, like any trending topics, I just search. […] I might click on an interesting hashtag and from there other posts comes up and also the trending topics. (P1)*

This shows that there are various ways for the participants to find the information they have missed on Twitter, as it does not require them to be present on Twitter all the time. As P5 said in the interview, she accessed her Twitter account or viewed her Twitter feeds during breaks only:

> *I use [Twitter] during my lunch break or you know, in the morning when I wake up, so, I kind of control* it. (P5)

P1 pointed out that she also did not keep her Twitter apps open or access Twitter feeds continually except during her spare time.

> *I don't have my Twitter apps open. Reading the tweets might be when I'm on a bus stop or while watching TV or somewhere else or in the meetings or something I might quickly look what is coming through, that sort of thing, but not necessarily. (P1)*

The participants classified Twitter as an immediate tool because it allows the participants to quickly fulfil their information needs. As P3 described:

> *I like Twitter [because] it's immediate. I can be anywhere and I don't need to think deeply about my post. It could just be a couple of words or a link to something or an observation. And, I can get it out of my system quickly, I think. (P3)*

Twitter not only transformed the participants' information behaviours but also influenced their professional networking in the virtual environments. As P8 said in the interview:

> *I have found this particularly when you go to, like an international conference, and you meet people, that something like Twitter is a great space for being able to stay in touch with people and continue to follow them and keep in touch with what they're doing, which, was really kind of hard to do [in physical location]. (P8)*

P8 emphasised that microblogging is a good place to establish physical or face-to-face relationships in online spaces.

> *I find [Twitter] is a quite good [communication tool], as you can build quite good relationships with people; if you usually met them often face-to-face and then you continue that professional relationship online, even if you are not physically in contact with each other all the time. (P8)*

In this way, Twitter is a useful tool for resource seeking and information streaming for professional purposes. The following are some excerpts from P7's tweets (tweets have been paraphrased for participant privacy):

- If you need any advise on online shopping, I'm happy to help @PersonA
- Also, if you want to outsource your Christmas shopping, I'm happy to help. #xoxo
- Why Do Kids Spend All Day on Social Media? Because They're Not Allowed Out of the House http://t.co/suxKO4StRf via @PersonB

The way participants experience information in Twitter has a significant influence on their information behaviours. The participants ensure the information they have shared and the connection they have created or established on Twitter is vitally important, just like a face-to-face relationship. This is because the relationships they have on Twitter are beneficial in developing and establishing mutual professional networking.

The dynamics of information sharing on Twitter

Twitter is an information mechanism that enables participants to seek, use and share the information they encounter on the Internet and on Twitter. Participants use and share interesting information and often add their own comments before sharing it via Twitter. As P7 stated:

> *If I want to retweet something and I think it's stupid or out of line or inappropriate then, I always add some kind of text that says you know, 'this is ridiculous' and then tweet it, but in general, I try to add some kind of commentary to links before I tweet them. (P7)*

Some participants did not bother to add their own thoughts or opinions when retweeting. This is because they only *"retweet if the information is good for sharing." (P6)* As P3 stated:

> *Every now and then I'll see something on Twitter, that's what I call sort of, you know, someone tweets their opinion on something or blog posts about something, and if that resonates with me for some particular reason, then I'll often retweet. (P3)*

For the participants, the information they encountered or shared may or may not be valuable for their followers, but they nevertheless validated the resources or sources of the information they encountered before they posted it. They read through the information before sending it out from their Twitter accounts and ensured the links to the resources were correct before sharing. P6 explained this as follows:

> *I need to confirm whether the information that I'm going to tweet is correct so I filter it by reading the article and if I found out its something new I'll forward on my discovery and if there is something wrong with the links to the articles then I don't share it on Twitter. (P6)*

The participants believed the information that they shared was important to them and might be beneficial for others. P11 explained the way information was found and shared via Twitter:

> *Those links that were originally tweeted by me were those that I have read, and I found it is valuable for me, and also things that might be beneficial for somebody else. (P11)*

