# If you Build it, They Won't Come: What Motivates Employees to Create and Share Tagged Content: A Theoretical Model and Empirical Validation

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## ABSTRACT

The purpose of this paper is to investigate factors influencing employees' knowledge-sharing behavior on social tagging supported systems. Using the strong theoretical background of the well-known technology acceptance model (TAM), this paper proposes and empirically validates a model that fits the social and technical nature of social tagging tools within the public sector. The analyses in this paper were based on data collected from a large survey of more than 480 respondents working for two public organizations in the United States. The findings demonstrate a significant impact of the role of social presence in encouraging employees to create and share content. Further, there is a strong relationship between the benefits employees receive from using tagging tools and their creation and sharing of tagged content. Specifically, the following factors showed a significant impact on employees' creation and sharing behavior, specifically their attitudes towards and intentions to create and share tags: perceived ease of use, perceived usefulness, social presence, and pro-sharing norms. For researchers, the paper offers an opportunity to further study knowledge-sharing behavior regarding social media technologies. The findings should motivate practitioners to inject these tools with a social aspect so that employees are encouraged to share content.

## 1. Introduction

Recent technological advances in telecommunications, especially with the World Wide Web, brought to light more opportunities for online dynamic applications that are a rich soil for users' shared content. A major development of Web applications during the last decade, termed Web 2, is the emergence and intensive use of social tagging tools (STTs). Social tagging tools are a subset of social computing tools that offer strong potential for users to engage in (metadata) knowledge sharing and collaboration. Social tagging is defined as labeling web resources with the users' own styles of descriptions of Web content for easier retrieval and findability of previously found resources (Wu, Yang, Yu, & Hua, 2009). Users add labels or tags to online resources such as images, videos, bookmarks, and texts. These tags can be refined and edited before being shared with others (Trant, 2009). Tagging tools were developed in response to the need for individuals to organize content and make it easier to re-find information resources. The core

power of tagging is that it leverages users' own language and personal logic to describe information resources to organize and retrieve content that is of interest. Further, social tagging is popular because the value of tags is seen to benefit groups as well as individuals. Users can find their own tags and those of other users who have tagged additional potentially interesting and related content. Thus, these tags moved from simply a personal content management tool to a social tool for sharing tagged resources, which can ignite the serendipitous discovery of content, ideas, and peers (Lemieux, 2009). Further, with social tagging tools, people have the desire to read what influential people are reading by clicking on their tagged resources (e.g., Twitter hashtags).

By nature, social tagging tools are tools for creating and sharing information and knowledge. For example, tags are used as a way to discover information, share previously discovered information, and highlight information in a tagged format that can be easily found by other users. Further, tagging is useful for tasks such as search, navigation, and even information extraction. Suchanek, Vojnovic, and

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Gunawardena (2008) argued that tagging's primary goal is serving users' needs by organizing their tagged collections for better retrieval and for others. Lee (2006) added to that by indicating that a collaborative tagging system offers its users two features: extracting information at the most cumulative level and, with its implanted social networks, a more guided sharing and discovery of information. In line with the discovery of new topics, another study by Velsen and Melenhorst (2009) noted that tags help users conduct serendipitous browsing when they are displayed in the form of a tag cloud, and when presented along with the content items, they help users decide quickly on items' relevance. In that way, social tagging tools help by adding a sense of serendipity to users' search tasks. As users start with their own tags, they end up clicking on similar tags that might lead them to unexpected but related information about a certain topic. Further, some advanced social tagging features, such as the 'tag cloud', enhance the browsing and searching process by displaying popular tags based on the frequency of users' visits to these tags (Quintarelli, 2005). Rainie (2007) noted that social tagging can help users stumble upon interesting resources already found by others when dealing with online catalogs such as Amazon.com. For example, on Amazon's "most popular tags" page, a search for things tagged "horror" results in approximately three thousand books and movies that presumably belong to the horror genre.

There is plenty of research on why people use and create tagged content with social tagging tools, but there is a paucity of research on what drives people to create and share their tagged content in public organizations. Organizations are left with one important question: we built the portal, but how do we encourage employees to create and share content to fill the portal with valuable information? In the public sector, organizations are struggling to add content to their online portal for others to benefit from. With the high potential of aggregating valuable knowledge from social tagging tools' collaborative intelligence, organizations try to find ways to encourage their employees to actively participate in creating and sharing content. Therefore, this study aims to advance our understanding of knowledge-sharing behavior in the context of social tagging tools within the public sector. Specifically, this research paper aims to investigate the impact of three dimensions on employees' attitudes and intentions to create and share content using social tagging tools. The three dimensions are as follows: systems factors (presented in PEOU and PU), social factors (presented in reciprocity, altruism, and social presence), and factors that are related to the organizational environment (presented in pro-sharing norms, management support, and recognition). We chose these three dimensions because of the nature of enterprise social tagging tools (ESTTs). First, social tagging tools are a system with two major features covered by the TAM and most IS research: PEOU and PU. Second, tagging is a social system because its content is built through social collaboration between users. Last, the organizational dimension originates from the fact that we are studying social tagging within organizations; hence, we use organizational factors, such as management influence, pro-sharing norms, and recognition, that could have an influence on users' contributions to ESTTs. The TAM is used because of its strong theoretical foundation with system features such as PEOU and PU, which have been shown to have a significant impact on technology adoption. To the best of the authors' knowledge, this study is the first to add benefits that are closely related to social tagging tools as determinants for users' social tagging sharing behavior as opposed to the generic usefulness that usually comes with most TAM studies.

The remainder of this paper is organized as follows. In the next section, a thorough literature review on social tagging and knowledge-sharing behavior is conducted. Then, we explore the existing research on behavioral aspects and antecedents of knowledge sharing in the context of social media tools. The paper then proceeds by introducing the conceptual model and hypothesis through the methodology section. Section five covers the data analysis, including a discussion of the findings. Section six provides a discussion of the implications, limitations and future research directions.

