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The Role of Information Experience on IT Professionals' Twitter Use

https://doi.org/10.1515/libri-2018-0096
Received June 09, 2016; accepted February 14, 2019

Abstract: Twitter acts as an information gateway as it provides a place where professionals network and share their knowledge. Twitter has increasingly influenced the way people use and share information. However, limited research demonstrates IT professionals' information experience on Twitter impacts the way they use it for professional purposes. The study aimed to understand how such information experiences impact on the way IT professionals use Twitter for professional purposes. Eleven IT professionals were recruited for this study to understand the participants' information experience through their own individual perspective, with the data analysed using constructive grounded theory. This study revealed that IT professionals' information experience plays a vital role in creating professional networking and knowledge sharing in online spaces. These lived experiences influence the way IT professionals use Twitter for professional purposes. Thus, the findings of this study contribute to theoretical perspectives in the understanding of information experience perspectives within Twitter, along with a foundational understanding of the ways in which microblogging is used for professional purposes. The findings can help organisations understand and provide for this emerging channel of professional information sharing for its staff and stakeholders.

Keywords: IT professionals, information experience, microblogging, professional networking, Twitter

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Introduction/Background

The microblogging phenomenon has significantly influenced the way professionals communicate, engage and find information. Twitter has been widely used for professional development (Power 2015), digital backchannel, and collaborative spaces (Talip 2015). The accessibility and availability of the information can reach a wider audience than traditional word of mouth information sharing or dissemination (Hughes et al. 2012). Talip (2015) emphasised that availability and accessibility of information have triggered the way IT professionals experience Twitter. Information experience is the way in which individuals experience and derive meaning from the way in which they engage with information and how this has a significant influence on their daily activity (Bruce et al. 2014). Information experience of individual impact on IT professional information behaviour that occurs on Twitter is more dynamic than traditional information behaviours that subsequently influence the way individuals engage with and use information. This study found that information experience on Twitter is more about the people than the information itself. Ease of use and accessibility of information enable professionals to use information that is available on the Internet creatively, and share it as posts on social media.

Not all professionals use social media in the same way. For example, Twitter has been widely used for professional communication, whereas LinkedIn is used to maintain professional networks. LinkedIn requires users to get approval from the person who they want to connect with, friends or others, in order to able to communicate or access information, whereas Twitter enables users to connect with friends and strangers with common topical interests. Burns, Blumenthal, and Sitter (2018) highlighted that Twitter is free and enables users to tweet posts of up to 280 characters that make them more engaging, while they can also share their tweets publicly. In contrast to Facebook, Twitter allows users to share status updates and photos with everyone unlike Facebook where one can chose to share with a select group of "friends". Twitter was chosen over LinkedIn because of its powerful online word of mouth tool, is engaging, and its popularity lies in its endless

networking opportunities (Gerstein 2011). Although LinkedIn is known as the largest professional networking platform, surprisingly, 38 % of LinkedIn users found it difficult to stay in touch with their network (Cohen 2017). Marwick (2013) further suggests that Twitter can also be used as the primary place to observe interactions between people over a period of time. This approach is relevant to this study as its aim is to investigate Twitter as a place for professional purposes amongst IT professionals, as well as to study their experience of whether or not Twitter was different from conventional methods of information communication.

Twitter enables IT professionals to freely communicate and connect with other professionals around the world. The literature confirms that online spaces enable online collaboration, social interactions and attract a wider audience as well as participants from around the globe. Ebner et al. (2010) state that microblogs support collaboration and are useful for collaboration independent of time and place. Increasingly, social media platforms are also perceived as places that are comparable to physical spaces (Narayan et al. 2013). Some research has been conducted in understanding the information behaviours and flow in physical and online spaces in the context of health personnel (Counts and Fisher 2010), the homeless (Fisher and Naumer 2006) and immigrants (Fisher, Durrance, and Hinton 2004) that demonstrates place has a significant influence in the way people engage with information. However, a literature search revealed no empirical research to understand IT professionals' information experience on Twitter, although IT professionals are generally perceived to be at the forefront of social media use, and social technologies such as Twitter are often the result of innovations in Information Technology and developed by IT professionals within the industry.

Chae, Seo, and Lee (2011) classify IT professionals as system administrators, web developers, programmers, system analysts, project/ team leaders and hardware specialists, which also includes front-line to back-end personnel. This study, however, does not limit IT professionals to those who work in the industry, but extends it to academics and teachers of IT. Stoodley (2009) defines IT professionals as "an umbrella term to embrace, for example, computer science, information systems and information management" (7) and professional refers to "someone who regards themselves as a professional" (Stoodley 2009, 8). In summary, in keeping with the broad definitions mentioned above, this study defines an IT professional as any person who either develops, manages, uses, interacts with or works with information technologies in relation to their jobs or interests on a regular basis. For purposes of this study, we define an IT professional as an umbrella term to include professionals working or practicing in the various interrelated fields that involve information and the use of technology in their research or work. This ranges from practicing librarians to professional programmers. Hence, such a study has the potential to generate new knowledge about digital and social media communications within a professional context. This study aims to fill the gap in our understanding of IT professionals' information experience and its influence on professional activities, by examining their information behaviours (information seeking, information sharing, information use etc.) within social media.

In short, this study will investigate IT professionals' information experience by studying their use of Twitter and how this experience affects the way they use Twitter. This study aimed to do that not just through studying the information behaviours of IT professionals through online observations, but also by understanding their information experiences through interviews. Bruce et al. (2014) define information experience as the experience related to the actions, skills, thoughts and feelings of actors within an information environment. Reddy (2014) studied information experience in the context of information seeking methods and focused on student perspectives, and Nalumaga and Seldén (2014) investigated the information experiences of female legislators' activities in the Ugandan Parliament. Experience is a personal point of view that is gained over time (Kuhlthau 1999) and it is influential in a social setting (Forlizzi and Battarbee 2004), which enables people to learn and experience a particular event or product in a certain way. Therefore, it is important not just to examine the information behaviours of IT professionals on Twitter, but also its influence in developing their professional networking and knowledge sharing in microblogging for professional purposes. The main research question that this study will address is: what is the degree to which information experiences influence Twitter use by IT professionals?