This highlights that the information shared via Twitter reflects on the information technology professionals' identity and affects their online image, which influences the way information technology professionals use Twitter. This study found that the participants considered their online presence to be as important as their physical presence. P7 explained this as follows:

> *I'm really conscious of maintaining connections I've got on Twitter, it is a mutually beneficial relationship. For example, last 6 months when I haven't really been teaching and I haven't done any speaking or gone to any conferences, it's really important for me to be able to keep in touch with those people so that you know, those networks remain intact when I'm back doing my normal job. (P7)*

They are aware that the information that is publicly available on the Internet including Twitter would be stored there forever, and hence it is important for them to ensure they did not share something that could damage their online professional persona. P5 pointed out that she does not post anything about controversial issues or arguments:

> *I kind of tweet things that are safe. They're not very controversial. They are sort of interesting to me and to the people who maybe following me. I don't tweet anything really, you know, that's going to cause any arguments or look bad or that would look bad professionally, and I don't like to tweet anything unprofessional. (P5)*

The information technology professionals also pointed out that information seeking and sharing was more likely to create human networks and that they would continue relationships on more private platforms. P11 stated:

> *Information gathering and information sharing [are] started from Twitter then end up to email or something else. […] Most of the discussion is basically something that is not meant to be public, so it's something like planning for the year or planning of projects, and maybe some algorithm needed to be implemented in the code, so we choose not to make it public, that's when we use other platforms. (P11)*

Information sharing on Twitter leads to the building of epistemic communities or communities of practice. Lave and Wenger (2000) define a community of practice as *'a set of relations among persons, activity and world, over time and in relation with other tangential and overlapping communities of practice' (p. 171).* For example, P7 published a collaborative paper with a researcher in the library and information science field whom she met on Twitter before they officially met face-to-face in a work environment:

> *I'm connected to [Person A], for example, you know, we used to use direct messages on Twitter and we just recently moved to talking more on People Chat but we still will tweet each other backwards and forwards. […] So, I think the first time I met her was maybe 18 months after we met on Twitter and we were already collaborating on research at that point before she came to work with us. (P7)*

In addition, P3 pointed out that Twitter helped him to stay up-to-date with new developments of information technology products and services. Keeping up with the latest information has led to professional networks development:

> *I'd follow a professor or some academics who I respect, I want to read their work and they would follow me and the relationship there that I found [Twitter] was really good because you could actually you know, develop a bit of a [professional] profile and the like. (P3)*

P4 highlighted that she stumbled upon information that led to mutual relationships with experts in their fields:

> *Sometimes when you see something being retweeted by somebody else, you might look at their Twitter feeds to see if it's interesting. So, I follow and I tend to have conversations [with them]. I found it is quite a good way of networking with other people. (P4)*

The findings fit well with the discoveries of Dunlap and Lowenthal (2009) as well as Sheehan (2013), which emphasise the usefulness of microblogging for information sharing and professional purposes that have a significant impact on social presence. It is evident that microblogging is a useful tool for keeping in touch with information and people, as expressed in the following description by P5:

> *My colleagues [are] currently on Twitter. So, I follow them and see what they're tweeting and yes, it's just a way to keep in touch with them. (P5)*

These findings aid in understanding the dynamic and unpredictable nature of information sharing on social media. The information sharing that spreads to human networks has a significant impact on the participants' career development and knowledge transfer. This study emphasises that building professional connections and a community of practice is more important to these information technology professionals than the information sharing aspects of microblogging.