## 2. Literature Review

### 2.1. Social Media and Knowledge Sharing

Social media refers to the activities and tasks through which people share their knowledge within a collaborative online tool (Papadopoulos, Stamati, & Nopparuch, 2013), while knowledge sharing is defined as "the communication of knowledge from a source in such a way that it is learned and applied by the recipient" (Ma & Chan, 2014, P. 52). Social media tools, such as social Q & As, are becoming increasingly popular among information seekers because they offer a convenient channel for information sharing and knowledge flow. For example, Yahoo! Answers attracted more than 62 million visitors per month in the United States alone in 2010 (Gazan, 2011). Recent studies have indicated that many organizations motivate workers to share their knowledge via social media platforms because doing so facilitates efficient information flow within and between teams (Panahi, Watson, & Partridge, 2016; Pee & Lee, 2015). Social media helps describe what, how and where to find useful knowledge within an organization (Jin, Li, Zhong, & Zhai, 2015). Further, Kiron, Palmer, Phillips, and Kruschwitz (2012) reported that 86 percent of managers value social media as a channel for knowledge sharing for their business. Furthermore, the use of social tools offers countless opportunities for faster knowledge sharing between people working across different geographical areas than could be provided through traditional tools such as search engines or databases (Panahi et al., 2016).

Previous research has indicated that social media tools can help with sharing and improving knowledge flow within enterprises. A study conducted by Leonardi (2014) on knowledge sharing and innovation in enterprise social networks found that social media could play a key role in knowledge sharing because it makes invisible communication among coworkers visible to others. Message visibility creates message transparency and network translucence, which eventually help foster the sharing mechanism. According to Leonardi, Huysman, & Steinfield (2013), enterprise social media tools help workers to (1) communicate messages with selected coworkers or broadcast messages to everyone in the organization, (2) explicitly indicate or implicitly reveal particular coworkers as communication partners, (3) post and classify text and files linked to themselves or others, and (4) view the messages sorted by others in the organization at any time. Further, the use of social media tools to disseminate, externalize, and discuss information with other workers can help generate shared new knowledge that can further foster and enrich employees' cognitive abilities and provide them with more motivation to generate or co-create new ideas and knowledge (Sigalaa & Chalkiti, 2015). Although relatively new, online social networks are platforms that have the potential to build information aggregation and sharing through the strong ties that are built between the knowledge provider and knowledge recipient (Wang & Noe, 2010).

### 2.2. Organizational Social Tagging Tools

Organizational or enterprise social tagging tools (ESTTs) refer to social tagging technology used both within workgroups and across the organizational environment. ESTTs offer many benefits for organizations on an individual and organizational level. For starters, ESTTs have the potential to improve the information retrieval process through knowledge management initiatives such as intranet and document management systems (Lemieux, 2009). Taking on the role of information categorizers, organizational members can use tags to enhance the findability and retrieval of previously found information resources (Allam, Blustein, Bliemel, & Spiteri, 2012; Allam, Bliemel, Blustein, Spiteri, & Ali-Hassan, 2019; Webster, Gibbins, Halford, & Hracs, 2016). Moreover, employees can subscribe to "tagging streams" and monitor content that is of interest when it is tagged by others, which can come in the form of trend monitoring, blogs and current news. Additionally, organizations can improve the information retrieval process through

knowledge management initiatives such as intranet and document management systems (Kump, Moskaliuk, Cress, & Kimmerle, 2015; Lemieux, 2009).

Social tagging tools within organizations can work as collaborative means to enhance information organization and searches. Innovative group work can be enhanced by the collaborative searching and annotation of online resources. To achieve that, it is necessary to help information seekers both stay fluent by maintaining ideational fluency and stay consistent in annotating and tagging resources. Sharing search results with other users, such as through bookmarks and social tags, can help prompt search processes in memory, leading to an increase in ideational fluency (Kump et al., 2015; Seitlinger et al., 2018). This can be done by utilizing tagging systems such as tag recommendation systems (TRM) (Webster et al., 2016) that help make information searching more effective. TRM can be directed towards either tag consistency to better align vocabulary (e.g., Font, Serra, and Serra, 2015) or ideational fluency to simulate creative ideation (Kerne et al., 2014).

Compared to online social tagging environments, organizations are relatively slow in adopting social tagging applications behind their firewall because of some contextual differences between the Web and the enterprise's environment. The first and most influential difference is that the Web and enterprises are opposite with regard to the nature of their content. Web content is almost infinite, with billions of resources that are hard to organize. Therefore, having users organize this vast amount of information via social tagging is appropriate for such an environment. However, at the organization level, content is more defined with rules and specific structures that must be followed to match the organization's norms. Additionally, organizational members must have more precise and reliable sources of information to achieve their job goals (Lemieux, 2009; Muller, Milien, & Feinberg, 2009).

The second difference between the Web and the organizational environment is the number and nature of the people participating in them. A recent study by Lemieux (2009) showed that approximately 16-18 percent of the Web population use social tagging online, which can be millions more than the relatively small number of users in a given enterprise. The number of people participating in the tagging process affects the success and failure of adopting social tagging in the business environment. Social tagging proved its success in the Web environment because many people tested it and witnessed its success. In the organizational context, it would be hard to encourage enough motivated employees to use and test a social tagging application, especially given the number of daily activities and responsibilities that employees have. Further, given that tagging is social and visible to all organization members, some employees may be concerned with security and privacy issues, which may delay their adoption of tagging practices (Koplowitz, 2009; Lemieux, 2009).

### 2.3. Motivations for Employees' Knowledge Sharing

Although many studies have explored factors that drive users to contribute tagged content online, very few studies have dealt with the motivation for using and contributing to social tagging tools within the organizational context. Since creating and sharing tagged content is part of employees' knowledge-sharing behavior, we will discuss motives for knowledge-sharing behavior in an organizational context. Knowledge sharing research has identified several determinants of why individuals share knowledge with others. One line of research is focused on users' attitudes and intentions as major determinants of users' knowledge-sharing actions. Research following these streams has used the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) and its extension, the theory of planned behavior (TPB) (Ajzen, 1991). From the TRA perspective, users' intention to share knowledge is determined by their attitude towards sharing and subjective norms, and intention, in turn, leads to actual knowledge-sharing behavior. Similarly, using the TPB, the same factors (i.e., attitude and social norms) with an

addition of the factor of perceived behavioral control are determinants of users' actual knowledge-sharing behavior via knowledge-sharing intention. According to Ajzen (1991), the concept of attitude is not generic; rather, it is a contextual concept that represents users' attitudes towards performing a specific behavior.