Related Works

Previous research related to the current investigation has focused on the following areas: studies about the benefit of social media for professional purposes, the use of information on social media, information encountered on social media and information experience on Twitter.

The Benefits of Social Media for Professional Purposes

The uses of social media within any given community are varied and unpredictable, and some uses are more effective than others. Social media applications can also overcome geographical dispersion and improve collaborative research. The interaction of participants within online collaboration has increased the productivity and process of collaboration and accessibility of information for wider audiences. Counts and Fisher found that a mobile-device social networking known as "Slam" increased the size of online information grounds: "at physical information grounds the number of people participating in any conversation tends to be low as only a finite number of people can hear and participate in a conversation unless a microphone or some other tools is used to project. With Slam, however, any number of people can participate" (2010, 104). Slam allowed instant messages and photos, which is similar to some social media applications. Social media is useful for information seeking, a powerful tool for disseminating information as well as enabling online collaborative research (Gu and Widen-Wulff 2011). Gu and Widen-Wulff (2011) argue social media has influenced information behaviours in the context of scholarly communication. This is because the sentiment in social media content induces "cognitive and arousal-related effects (e. g. attention and physiological arousal)" (241) that "affect [their] sharing behaviour in social media communication" (Stieglitz and Dang-Xuan 2016). Pilerot and Limberg (2011) found that information sharing within Nordic design researcher communities happens automatically when individuals communicate with each other using any kind of telecommunication tools and from any place. They found that a geographically dispersed group of individual academics with a shared research interest want to cultivate collaboration and information sharing in "a structured but informal and flexible way together with peers [online through] shared experiences, discourse and documents originating from, for instance, testimonies from conferences and seminars" (Pilerot and Limber 2011, 317). Mewburn (2012) states that social media has helped her develop and maintain her online community and Deborah Lupton, a sociologist, agrees that social media has helped widen her professional and research networks (Lupton 2012). IT researchers, too, are using social media for similar purposes, but IT is a fast-changing field and hence the immediacy and speed with which social media can help professionals communicate is crucial to its importance. Collectively, existing research has shown that social media has transformed and has a significant impact on personal and professional context of individuals. Thus, this study aims to investigate the influence of Twitter for professional purposes.

The Use of Information on Social Media

According to Lakshminarayanan (2010), information seeking, searching, finding and sharing are the behaviours that have been most studied; yet, very little research exists regarding what humans do after they find the information they need. Kirk (2002) argues that information use has received little attention from Information Science researchers. However, social media phenomena have influenced Information Science scholars in investigating information behaviour. For example, Bunce, Partridge, and Davis (2012) explored information experiences using social media during the 2011 Queensland floods and found four categories of information experience, specifically: monitoring information, community and communication, affirmation and awareness. Moreover, social media applications connect human networks and make sharing information easier (Webber 2013); they also provide "a sense of place" (Narayan et al. 2013).

Bruns (2011) has highlighted that social media is vital to modern emergency responses as its content is user-generated, and social communication is a driver behind a growing consumer participation in user-led content generation. Sharing news, making sense, and saying thanks were the patterns of talk on Twitter during the Queensland floods in 2011 (Shaw et al. 2013). Narayan et al. (2013) point out that social media provides sense of place and Counts and Fisher (2010) emphasise that mobile spaces eliminate the number of participation limitations and hence are not bound to particular physical location. In addition, Boyd and Ellison (2007) highlight the issues explaining that social media provides temporal setting and allows individuals to build their own online communities within their networks. The literature also confirms that social media is not just simply a space for social networking but it is more likely to be as an information space, where individuals can function as information providers or producers.

Social media is important as an information resource as it provides valuable information in real time. This

phenomenon has significantly influenced the way information is being created, used and shared, which is consistent with Sheehan (2013) who explores how university professors have embraced the importance of social media in knowledge sharing and professional networking. However, very few studies have investigated the experience of use of information between conventional and digital information communication. Social media has not only influenced the transformation in the use of information within virtual environments but has also had an impact on social or professional networking. Schultz-Jones (2009) proposes that it is valuable for researchers across various disciplines to study how networks develop and change over time. Narayan et al. (2013) emphasise that Twitter also influences how information access contributes to network development. This is consistent with Power (2015) who highlighted that Twitter has helped professionals create online profile and expands their professional networking. Talip (2015) argued that Twitter provides online spaces that enable IT professionals to easily create their professional network and subsequently share their expertise and be acknowledged as experts in their respective expertise worldwide.

Moreover, Twitter has changed the way IT professionals use and share information on the Internet and social media (Talip 2015). The social communication aids information access in social networks and broadens people's information horizons through serendipitous information discovery. Information horizons consist of various information resources, are determined socially and individually, and may be conceptualised as densely populated solution spaces (Sonnenwald 1999). However, due to the advancement of machine learning and data mining, Twitter applies personalisation techniques to retrieve and display information for users. Personalisation technique limits Twitter users' experience partly based on their profiles, backgrounds, network and geographic locations. Samarawickrama et al. (2017) highlighted that Twitter matches the user search tailored to user interests. Although the outcomes of their search on Twitter are influenced by the profiles, backgrounds, network and geographic locations, the serendipitous information is still wider compared to traditional communication.

Information Encountering on Social Media

Information encountering occurs when information receivers encounter useful information unintentionally from the information resources or sources. Information encountering occurs when "one is looking for information related to one topic and finds information relating to another one" (Erdelez 1999, 25). It is not limited to purposive information seeking but "it can occur upon [a person] bumping into [unexpected] information while carrying on a routine activity" (Erdelez 1999, 25). Erdelez (1999) argues such encountered information may not only be important to them only but often the information may be relevant to others also – friends, relatives and colleagues, or people in the closest environment (e. g. families and close friends). Often, this leads to the person sharing the information with others in what is known as lay information mediary behaviour. Information encountering is a series of episodes that information users experience while seeking the information they need (Erdelez 2004). Erdelez (2004) has proposed that a typical information encountering episode consists of the following functional elements (see Figure 1):

1. Noticing – the perception of encountered information.
2. Stopping – the interruption of the initial information seeking activity.
3. Examining – the assessment of usefulness of the encountered information.
4. Capturing – the extraction and saving of the encountered information for future use.
5. Returning – the reconnection with the initial information seeking task.