Discussion

This study identified seven factors that impact the way information technology professionals use Twitter for professional purposes. The participants' experience of information on Twitter has a significant influence on their co-experience in online spaces. These seven factors demonstrate that Twitter acts as an online place for information technology professionals to create and establish their professional networking:

1. Twitter is a great place for finding resources: information technology professionals can ask for recommended books, new tools releases, ideas for developing new applications and for crowdsourcing resources for their work.
2. It helps individuals build a personal brand: It has helped IT professionals develop and establish their online professional presence and to be known as an expert in a particular area.
3. It enables partnerships with local or international organisations: It allowed information technology professionals to organise community events regarding their work; directly or indirectly they develop and maintain communities of practice.
4. It allows individuals to communicate with experts in their field of interest: It has helped information technology professionals connect with authors and researchers online. It is a great resource for professional development.
5. It is a source for evaluation: IT professionals can share resources and ongoing work and get feedback, and share encouraging comments. Information technology professionals also share their own work for review or evaluation.
6. It is a place for gathering real-world data: information technology professionals can use microblogging sites to ask for data from their network, like opinions, locations and facts.
7. Microblogging is a medium for asking for help and advice: information technology professionals can use microblogging sites to find out if anyone has advice about technological issues, like when a new Apple product is released or how to solve malware attacks or fix bugs.

In addition, information on Twitter is rich, complex, dynamic, and comes from various perspectives. The relevance of information is hard to determine or to know, especially as new information feeds take over and drown out old information. The findings show that information flows on Twitter are unpredictable within the temporal settings. Twitter provides a sense of place and a sense of belonging in online spaces where information sharing occurs dynamically and the information is infinite. Information sharing is not the main activity; rather, the information flows initiate human networks.

Information flows facilitate social interaction between users on Twitter, and this interaction in turn initiates co-experience. Previously, Battarbee (2003) proposed that co-experience occurred in mediated communication that allows users shared pictures that consequently trigger social interaction. This is because it allows users to create, edit, share and view content with others. This study found that the significant difference between mediated communication and Twitter is that engagement and conversation on Twitter initiates co-experience, and occurs more by choice than by chance, which changes the dynamics of social interaction. This study yielded an interesting result: the difference between information sharing and co-experience is that sharing information does not always need to be a social interaction, whereas co-experience emerges when the information that has been shared triggers also a social interaction. The significant difference between mediated communication and Twitter were the platform and network itself. Many users can access Twitter at once and it can reach to a wider audience, whereas mediated communication like WhatsApp or Short Message System (SMS) is restricted to a certain number of people. This study also found that the information flow

simply facilitates the interaction between information technology professionals on Twitter, which in turnfacilitates a co-experience that simply happens to be an information-related experience. Information technology professionals access Twitter to keep in touch with colleagues and also for purposes of professional development rather than just to gather or share information. Therefore, these findings contribute to theoretical perspectives in the understanding of co-experience within Twitter, along with a foundational understanding of the ways in which microblogging is used.

Information technology professionals use Twitter to keep in touch with colleagues and to engage in professional development rather than solely to share information. This engagement initiates co-experience, such as commenting on, tweeting or retweeting information. Co-experience that occurs on Twitter has a significant influence on information technology professionals' information behaviour; information sharing is not the main activity, but it involves the creation of human networks. This co-experience also triggers social interaction that impacts the development of professional networks in online spaces.

The findings revealed that the information technology professionals' professional networks established on Twitter remained intact and continued through in-person networking events and on a closed network platform by choice. Figure 2 demonstrates the transition from online information grounds (Twitter) to offline, physical grounds. This study highlighted that online information grounds are the place where people also communicate and engage with information serendipitously.