To further identify factors affecting employees' knowledge-sharing behavior, another line of studies has identified work-related factors such as the norm of reciprocity and organizational climate (Chiu, Hsu, & Wang, 2006; Lin, 2007). The concept of reciprocity refers to the mutual benefits between the person who shares knowledge and the person who receives it (Chai, Das, & Rao, 2012). The concept can also refer to employees' moral obligation to share knowledge within the work environment (Cho, Chen, & Chung, 2010). Previous studies have shown a strong connection between users' information-sharing behavior and reciprocity (Bock et al., 2005; Wah, Loh, Menkhoff, & Evers, 2005). For example, Bock et al. (2005) found a strong relationship between reciprocity as a part of organizational culture and employees' information-sharing behavior. Further, Wah et al. (2005) found that knowledge-sharing behavior in the work environment is positively linked with employees' sense of reciprocity and social capital in the work environment.

Technology Acceptance Model

The TAM aims to help scholars understand user acceptance behavior. The TAM has been used

in numerous contexts, such as photo tagging (Dhir, Kaur, & Rajala, 2018), online tagging tools (Allam et al., 2019), Twitter (Al-Daihani, 2016) and mobile government services (Ahmad & Khalid, 2017). Following the rationale of the TPB and TRA, Davis (1989) created the technology acceptance model (TAM) to effectively explain and predict the behavioral intention of information technology users. Davis' TAM indicates that users' attitudes towards using a technology are determined by their perceived ease of use of the technology in addition to their perceived usefulness of the technology. Both perceived ease of use and perceived usefulness are determined by other external variables.

For Davis (1989), perceived usefulness (PU) is defined as the degree to which a person believes that using a particular technology will improve his or her job performance, while perceived ease-of-use (PEOU) is defined as the extent to which a person believes that a particular system will be easy to use. Because the TAM overlooked social impact as a predictor for users' attitudes towards accepting a system, the TAM2 (Venkatesh & Davis, 2000) was developed with supporting factors that can affect users' attitudes and intentions to use a system. The TAM 2 includes factors such as personal standards, autonomy, and image in addition to perception tool flows such as subjective judgment, output quality, result clarity and perceived usefulness.

To summarize, previous research has highlighted the importance of knowledge sharing in social media, but very few empirical studies have shown the underlying factors that can help people share tagged content with public organizations. It is clear that people use shared content, but it is not known how to encourage a sufficient amount of content to be generated to fill up social media sites so that people to use them, especially in public organizations. For instance, if Yahoo! Answers does not have enough Q & A content, fewer people will use it, and it can turn into a deserted social media tool if people stop adding answers to the question stream. The key to knowledge-sharing media is to fill such tools with enough content to attract people to use them and then to motivate them to add to their current knowledge base. However, the question is: what motivates employees to add and share content on social media? This study proposes several determinants that can predict information-sharing behavior on social media sites within public organizations. Specifically, this study may be the first (based on the authors' knowledge of the time of this study) to explain why workers tag and share content using enterprise social tagging tools such as Microsoft SharePoint and IBM Connections. This study can encourage other studies to investigate motivating factors for sharing content using different social media tools such as Facebook, Twitter and Instagram.
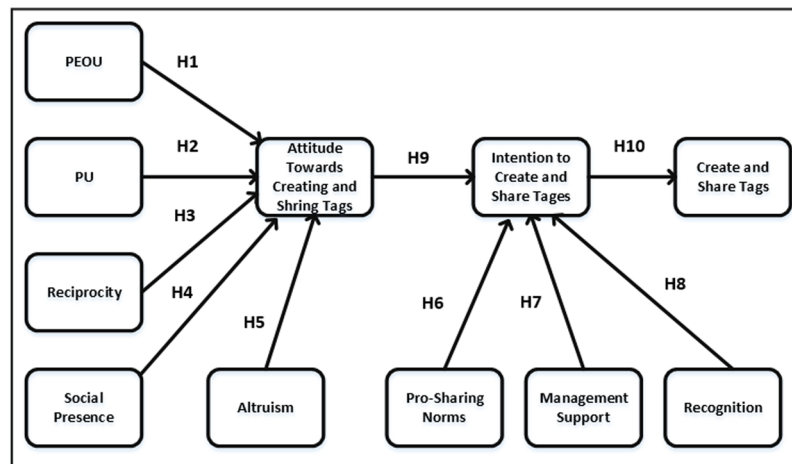
**Fig. 1.** Proposed Theoretical Model of Factors Affecting Employees' Attitude Towards Creating and Sharing Tags and Intention to Create and Share Tags.

## 3. Theoretical Background and Hypothesis Development

The following figure (Fig. 1) shows the proposed model of the study. We propose that several factors will predict employees' attitudes about creating and sharing tags and intentions to do so. These factors are classified under three dimensions: systematic, social, and organizational. Systematic factors relate the tagging tools and include perceived ease of use (PEOU) and perceived usefulness (PU), which are redefined in this paper as finding previously tagged content. Concerning the social dimension, we propose that reciprocity, social presence, and altruism will have a positive impact on employee attitudes regarding sharing tagged content and intentions to share tagged content. Further, we propose an organizational dimension that includes pro-sharing norms, management support, and recognition as major players in deciding employees' intention to share tags. Last, employees' tag-creating and sharing behavior is impacted by their intention to create and share tags. It should be noted that the proposed model uses the TAM as a base, but it advances the TAM to include factors that can play an important role in social media contexts such as reciprocity, social presence, and altruism. Further, since this study investigates motivating factors in the public organization context, the TAM was infused with organizational factors that could have an impact on workers' intentions to create and share tagged content such as management support, pro-sharing norms, and recognition. We argue that the TAM factors (including PEOU, PU, Attitude, Intention, Use) are not sophisticated enough to predict users' information behavior with dynamic social media tools.

### 3.1. Perceived Ease-of-Use

Perceived ease-of-use (PEOU) is the extent to which an individual perceives that using a particular system would be effortless (Davis, Bagozzi, & Warshaw, 1989; Venkatesh, 2000). Accordingly, PEOU is defined as the degree to which a person perceives that using a given tagging tool will be free of effort. Davis et al. (1989) indicated "an application perceived to be easier to use than another is more likely to be accepted by users" (p. 2). Subsequently, a connection between PEOU and attitude towards using social tagging tools is included in the proposed model of this study. By simply saving a tag or switching to another, employees are able to bookmark and organize what they have found to be useful. In conclusion, in the matter of ESTTs, PEOU indicates that both resource acquisition and search direction shifts are free from effort.