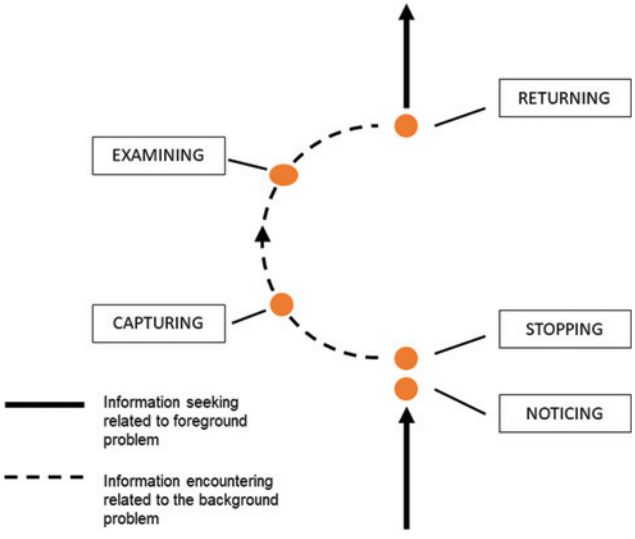

Figure 1: Information encountering framework (Erdelez 2004, 1016).

Erdelez (2004) emphasised that an individual's experience of the information they encounter and the information environment are varied but the processes they encounter are similar. Her findings show that both user capability

and the information environment influence information encountering on the Internet. She states that: (1) information users' capability to encounter information relates to their respective level of sensitivity to the information environment; and that (2) information encountering is a habitual activity adjusted to the unique characteristics of each information environment (Erdelez 2000, 363). Throughout the information encountering processes, information users will encounter information that they did not expect to discover. This is also known as "serendipity of information seeking". It is evident that information encountering triggers the serendipity of information seeking or discovery on mobile technologies (Counts and Fisher 2010), the Internet and the social media environment (Narayan 2013). Fisher, Durrance, and Hinton (2004) agree that serendipity of information seeking is a predominant behaviour that occurs when people encounter information – intentionally or unintentionally – while looking for specific information on the Internet, arranging face to face meetings (Fisher and Naumer 2006) or when using mobile technology (Counts and Fisher 2010).

Information encountering influences the ways in which people develop and maintain their networks. Fisher, Durrance, and Hinton (2004) have shown that information encounters in physical information grounds often lead to serendipity of information discovery but the restriction in accessing information and the availability of information also has impact on information sharing. Talip (2015) highlighted that IT professionals are very conscious with the information they have encountered on Twitter. They will not easily tweet the information, as they will authenticate the information first (Power 2015). IT professionals avoid any activities on Twitter that can jeopardise their online persona and professional networking. Counts and Fisher (2010) also discovered that serendipity of information sharing predominantly occurs in mobile environments but is limited to a certain number of people who can access the information. With Twitter having a broader access and less restriction, it is expected that this study will see more information discovery occurring on Twitter.

Information Experience on 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 et al. 2014). Information experience goes beyond "how they make meaning from an objective entity identifiable as information, to consider what informs them and how they are informed, encompassing the many nuances of that experience within different cultures, communities and contexts" (Bruce et al. 2014, 6). 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 reconnecting with 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). Yates and Partridge (2015) highlight that studying information experience provides valuable insights into the ways in which people relate to their information worlds. Existing research investigates people's information experience during disasters as well as in the context of information literacy, yet limited research investigates IT professionals' information experience while using Twitter.

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 tweets 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 spread the message (Boyd, Golder, and Lotan 2010). Starbird et al. (2010) found that the public often re-used tweets by retweeting information during disasters, which influenced the extent of new information about the 2009 Red River Valley flood threat in the United States and Canada. Retweeting brings together tweets and creates a valuable conversational infrastructure like actively commenting on tweets or acknowledging that users are listening (Boyd, Golder, and Lotan 2010). This demonstrates that retweet behaviour makes users part of the conversation, and part of the information experience. However, no prior studies have explored IT professionals' information experience microblogging for professional purposes as its research object.

Research Design

The researcher recruited IT professionals who identified themselves as IT professionals on Twitter, as IT support to top management in their respective companies. The participants held the following positions: IT developer, IT consultant, IT researcher, IT librarian, IT support manager, IT security analyst, IT support officer, IT lecturer, CEO in Business Process Management, Australian e-Health researcher and Website malware analyst. The researcher did not perform background checks for each individual

who identified themselves as IT professionals. However, the researcher created a set of participant selection's criteria guidelines to ensure the credibility and reliability of the participants. First, the researcher examined the participants' account to determine whether or not they had been using Twitter for at least six months and tweeted or retweeted information relevant to his or her stated work area. For example, if the participant was working on information security, they might have shared information about new technology for security or might have had a conversation about that on Twitter. Second, the researcher checked each participant's timeline to ensure that the participant shared more work-related information than personal information: sometimes participants shared information about entertainment news, current affairs, weather or sports along with some personal context, but they were not excluded. Third, the researcher contacted participants who agreed to participate in this study to confirm their job title and determine whether or not they were working in an IT or IT-related field.

Online observation and interviews were used for this study and the data were analysed using constructivist grounded theory (Charmaz 2006). The online observation was used to map out the structure and content of online social media interactions, while it also helped the researchers discern the information behaviours, or the objective and observable actions of the participants. This was followed up by interviews in order to get an in-depth understanding of participants' thoughts, feelings and motivations. The interviews also helped us understand the participants' own perspective on their information experience. In addition, the researcher also acts as an analytical instrument in data analysing to maintain the "methodology restlessness" (Richards and Morse 2006, 61) that occurs when a researcher views the data from various angles and constantly compares the emergent findings until data saturation is reached.

This study recruited 11 identified IT professionals who were each followed via Twitter for two weeks between September 1, 2013 and December 31, 2013, with their tweets downloaded with their permission. A total of 734 tweets were downloaded and analysed using a constructivist grounded theory approach (Charmaz 2006). The tweets were coded, categorised and constantly compared between participants, and between codes, which enabled the emergent findings from the data to rise organically, as seen in Figure 2 and Figure 3.