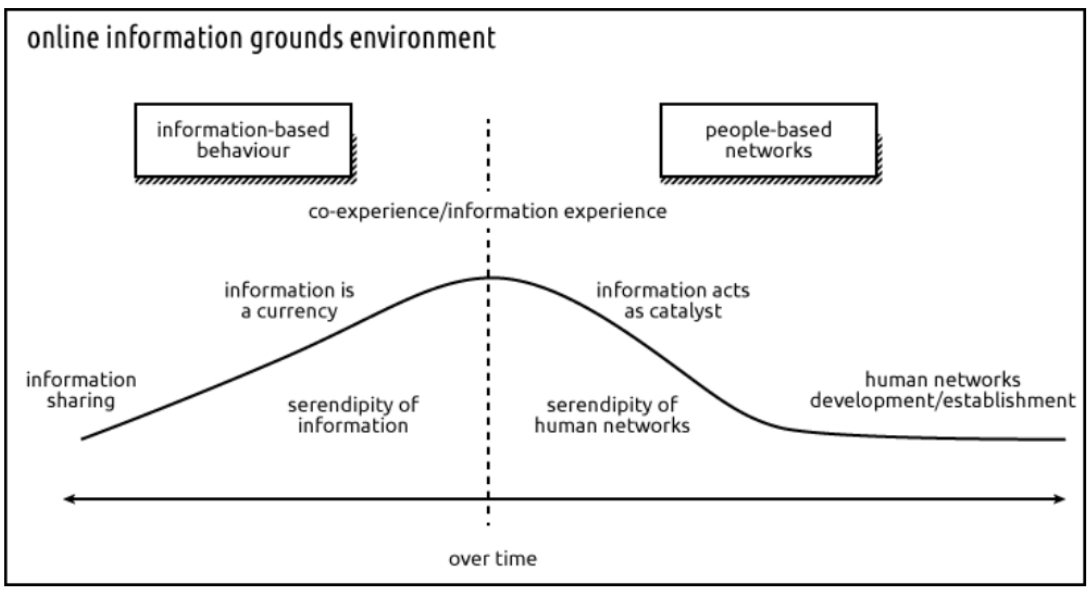

Figure 2: Transition from online information grounds (Twitter) to offline, physical grounds

This is consistent with Boyd (2006), that the privacy on digital spaces and the level of control over their audience are still questionable, which is why information technology professionals continued their conversations in a closed network platform when needed. Nevertheless, these private conversations would not be possible without their initial contact via Twitter. This study's results indicated that social interaction on Twitter is influenced by the individual's co-experience and that it has a significant impact on the individual's information experience. Information technology professionals often shared information and opinions related to their job, as they believed what they were tweeting or retweeting would reflect their self-representation in online spaces.

Conclusion

The outcomes of this study showed that information technology professionals' lived experiences play a vital role in creating co-experience on online spaces. These lived experiences are influenced by social settings in microblogging that have helped information technology professionals create their own online communities of practice. The information technology professionals reported encounters with news and with experts that took place beyond geographical barriers. Twitter enables them to collaborate with experts around the world without restrictions on the number of people involved and the geographical dispersal of information. This is consistent with Fisher, Durrance and Hinton (2004), who found that microblogging provides a temporal setting and establishes the telepresence of individuals. This temporal setting allows the user to share their personal experience while engaging with strangers on Twitter. This social engagement creates co-experience, where the user learns from others' experiences. This indicates that the information experience on Twitter is more about the people than the information itself. Thus, the findings of this study contribute to theoretical perspectives in understanding the differences between information sharing and co-experience within Twitter, along with a foundational understanding of the ways in which Twitter is used. This understanding has the potential to help social media users, scholars and organisations in their use of Twitter for professional development.

About the Authors

Bazilah A. Talip is a Senior Lecturer in Universiti of Kuala Lumpur (UniKL), Malaysian Institute of Information Technology. She received her Doctor of Philosophy and Master of Information Technology from Queensland University of Technology, Australia. Her research interests include but are not limited to information science, service science and Internet of Things areas. Currently, she has been actively working on IoT research projects, which she has received industrial research collaboration fund grant and Dana Penyelidikan Inovasi MARA (DPIM) from Majlis Amanah Rakyat (MARA), Malaysia. She is also a principle investigator of the Service Science and Information Science research cluster in UniKL. She can be contacted at bazilah@unikl.edu.my

Bhuva Narayan is Director of the graduate research programme at the School of Communication at the University of Technology Sydney, Australia. She has an MLIS from the iSchool at the University of Pittsburgh and a PhD from the Queensland University of Technology, Australia. Her research interests are in information behaviours, human learning, design thinking, digital social media, and in social justice issues. She can be reached at bhuva.narayan@uts.edu.au

References

Battarbee, K. (2003). *Defining co-experience.* Paper presented at the Proceedings of the International Conference on Designing Pleasurable Products and Interfaces. Pittsburgh, Pennsylvania.