Notably, many empirical studies of the TAM have found a significant relationship between users' perception of how easy a system is and their attitude towards using such systems (Adams, Nelson, & Todd,

1992; Moore & Benbasat, 1991). In their study on online users' motivation to tag online resources, Allam et al. (2012, 2010) found a strong correlation between the users' perception of how easy the tagging is and their attitude towards tagging resources. Similarly, Huang et al. (2012) also found that high PEOU leads to a high level of PU and high preference from users in using tagging systems. Further, in their study of users' adoption of a hybrid social tagging approach in an online knowledge community, Qin, Liu, Mou, and Chen (2019) found that the easier it is for users to use the tagging system, the more favorably they perceive the system. Moreover, using an extension of the TAM, Al-Ghaith (2015) examined individuals' participation intentions and behavior on social networking sites; he found PEOU to have a significant effect on users' attitudes towards using such sites. These observations lead to the following hypothesis:

**H1.** Perceived ease of use is positively related to attitudes towards creating and sharing tags.

### 3.2. Perceived Usefulness

User's perception of the usefulness of an information system has been linked with users' intention to use technology, especially in work-related contexts (Morschheuser, Hamari, Koivisto, & Maedche, 2017). However, recent research on TAM-based models has shown a correlation between perceived usefulness and users' attitude towards using social and hedonic systems (Hamari & Keronen, 2017; Hamari & Koivisto, 2015). In the context of this research, perceived usefulness is represented as information refindability (IRF), which is considered useful for using social tagging tools. IRF is defined as the degree to which a person believes using a tagging tool enhances his or her chances of finding previously found and tagged resources of their own. Ames and Naaman (2007) ran a comprehensive study on users' incentives to tag content on Flickr and ZoneTag. The study's results showed that participants were motivated by the usefulness of tags to organize their photos for future retrieval and finding. In their studies on tag usage in CiteULike and Connotea, Santos-Neto, Condon, Andrade, Iamnitchi, and Ripeanu (2009) noted that users' instances of reusing tags are considerably higher than their re-tagging behavior. In their analysis of users' information retrieval behavior on video tagging systems, Melenhorst, Grootveld, Setten, and Veenstra (2008) indicated that tagging offers users more maneuverability to organize content that is of interest, which, in turn, leads to easy content and tag retrieval relevant to users' needs. Rainie (2007) pointed out that while a folksonomy enables users to add their own tags to a shared pool of tags, it can categorize users' own tags in a better way for future retrieval.

Further, Halpin, Robu, and Shepherd (2007) showed how tag co-

occurrence networks for a sample domain of tags can help create a coherent information categorization scheme that helps individuals find related information faster. However, this pattern requires a sufficient and stable number of users, who eventually create what are called 'idiosyncratic tags trails.' Then, in the same stream, Mican and Tomai (2013) followed the analysis of collective intelligence regarding the ways in which community members build different tags; they noticed that tags grow and build a pattern over time. This can help build tag recommender systems for other users to follow and use what has been previously found useful by others. This leads to the following hypothesis:

**H2.** Employees' positive perception of a system's information refindability positively affects their attitude towards creating and sharing tags.

### 3.3. Reciprocity

Individuals are usually engaged in an exchange relationship based on both economic resources (e.g., money, goods, and services) and socio-emotional resources (e.g., status, devotion, and trust). Reciprocity behavior has been highlighted as a benefit of individuals engaging in the social exchange process (Blau, 1964). Following Wasko and Faraj (2005), this research defines reciprocity as the degree to which a person believes he or she can obtain mutual benefits through knowledge and tag sharing. Prior research has shown that a strong sense of reciprocity influences knowledge sharing in online communities (Wasko & Faraj, 2005). Additionally, researchers have observed that reciprocal benefits can provide effective motivation for facilitating knowledge sharing and can thus achieve long-term mutual cooperation (Kollock, 1999).

In their study on why people participate in commerce sites, Wasko and Faraj (2005) suggested that online users expect to share their knowledge because they believe in reciprocity. Bock et al. (2005) indicated that reciprocal relationships among online users have a positive impact on their attitudes towards contributing to the system. In their empirical study of how to motivate users to contribute to blog systems, Hsu and Lin suggested that expected reciprocal benefits have a positive impact on the individual's attitude towards using a blog system (Hsu & Lin, 2008). Further, reciprocity is viewed as a motivator for users for continuing sustainable information sharing (He & Wei, 2009). Thus, this thesis proposes that employees are more likely to favor the act of creating and sharing tags if they can acquire reciprocal benefits when interacting with this tool. The following hypothesis is proposed:

**H3.** Reciprocal benefits will positively affect employees' attitudes towards creating and sharing tags.

### 3.4. Social Presence

Social presence is defined as (1) "the degree of salience [awareness] of the other person in the interaction" and (2) "the consequent salience [outcome/result] of the interpersonal relationships" (Short, Williams, & Christie., 1976, p.65). According to social presence theory, awareness of the online presence of fellow members can influence online community activity (Fulk, Schmitz, & Steinfield, 1990; Fulk, Steinfield, Schmitz, & Power, 1989). Social presence is considered a major design principle in computer-mediated communication and an important determinant of online community participation. Shen and Khalifa (2008) investigated the role of social presence on the interactions of online communities. They proposed three social presence dimensions (i.e., awareness, effective social presence, and cognitive social presence) to analyze users' social behavior online. The results showed strong support for the role of social presence in encouraging users' participation in online communities. Nov et al. (2008) studied the motivations associated with tagging behavior on Flickr and how such motivations affect the level of users' tagging activity. Based on their work on a qualitative

study conducted by Ames and Naaman (2007), Nov et al (2008). confirmed that social presence works as a main motivator for users to add tags to information resources. Further, some tagging motivations come from a group contribution perspective.

When users feel that their contribution is important to groups, they are more likely to contribute more to the system. Conversely, if they feel their contribution is less effective, they are less likely to contribute (Karau & Williams, 1993). Lee (2006) stated that although tag posts are largely motivated by personal organizational reasons, social presence plays an important role in getting users to tag resources. Beenen et al. (2004) conducted a study on the "undercontribution" of some users on the movie recommender system MovieLens. They found that users, when reminded that their tag contribution will help others choose the right movie, perceive a sense of uniqueness about their tags and will hence add more movie tags to help the group. A study at HP found that bloggers are likely to participate in a company's blog if they perceive the presence of others through visual feedback responding to their posts (Yardi, Golder., & Brzozowski, 2009). An empirical study performed by Brzozowski (2009) showed that coworkers' contributions and attention to posts played an important role in employees' participation behavior in an organization's virtual community.