The connection of tweets and their information behaviour enabled us to develop interview questions to understand participants' personal experiences and to examine

NO	DATE	TWEETS	INITIAL CODING
1	28 Oct 2013	Excited to be attending Kickstarter school tonight only two weeks to go until Australia & NZ projects launch! http://t.co/mj84Ln65Gh	letting her followers know about her new Kickstarter school project launch
2	26 Oct 2013	sauramaia @timckenzie @Kalinskald Hi! We're brainstorming & data hunting today but we'll definitely continue our project beyond #healthhac	returning feedback about her new project launch to her followers who were asking an update
3	26 Oct 2013	@sauramaia We're enjoying being part of the hack regardless. Thanks for all your efforts	thanking her follower-cum-her hacking project participants
4	26 Oct 2013	@aneesha aww thanks :) We're taking it pretty easy here, having fun but I don't think we'll produce a finished hack by end of the event	thanking her followers who congrats her hacking project success
5	26 Oct 2013	But thanks to the #HealthHack team in Melbourne, especially Maia for including us!	thanking her project sponsors
6	26 Oct 2013	Lesson learnt from #HealthHack today - it's not as much fun and more difficult participating remotely in hackathons via hangouts and twitter	letting her followers know her experience doing the hacking project
7	26 Oct 2013	@thatpatrickguy! Guess you've seen this?Nice project to get you started with both :) http://t.co/LcrtY2hzGX	congrating her followers because of his/her project success
8	26 Oct 2013	Brain still reeling with ideas from WD513 and eResAu this week, but it's time to focus:Participating remotely in #HealthHack from SQL today	letting her followers know an update on upcoming hacking project event
9	25 Oct 2013	@_kyliejane thanks, lovely to meet you too!	thanking her followers who congrats her project success and shows her gratitude to her followers
10	25 Oct 2013	At the airport,mind buzzing after my first Web Direction South conference #wds13	letting her followers know her current location
11	25 Oct 2013	@OphelieLechat fantastic!thanks :)	thanking her followers who congrats her hacking project success
12	25 Oct 2013	@OphelieLechat ooh,yes please!	thanking her followers who wants to contribute ideas for her upcoming project
13	25 Oct 2013	thatpatrickguy Take a look at http://t.co/vYauwEibNC for some info to get you started	giving an information to her follower who want to start a project
14	25 Oct 2013	RT @NodeBotsAU: Next #NodeBots Day is in Brisbane on November 20. Stay tuned for details!	RT other people information on upcoming NodeBot day in Brisbane
15	24 Oct 2013	RT @ajfisher: IoT is annoying because hardware engineer don't deal with people.This is why web peeps cutting across to hardware is so imp...	RT about hardware and software communication communication breakdown
16	19 Oct 2013	I'll be running a hands-on tutorial working with sensors & Johnny-Five at disruptive tech for research unconf today http://t.co/VUL129fqC5	letting her followers know that she is running a tutorial
17	15 Oct 2013	RT @garrows: If anyone is really keen to try now, load this as an unpacked chrome extension.https://t.co/pHN3Lv5NK1 #nodebots #trpt	RT other people information of Google chrome extension
18	15 Oct 2013	Tapster: sweet 3d printed mobile app testing robot powered by Arduino + Johnny-Five https://t.co/YNuwo1KGeV	sharing a link about new 3D printed mobile apps
19	15 Oct 2013	RT @dealaw: The @SLQedge is looking for a Hack Catalyst. And a Hack Resident. #BneJobs http://t.co/4CTDrgOgJp	RT other people advertise JOB vacancy
20	14 Oct 2013	@clinton_roy islands,perhaps?	giving suggestion to her follower

Figure 2: Example of initial coding for Twitter data.

FOCUSED CODING	CATEGORIES	NOTES
SHARE her new project **USE** link to the project details	EXPERIENCE OF USE	She's really concerns on her reputation, which she only tweets and RT anything related to her work.
SHARE her updates on a new project	RESEARCH PURPOSE	tweets to avoid any reputation damage.
SHARE thanking her participants	HOBBIES	Whatever she tweets that is personal interest means directly to her research interest and work related.
SHARE thanking her project sponsors	EXPRESS GRATITUDE	She only uses Twitter for professional purposes.
SHARE her experience did the hacking project	TECHNOLOGY ETHUSIASM	
SHARE congrats her followers **USE** a link to the project	PERSONAL DATA ENTRY - METAPHOR	
SHARE her an upcoming event	EDUCATIONAL NEWS FEED	
SHARE thanking her followers	EXPRESS GRATITUDE	
SHARE her location	BUSINESS NEWS FEED	
SHARE thanking her follower who contribute an idea for her project	WELL-BEING NEWS FEED	
SHARE her gratitude to her follower who want to contribute an idea for her next project	POLITICAL NEWS FEED	
SHARE her experience starts her project	GADGET LOVER	
SHARE an upcoming event **USE** a link to the event		
SHARE other people experience difficulty between h/w and s/w developers **USE** other people	NEW CATEGORIES	
SHARE her workshop **SEEK** participant	PET LOVER	
SHARE information about Google Chrome **USE** other people tweet	COMMUNICATION SITE	
SHARE information about 3D printer using mobile apps **USE** other people tweet	EVENT PROMOTIONAL	
SHARE job advertisement **USE** other people tweet	WEATHER ALERT	
	SCIENCE & TECHNOLOGY NEWS FEED	

Figure 3: Colour coded approach in data analysis.

the extent to which they use Twitter for professional networking rather than just as a part of their job description (e. g. social media policy maker, social media manager).

After following them for two weeks, the participants were contacted for a one-on-one interview, and each interview was conducted for between 30 and 60 minutes. The interviews were coded and repeated again until the emergent categories were saturated. 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 researcher knew that the data collection reached saturation when the researcher interviewed participant 9 (P9), 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.