Birks, M. & Mills, J. (2011). *Grounded theory*. Singapore: Sage Publications, Inc.

Boellstorff, T. (2010). *Coming of age in Second Life: an anthropologist explores the virtually human.* Prinsteon, NJ: Princeton University Press.

Boyd, D. (2006). Friends, friendsters, and top 8: writing community into being on social network sites. *First Monday, 11*(12). Retrieved from https://doi.org/10.5210/fm.v11i12.1418

Boyd, D., Golder, S. & Lotan, G. (2010). *Tweet, tweet, retweet: conversational aspects of retweeting on twitter*. Paper presented at the Proceedings of the Annual Hawaii International Conference on System Sciences, Koloa, Hawaii.

Bruce, C., Davis, K., Hughes, H., Partridge, H. & Stoodley, I. (2014). Information experience: contemporary perspectives. In C. Bruce, K. Davis, H. Hughes, H. Partridge & I. Stoodley (Eds.), *Information experience: approaches to theory and practice.* (pp. 3–16). Bingley, UK: Emerald Group Publishing Limited.

Burrell, J. (2009). The field site as a network: a strategy for locating ethnographic research. *Field Methods*, *21*(2), 181–199.

Charmaz, K. (2006). *Constructing grounded theory*. London: Sage Publications, Inc.

Dey, I. (2004). Grounded theory. In C. Seale (Ed.), *Qualitative research practice* (pp. 80–93). Thousand Oaks, CA: Sage Publications, Inc.

Dunlap, J. C. & Lowenthal, P. R. (2009). Tweeting the night away: using Twitter to enhance social presence. *Journal of Information Systems Education*, *20*(2), 129–135.

Farwell, T. M., & Waters, R. D. (2011). Introducing students to micro-blogging through collaborative work: using Twitter to promote cross-university. In C. Wankel (Ed.), *Teaching arts and science with the new social media (Cutting-edge Technologies in Higher Education, Vol. 3)* (3rd ed.; pp. 297–320). Bingley, UK: Emerald Group Publishing Limited.

Fisher, K. E., Durrance, J., & Hinton, M. B. (2004). Information grounds and the use of need-based services by immigrants in Queens, New York: a context- based, outcome evaluation approach. *Journal of the American Society for Information Science and Technology*, *55*(8), 754–766.

Forlizzi, J., & Battarbee, K. (2004). Understanding experience in interactive systems. Paper presented at the Proceedings of the 5th Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques, Cambridge, Massachusetts.

Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: strategies for qualitative research.* Chicago, IL: Aldine Publishing Company.

Gu, F. & Widen-Wulff, G. (2011). Scholarly communication and possible changes in the context of social media: a Finnish case study. *The Electronic Library*, *29*(6).

Harlan, M. A. (2014). Information experiences of teen content creators. In C. Bruce, K. Davis, H. Hughes, H. Partridge & I. Stoodley (Eds.), *Information experience: approaches to theory and practice* (pp. 101–115). Bingley, UK: Emerald Group Publishing Limited.

Howlett, A. (2011). Connecting to the LIS online community: a new information professional developing a personal learning network. In *ALIA 5th New Librarians Symposium 2011.* Retrieved from http://conferences.alia.org.au/nls5/papers/Alisa_Howlett.pdf

Kreitzberg, A. P. (2009). Building a Web 2.0-friendly culture: success on the Web is about people, not technology. *People and Strategy*, *32*(2), 40–45.

Lave, J. & Wenger, E. (2000). Legitimate peripheral participation in communities of practice. In R. L. Cross & S. B. Israelit (Eds.), *Strategic learning in a knowledge economy* (pp. 167–182). Boston, MA: Butterworth-Heinemann.