**H4.** Perceived social presence will positively affect employees' tag creation and sharing activities.

### 3.5. Altruism

The benefit of enjoying helping others originated from the concept of altruism (Kankanhalli, Tan, & Wei, 2005). Altruism is defined as the degree to which a person is willing to increase other people's welfare without expecting returns (Hsu & Lin, 2008). In the context of this study, it means that employees enjoy sharing tagged content to allow others to find valuable information resources without expecting anything in return. Individuals may contribute knowledge in an electronic network of practice because they find that helping others with challenging problems is interesting and because it feels good to help other people (Kollock, 1999).

Previous research has found that altruism is a key factor in knowledge-sharing behavior. Empirically, Wasko and Faraj (2000) found a correlation between enjoyment from helping others and knowledge-sharing behavior. Palmer (1991) confirmed the important role altruism played in the information sharing environment where users were motivated by an internal feeling of satisfaction from helping others. In investigating the idea of a virtual knowledge-sharing community based on decentralized P2P technology, Kwok and Gao (2004) focused on altruism as a motivator for users to contribute and share knowledge. In their study of users' acceptance of online blogs, Hsu and Lin (2008) found that altruism has a strong effect on users' attitudes towards blog acceptance. The following hypothesis is thus proposed:

**H5.** Altruism will positively affect employees' intention to create and share tags.

### 3.6. Pro-sharing Norm

A pro-sharing norm is defined as the prevalence of norms that are intended to facilitate knowledge sharing in an organization (Nahapiet & Ghoshal, 1998; Orlikowski, 1993). Norms can moderate human behavior in accordance with the expectations of the group or community (Kankanhalli et al., 2005). Having a pro-sharing norm is regarded as an important contextual factor affecting users' knowledge contribution and sharing behavior (Bock et al., 2005; He & Wei, 2009; Hsu & Lin, 2008). Goodman and Darr (1998) suggested that organizations should nurture a sharing culture prior to the implementation of a knowledge-sharing information system. VanDamme (2008), in proposing an approach to using enterprise social tags as a business intelligence tool,

suggested that the tagging process should be integrated into the working processes of employees to help encourage tagging contributions and sharing.

IS research has indicated that pro-sharing norms have a significant impact on users' decisions to use technology. For instance, Chang and Chen (2014) examined the factors influencing college students' intentions to share their locations on Facebook. The findings showed that students tend to share their location on Facebook if they know that their peers are doing so. Further, Li (2012) has suggested that peer pressure has a significant impact on individual information-sharing behavior. He argues that in order for users of Facebook to make friends, they generally first reveal some personal information related to their personal interests and hobbies. Similarly, we believe that subjective norms will influence employees to share their tagged content via organizational social tagging tools. Hence, we postulate the following hypothesis:

**H6.** Pro-sharing norms will positively impact employees' intentions to create and share tags.

### 3.7. Managerial Influence

Managerial influence is the degree of influence a direct manager has on his/her subordinates to adopt new technology (Wattal, Racherla, & Mandviwalla, 2009). In the context of this study, managerial influence assumes that employees will create and share tagged content if managers support such actions. Although the TAM was quite equivocal about managers' roles in adopting technology, IS research has shown support for managers' impact on adoption through their own adoption of technology (Karahanna & Straub, 1999), through being visible and watching employees' participation (Brzozowski, 2009), through persuasive communication (Leonard-Barton & Deschamps, 1999), and through employees' perception of their manager's views on new IT ventures (Davis et al., 1989).

Koh, Kim, Butler, and Bock (2007) indicated that since virtual networks are characterized by the voluntary addition of social context, leaders of these communities play a major role in cultivating the social context to encourage members' participation. A comprehensive study by Wattal et al. (2009) indicated that the usage and influence of managers is highly correlated with the number of blog posts created by corporate employees. A study at HP found that bloggers are more likely to participate in the companies' blog if they see managers as active participants in the corporate blog (Yardi et al., 2009). Rouibah, Hamdy, and Al-Enezi (2009) investigated organizational factors and human motivations influencing information systems and information technology usage and users' satisfaction in the Middle East. Their findings showed that technology use and user satisfaction are positively correlated with perceived usefulness and top management influence, with the latter having the strongest effect on IS use.

**H7.** Perceived managerial influence will affect employees' intention to create and share tags.

### 3.8. Recognition

Contribution and sharing behavior can be regulated by the outcome of social factors such as social recognition, monetary reward, power, and applause (Bandura, 1986). Organizational reward is defined as the importance of economic incentives provided for knowledge contributors and knowledge seekers (Kankanhalli et al., 2005). Organizational recognition of employees' contribution refers to the extrinsic incentives provided by an organization to entice employees to contribute content to organizational knowledge repositories (Kankanhalli et al., 2005). Hence, incentive mechanisms such as career advancement or supervisors' recognition of employees' efforts play an important role in driving employees to contribute and share their knowledge with their colleagues in the organization (Bock & Kim, 2002; Kankanhalli et al.,

2005; Wang, Gwebu, Shanker, & Troutt, 2009). Several studies have demonstrated that appropriate incentive mechanisms such as bonuses or career advancement can motivate employees to share their knowledge (Bock et al., 2005; He & Wei, 2009; Wang et al., 2009). VanDamme (2008) suggested a number of strategies companies can take to encourage their employees to participate in tagging activities. One of the recommendations is giving employees incentives, since personal benefits that comes from sharing tags are sometimes missing.

To encourage their employees to share their knowledge with their coworkers, several organizations have introduced reward systems. For example, Buckman Laboratories recognized its 100 top knowledge contributors by treating them to an annual conference at a resort. Further, in the IBM Lotus Connection Unit, managers based 25 percent of employees' total performance on their knowledge-sharing interactions (Bartol & Srivastava, 2002). Thus, this thesis expects that if employees believe they can receive organizational recognition by offering their knowledge, they will develop more positive intentions regarding tag sharing. The following hypothesis is therefore proposed:

**H8.** Organizational recognition will positively affect employees' intentions to create and share tags.

### 3.9. Attitude Towards Knowledge Sharing

In the TRA, the attitude factor has been tested and shown to be a significant predictor of users' behavioral intentions. Many IS studies have confirmed a strong association between users' attitudes towards using a technology and their intentions to use that technology. For example, He and Wei (2009) studied users' motivation for knowledge sharing in an organization. They confirmed that attitude has a positive impact on employees' intentions to share knowledge. Similarly, Hsu and Lin (2008) investigated the role of technology acceptance and social influence on users' acceptance of blog use. Their study found that users' attitude towards using a blog significantly influenced their behavioral intention to participate in blogs. Moreover, Bock et al. (2005) investigated the role of extrinsic motivation, psychological forces, and organizational climate on managers' knowledge-sharing behavior. The results confirmed that attitudes towards knowledge sharing significantly affected managers' intention to share knowledge within their organizations.