The coding process was conducted manually; the researcher went through 734 tweets from participants and the 11 interview transcripts. The researcher did not use any automated text software in analysing the data. By way of this technique, the researcher read the data line by line and could see the emergent pattern easily, and even though it was time-consuming, the outcomes were satisfying. Using the manually coded data, the researcher also understood the phenomena clearly and reduced data redundancy. In order to ensure the connections between the findings, the researcher used the "memoing technique" to constantly compare between various points of data as well as between the data and theory. Memoing technique is one of the ways to sort emergent codes and categories for constant and continuous comparison in the grounded theory (Glaser 1998). The researcher utilised memoing to register ideas about the ongoing study that might eventually appear in the analysis, thereby not excluding any serendipitous emergence of theoretical connections. Constant comparisons in the grounded theory helped the researcher to generate categories, which resolved the main concern; inter-coder reliability was employed within the supervisory team to ensure the reliability and validity of the data. Intra-coder reliability assures "the consistent manner by which the researcher codes" (Van Den Hoonaard 2008, 446). This process was conducted numerous times with the supervisory team until no new codes emerged from the data. The grounded theory procedures followed in this Twitter study are detailed below; they are based on the constructive grounded theory approach (Charmaz 2006), as seen in Figure 4.

1. Initial and focused coding was conducted wherein the researcher read the 11 participants' tweets and interview transcripts to become familiar with the data. Next, the researcher coded the participants' tweets line by line and their interview transcripts were coded answer by answer. The emergent findings were then categorised and comparisons were constantly made between data and data as well as between data and theory.
2. In the initial coding for Twitter, the researcher looked for indicators of categories of behaviours, named them and colour-coded them on a spreadsheet. Interview

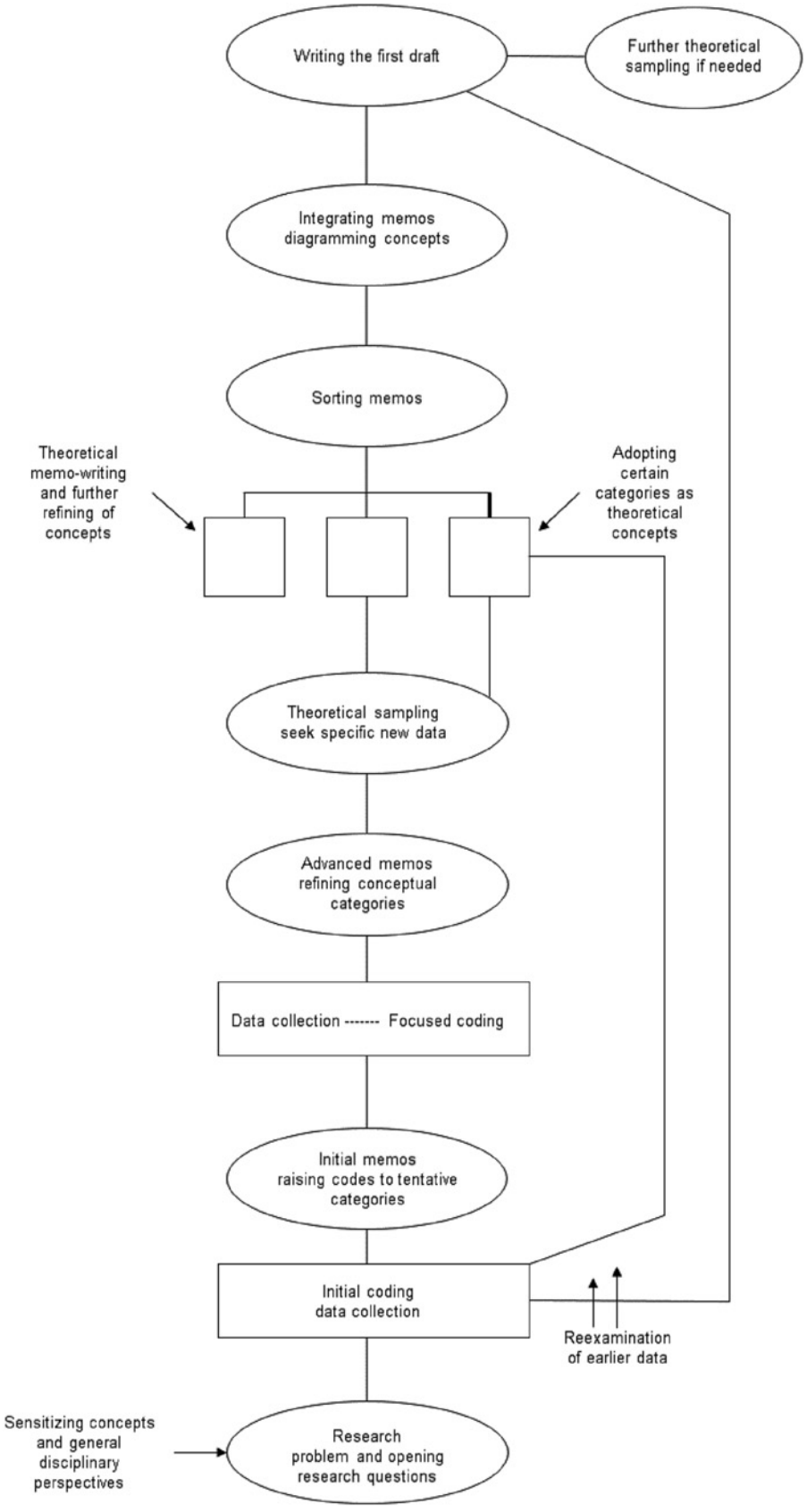

Figure 4: Constructive grounded theory process (Charmaz 2006, 11).

transcripts were coded manually using Microsoft Word's highlighting and commenting functions and the researcher looked for new and emerging codes and categories to be compared for further analysis.

3. Later, the general codes that emerged were compared with each other and crosschecked by everyone in the research team before conducting a more focused coding. The identified codes were compared to find consistencies and differences. Consistencies between codes (similar meanings or pointing to a basic behaviour) revealed categories.
4. After constant comparisons were made between data, the emergent categories were compared based on data and theory. This technique was conducted repeatedly until there were no new emergent categories. The researcher "memoed" or made notes on the comparisons and emerging categories.
5. When no new codes emerged from the data, the category was considered saturated. The procedure helped the researcher to further clarify the process in analysing the data using the constructing grounded theory techniques.

Findings

Discussion of the findings are divided into two themes: from information monitoring to information organising and from information behaviour to information experience.