Lupton, M. (2014). Creating and expressing: information-as-it-is-experienced. In C. Bruce, K. Davis, H. Hughes, H. Partridge & I. Stoodley (Eds.), *Information experience: approaches to theory and practice* (pp. 69–84). Bingley, UK: Emerald Group Publishing Limited.

Marwick, A. E. (2013). Ethnographic and qualitative research on Twitter. In K. Weller, A. Bruns, C. Puschmann, J. Burgess & M. Mahrt (Eds.), *Twitter and society* (pp. 109–122). New York, NY: Peter Lang.

Marwick, A. E. & Boyd, D. (2011). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media and Society*, *13*(1), 114–133.

McCarthy, J. F., and boyd, d. m. (2005). Digital backchannels in shared physical spaces: experiences at an academic conference. In *Proceedings of Conference on Human Factors and Computing Systems* (pp. 1641–1644). New York: ACM.

McKechnie, L., Julien, H., Pecoskie, J. L. & Dixon, C. M. (2006). The presentation of the information user in reports of information behaviour research. *Information Research, 12*(1), paper278. Retrieved from http://www.informationr.net/ir/12-1/paper278.html

Miller, V. (2008). New media, networking and phatic culture. *Convergence: The International Journal of Research into New Media Technologies*, *14*(4), 387–400.

Murphy, J. (2008). Microblogging for science and technology libraries. *Science & Technology Libraries*, *28*(4), 375–378.

Narayan, B., Talip, B. A., Watson, J. & Edwards, S. (2013). *Social media as online information grounds: a preliminary conceptual framework*. In *Lecture Notes in Computer Science* (pp. 127–131). Berlin: Springer. (Lecture Notes in Computer Science, 8279).

Power, A. (2015). Twitter's potential to enhance professional networking. *British Journal of Midwifery*, *23*(1), 65–67.

Ross, C.. (2012). Case study babble or backchannel: conference tweeting in practice. In C. Warwick, M. Terras and J. Nymhan (Eds), *Digital humanities in practice* (chapter 2). Retrieved from http://blogs.ucl.ac.uk/dh-in-practice/chapter-2/

Sheehan, C. (2013, March 15). How are professors embracing social media? *Teach Online.* Retrieved from https://teachonline.asu.edu/2013/03/how-are-professors-embracing-social-media/

Shklovski, I., Palen, L. & Sutton, J. (2008). Finding community through information and communication technology during disaster events. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW, San Diego, California* (pp. 127–136). New York: ACM.

Starbird, K., Palen, L., Hughes, A. L. & Vieweg, S. (2010). Chatter on the red: what hazards threat reveals about the social life of microblogged information*. In Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW, Portland, Oregon* (pp. 241–250). New York: ACM. DOI: https://doi.org/10.1145/1718918.1718965

Stieglitz, S., & Dang-Xuan, L. (2016). Emotions and information diffusion in social media—sentiment of microblogs and sharing behavior. *Journal of Management Information Systems*, *29*(4), 217–247.

Strauss, A. L. & Corbin, J. (1998). *Basics of qualitative research: techniques and procedures for developing grounded theory (2nd ed.).* Thousand Oaks, CA: Sage Publications, Inc.

Talip, B. A. (2015). IT professionals' information behaviour on Twitter. *LIBRES: Library and Information Science Research Electronic Journal*, *25*(2), 86–102.

Tian, Y. & Lo, D. (2014). An exploratory study on software microblogger behaviors. In *4th IEEE Workshop on Mining Unstructured Data (MUD 2014), 30 September 2014, British Columbia, Canada* (pp. 1–5).

Torrente, E., Martí, T. & Escarrabill, J. (2012). A breath of Twitter. *Revista Portuguesa de Pneumologia*, *18*(3), 137–141.

Yates, C., & Partridge, H. (2015). Citizens and social media in times of natural disaster: exploring information experience. *Information Research*, *20*(1), paper 659. Retrieved from http://InformationR.net/ir/20-1/paper659.html (Archived by WebCite® at http://www.webcitation.org/6WySni6cw)