Further, attitude is regarded as a major determinant for behavior outcomes in wide IS user acceptance research, including that on social tagging (Allam, Bliemel, Blustein, Spiteri, & Watters, 2010, 2012; Allam et al., 2019; Dhir et al., 2018; Dhir, Kaur, Chen, & Lonka, 2016), social networking services (Kwon, Park, & Kim, 2014), online public systems (Rana, Dwivedi, Williams, & Weerakkody, 2016), collaborative technology (Cheung & Vogel, 2013; Shen, Cheung, & Lee, 2013), blogging tools (Lin and Hsu, 2008), blended learning environments (Padilla-Meléndez, Del Aguila-Obra, & Garrido-Moreno, 2013), modeling user acceptance of social networks (Hossain & de Silva, 2009), and electronic government adoption (Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2019). Further, based on a very recent critical review of the unified theory of acceptance and use of technology (Dwivedi et al., 2017) and the TRA, and consistent with the above assertions regarding employees' attitudes towards knowledge sharing and behavioral intentions, the following hypothesis was formulated:

**H9.** Employees' attitudes towards contributing and sharing tags will positively affect their intention to contribute and share their tags.

### 3.10. Intention to Contribute and Share Tags

The next hypothesis relates to the effect of users' behavioral intention to participate in tagging activities on the actual behavior of contributing and sharing tags. In general, an action taken by someone is first sourced from an intention. In other words, employees' tagging and

sharing behavior is determined by their intention to tag and share. This is reinforced by research conducted by Agudo-Peregrina, Hernández-García, and Pascual-Miguel (2014) and Venkatesh, Davis, and College (2012), whose results stated that behavioral intention influences use behavior.

Further, previous research strongly confirmed that behavioral intention is a major factor driving the actual use of technology (Bhattacherjee, 2001; Davis, 1989; Venkatesh, Morris, Gordon, & Davis, 2003). Although research on knowledge-sharing behavior has been confined to the prediction of intention (e.g., Bock et al., 2005), this research study proposes a direct link between users' intentions and their actual behavior of tag seeking, contributing and sharing. It is expected that employees' seeking, creating and sharing behaviors will be positively affected by their intention to seek, contribute, and share tags. In his study, Handoko (2019) used both the unified theory of acceptance and use of technology model to predict students' use of online learning

programs; he found that behavior intention had a strong significance on students' use of such programs. Accordingly, the following hypothesis is stated:

**H10.** Behavioral intention will positively affect employees' tag contribution and sharing behavior.

## 4. Research Method

### 4.1. Instrument Development

A theoretical model was proposed to identify factors impacting employees' tagging behavior. To test the concepts used in the proposed model, a survey was designed to ask participants about their perception of and experience with n different aspects of tagging tools. Some of the survey questions were extracted from constructs used in previous IS

**Table 1**
Constructs and measurement items.

| Construct | Item Code and Wording | Sources |
|---|---|---|
| Perceived Usefulness (PU) | The tagging tool(s) helps me remember and locate my tagged resources. The tagging tool(s) allows me to re-find resources *that I have already tagged.* The tagging tool(s) enables me to search for my previously found resources. The tagging tool(s) makes it easier for me to find my tagged resources. | Self-developed based on Davis (1989) |
| Perceived Ease of Use (PEOU) | I find creating tags through the tagging tool(s) easy to do. I find it easy to become skillful at creating tags with the tagging tool(s). I find learning to create tags through the tagging tool(s) easy. | Adapted from Davis (1989) and Hsu and Lin (2008) |
| Reciprocity (REC) | My public tags are useful for other users' tasks. I create public tags that are applicable to other users' tasks. Other users' public tags are appropriate for my tasks. Other users create public tags that are applicable to my tasks. | Adapted from Arakji, Benbunan-Fich, and Koufaris (2009) |
| Altruism (ALT) | I create and share public tags for information resources because I think other users will find them useful. I create and share public tags for information resources because I think those resources should be discovered by other users. I create and share public tags for information resources so other users will be able to find those resources. | Based on Arakji et al. (2009) |
| Management Influence (MGMTS) | The senior management of this business has been helpful in the use of the tagging tool(s). My supervisor is very supportive of the use of the tagging tool system(s) for my job. In general, the organization has supported the use of the tagging tool(s). | Adapted from Venkatesh et al. (2003) |
| Recognition (RECOG) | It is important for me to … at work for contributing my knowledge through the tagging tool(s): Be appreciated Get a better work assignment Be recognized by my supervisor Get more job security Get recognized by my organization when I share my knowledge with the group | Adapted from Kankanhalli et al. (2005) |
| Pro-Sharing Norm (PSN) | There is a norm (or culture) of … in my organization: Cooperation Collaboration Teamwork Willingness to value and respond to diversity of opinion Tolerance for mistakes | Kankanhalli et al. (2005) |
| Social Presence (SP) | There is a sense of social interaction in the tagging tool(s). There is a sense of social collaboration in the tagging tool(s). There is a sense of sociability in the tagging tool(s). | Adapted from Gefen and Straub, 1997, 2003) |
| Attitude (ATT) | I feel positive about creating and sharing tags using the tagging tool(s). Creating and sharing tags is a good idea for me. In general, I like creating and sharing tags. | Adapted from He and Wei (2009); Liao et al. (2008); Moon and Kim (2001); and Davis (1989) |
| Intention (INT) | I intend to create and share tags. I intend to continue creating and sharing tags in the next month. It is worth creating and sharing tags with the tagging tool(s). I will continue creating and sharing tags on a regular basis in the future. | Adapted from He and Wei (2009); Liao et al. (2008); Moon and Kim (2001); and Davis (1989) |
| Tag Contribution (CRE) | I often use the tagging tool(s) to create and share tags. (Strongly) Disagree-(Strongly) Agree How frequently do you create and share tags? (Extremely) Infrequent-(Extremely) Frequent On average, how many times do you use the tagging too(s) to create and share tags? A few times a year-Several times a day | Developed Based on Phang et al. (2009); and Moon and Kim (2001) |

studies, while other new constructs were self-developed based on the definitions in previous literature. Questions that were extracted from prior IS research were exposed to slight modifications to fit the context of social tagging. The scaled items for PEOU and ATT were based on studies from Davis et al. (1989) and Liao, Tsou, and Shu (2008). Reciprocity was measured by items adapted from Hsu and Lin (2008), and subjective norms were measured by items adapted from Venkatesh et al. (2003). Each item was measured on a seven-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7). The detailed constructs and item measurements are listed in Table 1.