From Information Monitoring to Information Organising

Information monitoring occurred when the participants monitored their feeds everyday as a routine, using the microblogging sites as an immediate tool. The results show that information monitoring is one of the dominant behaviours that influenced the participants' information use and sharing via microblogging. This study found that participants monitored information on Twitter by skimming through the Twitter feeds every day. The participants pointed out that they are monitoring their feeds every day in the morning or during their spare time. As Participant 5 and Participant 11 pointed out in the interview:

> I use it at the time that I have time to use it. For example, during my lunch break or, you know, in the morning when I wake up. (P5)

> The first thing in the morning, what I do is open up my Twitter client and go through the first 200 messages, while waiting for the client to bring other messages. (P11)

Monitoring behaviours usually involved various other information behaviours in order to make sense of the information encountered while monitoring microblogging site feeds or hashtags. Participant 7 described this process as follows:

> I use hashtags like #phdchat and TweetDeck so I can see what people are saying. I recently did the academic writing month. So, I used #AcWriMo and kind of monitored that as well and used that when I was tweeting about my own writing. (P7)

The participants also often monitor conferences or popular hashtags. They often engaged in information seeking or searching behaviours at the same time, as Participant 4 explained:

> I use it a lot with conferences. That's my biggest use actually and why I keep it. Because I go to conferences, I might follow the hashtag for the conference, I tweet. I like that because it makes me take notes, it makes me think about what is specifically important at a conference. You know, it makes you think like what is the real message coming from this? And I find that useful. (P4)

Participants used microblogging sites because they can get the latest news about their topic of interest and monitor the information anytime. They used selected resources of information on a regular basis concerning news, weather, research, hobbies and special interests, and this formed a significant part of the participants' information behaviours. However, this kind of information was not work-related, but rather a kind of general knowledge about topics that interested them. Much of the general ad-hoc communication happened while they were monitoring their information worlds. As Participant 2 described:

> I use Twitter to try and keep up to date with news and current affairs impacting other countries as well as feed my need for science and technology news. As you have seen only this week, many contacts of ours are in countries impacted by the typhoon – I use Twitter to communicate with them to ensure they are safe. (P2)

The monitoring of information about their topics of interest on microblogging sites subsequently triggered information seeking to validate the information they encountered. The participants reported that they regularly monitored the information by skimming through their microblogging site feeds. As Participant 3 explained:

> I use Twitter 24/7 no matter where I am. I've got the opportunity to actually start skimming that activity stream, the information stream of posts from the different people I am

> following. There's certain people, certain topics I keep a look out for, that I guess I find interesting and I'll either read their comments or look for a link to an article. (P3)

Participant 5 emphasised that she validated the information she discovered on Twitter by authenticating the origin of the resources before sharing it on her Twitter:

> If it's news, then I'll go and look at the news sites like ABC or something like BBC news. If it were a technology thing, I would go and search for it and find links to it through Google. If it's sort of more of a local knowledge, I might talk to my friend and my colleagues to find out whether they know anything about it before I share it. (P5)

The significant difference between monitoring information on Twitter and other online sources is that Twitter is like a gateway to other online platforms (e. g. websites, blogs). Participant 11 pointed out that he monitors his Twitter feeds every day because he can just simply go to Twitter to get the latest news as a starting point:

> Twitter is my bookmarking that I can retrieve or search information easily. [...] I have stopped running my RSS client, and due to Twitter existence I would say it is very and highly useful for me. Before this I needed to follow all the blogs and everything, so I need to run the RSS client to get to know which website has been updated from time to time. (P11)

Accessing Twitter also allowed participants to retrieve the information they missed and enabled them to search the information using hashtags, search functions or the discovery tab. Twitter helps the participants to access their information world much easier, making the experience easier. Participant 7 described this as follows:

> I use [Twitter] to keep up to date with topics [that] I'm interested in and I just save searches for hashtags in Twitter [if I missed the information]. (P7)

Participant 5 also pointed out that she used the search function and discovery tab:

> I often do search, if there is something happening. Sort of do research to see what other people are saying about that something. So, something in the news or there's like a new Apple product released or something like that. I also look at the trending topic and I look at the discover tab as well to see kind of what it's recommending for me. (P5)

This enabled the participants to be in the information loop all the time. It was evident that currency of information is essential for IT professionals as IT is rapidly and continuously developing. Participant 6 explained this as follows:

> I follow groups of people from technology and security to keep up to date with the changes in the computer industry. Twitter is one of the best mechanisms so far to get the latest news as the development in the computer industry grows rapidly. Now, the best way to get information for me is to follow certain prominent people on Twitter to get the latest information. (P6)

Following experts in order to intentionally encounter the latest information from them is a kind of information monitoring. This behaviour is similar to conventional information monitoring such as subscribing to RSS feeds, but following experts on Twitter highly increases the opportunity to be noticed and acknowledged in the fields. As participant 1 said in the interview:

> For professional level for Twitter, I usually follow different people and I might also retweet some of their posts. I retweet when I think something will be interesting or useful to my followers. (P1)

The participants valued the information and the expertise of experts in a virtual environment, which can lead to positive interactions between members of the small world (Burnett et al. 2008). The finding is mapped well with small world theory (Chatman 1991) as the participants followed people whom they trusted and whose information they valued, seen with how participant 3 explained the way he started to use Twitter for professional purposes:

> I started the Twitter account four or five years ago as a way to connect with professionals like in the BPM, in the process base to follow up their work, to share articles and the like. And once I started doing that I found that they would follow me as well. (P3)

The use of microblogging sites helped participants to expand their networks and share their knowledge much easier and faster, as Participant 3 described:

> So, I think in a couple of years I used it actively to build that professional network and connections to academics and industry departments. As I was reflecting on this recently I realised I do less of that activity now because potentially I've got a lot of followers already. (P3)

Microblogging had a significant impact on the participants' information needs while they monitored their information world in Twitter, as indicated in the following description by Participant 1:

> I use Twitter for professional reasons to keep up to date, so I often look at feeds from people I am following to see what new resources or tools become available for the day. It is also a good way to keep up with a number of knowledge areas coming at you at the same time, so you know different technologies of interest. (P1)

The findings of this study show that the interaction and communication that occurred while monitoring information on Twitter involve many information behaviours, and these behaviours are not limited to information seeking and sharing. This study also found that the participants used Twitter as information repositories, which allowed them to organise or bookmark information that may be useful for future references. Information organising behaviour is "the process of analysing and classifying materials into defined categories, directories, folders, or using other methods" (Lakshminarayanan 2010, 160). Information organising includes the way individuals organise information using their own methods to establish their approach to organisation to retrieve information easier and faster.