### 4.2. Sample and Data Collection

Two large public, government-based organizations were contacted to help answer the survey questions, and two social tagging tools were used: Microsoft SharePoint and IBM Connections. For the sake of privacy, the managers of the two organizations asked for their entities' names to not be used in the study. Two IT managers at each of the companies were contacted to invite employees in different departments to participate in the survey to give their views on the current information portal and describe how they currently use enterprise social tagging tools. Before the actual study, a pilot study was conducted with 50 participants to gain feedback on and insights into the survey structure and content. The suggestions of the pilot test users were incorporated into the survey, and the pilot study data were not included in the final survey data. All participation in the survey was kept voluntary and anonymous; no personal information, except age and gender, were obtained in the study. The data collection period was 15 days, and in total, 481 usable responses were collected; 53 responses were partially completed and were eliminated from the collected data. The eliminated responses were those that were missing answers to major questions intended to establish the main concepts in the study.

### 4.3. Respondents' Profile

Fig. 2 shows the number of taggers who share their tags with other workers distributed across the different departments in the company. As indicated before, respondents coming from the IT department are seemingly comfortable using social media applications in general, and they not only seek out tags but also add and share tags via the tagging tool. Further, employees who come from the management department scored the second highest in contributing and adding tagged content to the enterprise social tagging tools. This can be explained because these employees are more aware of the organization and classification features that social tagging tools offer, and they are more likely to use them in creating tags to effectively manage their information resources. Further, employees coming from the customer service department seek more tags than they create. A possible explanation may be that
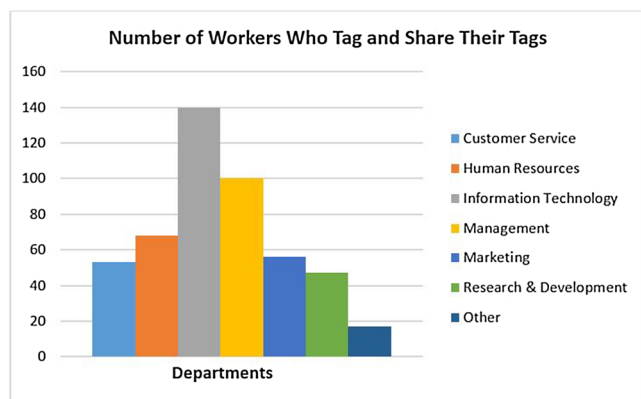


**Fig. 2.** Taggers Who Shared Their Tagged Content with People in Other Departments.

customer service employees tend to do more browsing and looking for resources, and they are less interested in creating tags. Moreover, employees belonging to the human resources department tend to do more creating and sharing of tags than seeking of tags. Finally, employees who belong to the research and development department tend to do more browsing of and clicking on tags than creating and sharing of tags.

### 4.4. Data Analysis

We used two statistical software packages, namely, IBM SPSS and AMOS 26.0, for our data analysis. We examined the skewness and kurtosis for the survey items, and the results showed that the data were normally distributed (George and Mallery, 200). Further, the examination of the Z-score for all of the survey items showed that they were below the threshold limit of 3.29 (Tabachnick & Fidell, 2007), suggesting that the data were free from potential outliers. To test the proposed model of the study, we ran the data in two stages as suggested by (Hair, Anderson, Tatham, & Black, 1998). First, we tested the measurement model to examine its model fit and to test for the sufficient reliability and validity of the items in the study. Second, we tested the structural model to investigate our research hypotheses. The main rationale behind the two-step approach is to ensure that structural relationships are drawn between only those study constructs that have valid and reliable psychometric properties (Shen et al., 2013).

## 5. Results and Analysis

We conducted a Chi-square test to assess the reasonableness of the structural constraints on the estimated construct covariances. Only if the results of the Chi-square test are positive can the structural model be considered for analysis. In our case, the result of the chi-square test was positive with the dependent variables (attitude, intention, and create/share tags), as shown in Table 2. All of the chi-square values for the construct items exceeded the critical value for $\alpha$: 5 percent of 3.841. This means that the null hypothesis (no significant covariance) was rejected; hence, we proceeded with the second step to verify the path coefficient for the structure model.

### 5.1. Measurement Model

To test the proposed model of the study, confirmatory factor analysis (CFA) using AMOS was performed to test the measurement model and examine the validity and reliability of its different measures. We used the maximum likelihood (ML) estimation method because of its robustness with large data samples (Reinartz, Haenlein, & Henseler, 2009). The recommended values for the goodness of model fit are $\chi 2/df$ (chi-square ratio degrees of freedom) $\leq 3$, comparative fit index (CFI) $\geq 0.92$, Tucker–Lewis Index (TLI) $\geq 0.92$ and root mean square error of approximation (RMSEA) $\leq 0.08$ (Byrne, 2001; Hair et al., 1998). The study results suggest a good model fit ($\chi 2/df = 2.85$, CFI = 0.95, TLI = 0.93, RMSEA = 0.03) for the measurement model, indicating that the model has the correct specifications. We also tested for internal consistency and indicator liability in the following sections.