This study discovered that Twitter enhanced the participants' information seeking and sharing. Previously, they had to subscribe to many Rich Site Summary (RSS) feeds to meet their information needs and it was difficult to monitor and manage. As Participant 7 explained:

> I've let Twitter become like a filter for me. I used to subscribe to 200 RSS feeds and check them religiously but, over time, I've realized that if I keep my Twitter network really honed and focused on the things that I am interested in most of the important content will come to me through Twitter. So, from that respect, as I've gotten busier, it's become more important to me to have good connections in Twitter who share really interesting content because that's the only way I'm going to see that content; I just don't have, you know, that volume of RSS subscriptions or anything anymore. (P7)

The participants also used online personal portals to electronically store the information for later use. Participant 11 described his use of microblogging sites for information organisation as follows:

> I have started to integrate my Twitter feeds into my system that will basically look for the tweet that I have posted with the link, and it will go into a database with a proper search engine so that I can easily search my previous tweets. (P11)

This study found that retweeting is a kind of information organising for some of the participants. Retweeting enables them to retrieve the tweets that they may not have the time to read at the time and they can also find the tweets for future references once they are in their own stream. As Participant 11 said in the interview:

> I use Twitter also for my bookmark. Once I found an interesting link that I might refer back to later, I will retweet the link. (P11)

In addition, information organisation influenced the way IT professionals organised the information they encountered. For example, the participants revealed that when they were starting to use the Twitter microblogging site, they used hashtags to group information by topic or to bookmark it for themselves. They organised the information using the list features on Twitter by grouping and naming it for the specific audiences, so it is easy to find the information.

One of the participants explained how she used Twitter to easily give updates to her students about her classes:

> Each semester I set up a list for my class. So, for each class, I'll have a list of the students that are in the class just so that other students can easily subscribe to it. The other thing I do is maintain a list of interesting [professional] people for my students so that they can subscribe to them if they're new to the industry, but I've been a bit slack with keeping them up to date. (P7)

The participants used the list function on Twitter to organise information that they subscribed to or to organise anything that they encountered that was interesting for future use. The use of lists was not limited to information organisation but was also involved in organising followers. As Participant 6 explained:

> I do use lists because in my case there are several domains for example in computer security, such as technical and managerial science as well as technology science, so it is important to organise it for future use. (P6)

People adopt various methods to manage information that they encounter on the Internet for re-use (Jones, Bruce, and Dumais 2001). For example, people often "emailed the web addresses (URLs) along with or without comments to themselves and to others, printing out web pages, saving web pages to the hard drive, pasting the address for a web page into a document, and pasting the address into a personal web site" (Jones, Bruce, and Dumais 2001, 119). The present study found the participants still used email to communicate and to organise information they found useful to be reused later on. As Participant 6 said in the interview:

> I also email [to myself] tweets that are interesting for me to refer [back] to later; normally the tweets contain URLs or hyperlinks. (P6)

However, this study shows that the participants used a diverse range of methods and associated tools to organise their information for re-use. For example, the participants created their own information management systems using the Twitter API, list features and hashtags to organise the information they found interesting, which also enabled them to re-find the information. In summary, Twitter is an online public space in which large volumes

of information are shared; hence, it is challenging for IT professionals to organise their own feeds, from people they follow and also the followers themselves. This was why participants experienced frustration when there was a lack of information organisation, as it was time consuming. The more information resources that a participant had to deal with on the microblogging site, the more frustration they reported, which was related to the deficiencies of the information they encountered in online public spaces to be used by them or by someone else. The findings of this study also highlighted that experience of information has a significant influence on the way the participants use Twitter and interact or communicate with experts in their field of expertise. These findings answered the research question of this current study, the IT professionals' information behaviours and information experience in microblogging.

From Information Behaviour to Information Experience

This research discovered that the information behaviour that occurs on Twitter is more dynamic than traditional information behaviour. Subsequently, it influences IT professionals' information experience on Twitter, which is more about the people than the information itself. Gaining more followers substantially expands the professional networks of IT professionals, and enhances the general perception of being experts in their fields of expertise. Moreover, the information flows facilitate interaction between IT professionals who access Twitter to keep in touch with information, which subsequently leads to the establishment of human networks. Participant 4 emphasises that: "it actually is quite a good way of networking with other people in the conference as well." (P4)

Over time, the IT professionals develop their networks with experts who share valuable work-related information. The credibility of the information has a significant influence on their online presence and helps IT professionals to be acknowledged in their fields. As Participant 3 stated in the interview,

> I'm trying to get a presence or a profile within Twitter. I actively use it to connect with people and share information. If I hadn't followed a few people or gotten into followers per day or per week, I would have used it a lot to actually try to boost up my networking. (P3)

This finding demonstrates that the functionality of Twitter and the availability and the accessibility of information encourages IT professionals to develop professional networking and knowledge sharing on Twitter:

> I used Twitter to express some of my personal views on papers that had been accepted in the Australasian Document Computing Symposium. I was replying to some of this with my own opinion and was retweeting things like, for example, if there was one of our papers that was presented. I retweeted that to make sure my network knew what people we were presenting at that conference. (P10)

This interview response shows how one IT professional engaged with information and shared their experience even though the person they interacted with was not their friend and not even asking for information. The finding reveals that the weak-tie relationship acts as a trigger for IT professionals to communicate and seek opinions on a particular event. The strong-tie relationship is overshadowed by the weak-tie connections on Twitter, as participants engage with experts and create mutual relationships with them. The individual information experience influences the way IT professionals engage and communicate within microblogging for professional purposes. The significant difference between information sharing and information experience is that sharing information does not entail social interaction, whereas information experience emerges when the information that has been shared triggers social interaction. Such communication helps people to develop their online communities through seemingly personal but inconsequential small conversation (Jansen et al. 2009). As Participant 7 stated:

> I've tweeted an article called 'to strengthen your attention span, stop overtaxing it'. So, that was an article about the reason you can't concentrate for very long is because you're pushing your brain too hard. So, I retweeted or tweeted that because people I follow and who follow me are other people who are doing PhDs and we're all in this phase of intense work, so it would also be useful to them. (P7)

The participants use Facebook more often to communicate and interact with their strong-tie connections. This is because the way they experience Facebook and Twitter is significantly different, as Facebook is a closed network, whereas Twitter is available for the public to gain access. Participant 3, who uses various social media applications for a variety of reasons, said,

> I use Twitter differently than, say, I use Facebook or Linkedin ... Facebook I use mainly for family and friends, not for any professional or networking reasons. (P3)

However, Participant 3 used microblogging sites such as Twitter for professional purposes more than they used it to connect with personal networks. Participant 5 pointed out that they used Facebook for personal rather than for professional purposes:

> I don't really use [Twitter] for personal use. I use Facebook for personal use. So, I only use it for things that are related to stuff to engineering or my job really. (P5)

As Participant 7 emphasised in the interview,

> I think my network is more honed in Twitter. It's the right network for me to be connected with professionally, whereas Facebook is kind of bloated with people from school and who I don't really have that kind of professional connection with, or even necessarily a personal connection. (P7)

This current study does not investigate the participants' engagement on Facebook, as its focus is on IT professionals' information experiences to understand the Twitter phenomena only. This study yielded an interesting result, in that building professional connections and a community of practice are more important to these IT professional Twitter users than the information seeking and information sharing aspects of Twitter. In short, the individual information experience on Twitter influences the way IT professionals socialise and communicate professionally. They also engage in a process of sense making that is not so much about making sense of the informational content of their Twitter networks, but about the network itself, and about expanding it in a strategic manner to advance their professional goals.

Conclusion

Information experience changes the way in which IT professionals use information in online compared to offline environments. This scenario is influenced by social settings in microblogging that has helped IT professionals create their own online communities or community of practice. The IT professionals reported encounters with news and experts that took place beyond geographical barriers. In microblogging, they can collaborate with experts around the world without restriction on the number of people involved and the geographical dispersal of information. This is consistent with information grounds theory, in that it can be in any type of temporal settings and established by the presence of individuals (Fisher, Durrance, and Hinton 2004). Twitter provides a sense of place where IT professionals engage and communicate with experts around the world. This enables IT professionals to gain access to information concurrently that has a significant influence in the discovery of experts in microblogging. This study reveals that IT professionals may encounter interesting experts in their field unexpectedly when they encounter information that is related to their expertise. This finding is consistent with Erdelez (1999), who argues that serendipity of information often occurs when people encounter and share information. Williamson (1998) highlights that "incidental information acquisition" is seen as synonymous with "accidental information discovery," which suggests people find information unexpectedly as they engage in other activities, some of which is "information they did not know they needed until they heard or read it" (Williamson 1998, 24).

The study yielded some interesting results, not just about the participants' information behaviours on Twitter but also about the network itself and the information flow within it. In many ways, the availability and accessibility of information through Twitter was like a "ticking bomb". This metaphor demonstrates that other people will sooner or later discover any information that is created or copied and shared on the Internet, as demonstrated in Figure 5.

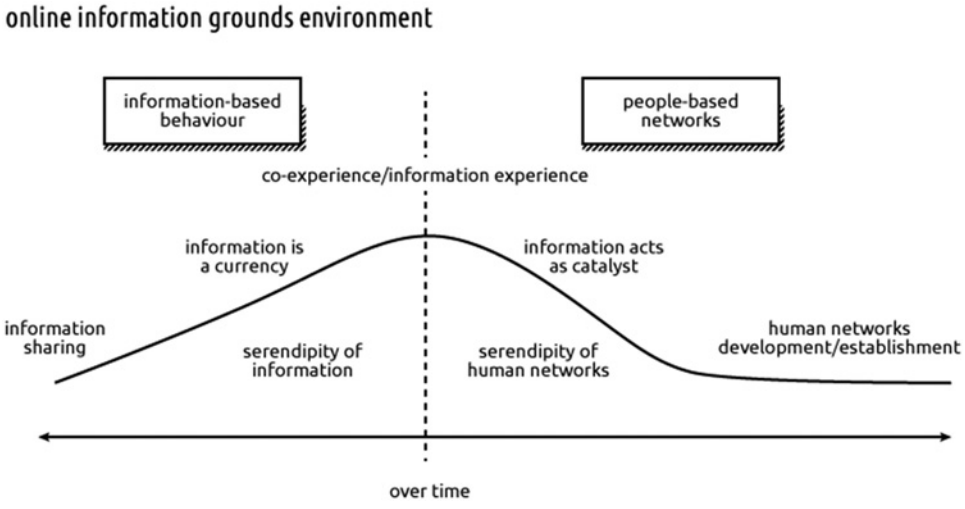

Figure 5: Transition from physical to microblogging.

For example, a blog post about "Hackathons are nonsense" (Ference 2012) was published in 2012 but remained unnoticed until it was shared by P1 on Twitter in 2014, igniting a heated discussion. This information discovered by P1 was then shared with hundreds of P1's followers, which suddenly made this older piece of information explode and spread to many other Twitter users. This finding shows that Twitter aids information discovery in its truest sense, a kind of information behaviour described in the literature as serendipitous information seeking and encountering (Foster and Ford 2003). This is different from traditional information sharing, which may be more linear and within a small timeframe.

IT 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. IT professionals were conscious before they tweeted and re-tweeted to avoid any information that was misleading or that could harm their professional reputation. The outcomes of this study show that IT professionals' information experience plays a vital role in creating professional networking and knowledge sharing in online spaces. Thus, the findings of this study contribute to theoretical perspectives in the understanding of information experience perspectives within Twitter, along with a foundational understanding of the ways in which microblogging is used for professional purposes. In short, the findings from this study have the potential to inform our understanding of social media networks in various ways. It provides a foundational understanding of the ways in which social media is used for professional purposes. This understanding not only helps researchers, but can also help IT professionals who are not yet using social media to its fullest potential. The findings can help organisations understand and provide for this emerging channel of professional information sharing for its staff and its stakeholders.

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