### 5.1.1. Internal Consistency
Two methods were used to assess the internal consistency of the measurement model: the traditional Cronbach's alpha (CA) (Cronbach, 1951) and composite reliability (Hair, Ringle, & Sarstedt, 2011; Werts, Linn, & Jöreskog, 1974). Internal consistency that uses CA is aimed at measuring the extent to which manifest variables (indicators) load simultaneously with the loading of their latent construct (Urbach & Ahlemann, 2010). A high CA indicates that all indicators of a single construct have the same range and meaning. Alpha values range from 0 to 1, referring to completely unreliable to completely reliable, respectively. The proposed threshold value for more advanced stages of research should be approximately .800 or .900, and for exploratory

**Table 2**
Chi-Square Significance Test.

| | ATT1 Chi Square | Asymptotic Significance | ATT2 Chi Square | Asymptotic Significance | ATT3 Chi Square | Asymptotic Significance | ATT4 Chi Square | Asymptotic Significance |
|---|---|---|---|---|---|---|---|---|
| PEOU1 | 206 | 0 | 235 | 0 | 283 | 0 | 211 | 0 |
| EOU2 | 241 | 0 | 256 | 0 | 156 | 0 | 128 | 0 |
| EOU3 | 231 | 0 | 171 | 0 | 135 | 0 | 129 | 0 |
| SP1 | 172 | 0 | 195 | 0 | 230 | 0 | 199 | 0 |
| SP2 | 376 | 0 | 356 | 0 | 559 | 0 | 192 | 0 |
| SP3 | 349 | 0 | 345 | 0 | 518 | 0 | 206 | 0 |
| PU1 | 243 | 0 | 237 | 0 | 222 | 0 | 179 | 0 |
| PU2 | 157 | 0 | 204 | 0 | 313 | 0 | 176 | 0 |
| PU3 | 208 | 0 | 210 | 0 | 203 | 0 | 184 | 0 |
| PU4 | 206 | 0 | 241 | 0 | 233 | 0 | 167 | 0 |
| ALT1 | 534 | 0 | 434 | 0 | 285 | 0 | 218 | 0 |
| ALT2 | 462 | 0 | 370 | 0 | 246 | 0 | 133 | 0 |
| ALT3 | 188 | 0 | 215 | 0 | 189 | 0 | 211 | 0 |
| REC1 | 190 | 0 | 205 | 0 | 197 | 0 | 138 | 0 |
| REC2 | 373 | 0 | 296 | 0 | 181 | 0 | 198 | 0 |
| REC3 | 165 | 0 | 149 | 0 | 303 | 0 | 152 | 0 |
| REC4 | 175 | 0 | 236 | 0 | 499 | 0 | 186 | 0 |
| | INT1 | | INT2 | | INT3 | | INT4 | |
| PSN1 | 169 | 0 | 369 | 0 | 142 | 0 | 389 | 0 |
| PSN 2 | 146 | 0 | 205 | 0 | 119 | 0 | 182 | 0 |
| PSN 3 | 186 | 0 | 259 | 0 | 124 | 0 | 171 | 0 |
| PSN4 | 199 | 0 | 266 | 0 | 113 | 0 | 164 | 0 |
| PSN 5 | 141 | 0 | 146 | 0 | 147 | 0 | 173 | 0 |
| RECOG1 | 165 | 0 | 454 | 0 | 153 | 0 | 325 | 0 |
| RECOG2 | 157 | 0 | 314 | 0 | 157 | 0 | 151 | 0 |
| RECOG3 | 177 | 0 | 232 | 0 | 130 | 0 | 226 | 0 |
| RECOG4 | 129 | 0 | 177 | 0 | 101 | 0 | 128 | 0 |
| MGMTS1 | 217 | 0 | 349 | 0 | 173 | 0 | 182 | 0 |
| MGMTS2 | 155 | 0 | 221 | 0 | 130 | 0 | 166 | 0 |
| MGMTS3 | 171 | 0 | 233 | | 174 | 0 | 164 | 0 |
| | ATT1 | | ATT2 | | ATT3 | | ATT4 | |
| INTC1 | 328 | 0 | 266 | 0 | 235 | 0 | 279 | 0 |
| INTC2 | 621 | 0 | 436 | 0 | 561 | 0 | 265 | 0 |
| INTC3 | 238 | 0 | 252 | 0 | 283 | 0 | 187 | 0 |
| INTC4 | 551 | 0 | 530 | 0 | 566 | 0 | 277 | 0 |
| | CREAT1 | | CREAT2 | | | | | |
| INTC1 | 188 | 0 | 80 | 0 | | | | |
| INTC2 | 284 | 0 | 101 | 0 | | | | |
| INTC3 | 191 | 0 | 71 | 0 | | | | |
| INTC4 | 219 | 0 | 110 | 0 | | | | |

research, it should exceed .700 (Nunnally, 1994). Tables 1 and 2 show the CA values for seeking and creating submodels. For the seeking submodel, all of the constructs meet the CA threshold for advanced stages of research. With regard to the Tag/Creating submodel, all constructs scored a completely reliable CA except for reciprocity and organizational reward/recognition, which scored .77, 78, and 77, respectively. Despite its wide use in IS research, CA is criticized because of its assumption that all indicators have the same reliability. Some research has recommended using composite reliability as a replacement for CA (e.g., Hair et al., 2011, and Urbach & Ahlemann, 2010).

Hair et al. (2011) indicated that composite reliability (CR), the second recommended measure for internal consistency, yields more reliable results than CA because of its statistical nature. CR attempts to offer more reliable internal consistency validity by measuring the sum of latent variable loadings relative to the sum of the factor loadings plus error variance. The resultant value ranges between 0 (unreliable) and 1 (completely reliable). Unlike CA, composite reliability is considered a more reliable measure in two ways: (1) it considers the difference and magnitude of reliability among indicators of the same construct; and (2) it prioritizes items according to their loadings during model estimation. Composite reliability values of .60 and .70 are considered satisfactory in exploratory research, while values of .70 to .90 are considered satisfactory for more advanced stages of research (Hair et al., 2011). According to Table 3, the tag creating and sharing model meets the advanced threshold for composite reliability, indicating high reliability of all the constructs of the model.

**Table 3**
Composite Reliability and Cronbach's Alphas-Tag Creating and Sharing Model.

| | Composite Reliability | Cronbach's Alpha |
|---|---|---|
| ATT | 0.91 | 0.87 |
| PEOU | 0.89 | 0.82 |
| ALT | 0.9 | 0.83 |
| Create | 0.9 | 0.85 |
| INT | 0.9 | 0.86 |
| PSN | 0.88 | 0.84 |
| PU | 0.91 | 0.88 |
| SP | 0.89 | 0.82 |
| REC | 0.86 | 0.78 |
| RECOG | 0.85 | 0.77 |
| MGMTS | 0.92 | 0.87 |

### 5.1.2. Indicator Reliability

Indicator reliability concerns the consistency of a construct in measuring what it intends to measure. Each construct is measured independently from other constructs based on its reflective indicator value. For an indicator to be reliable, its loadings should be higher than .70. Indicators between .4 and .7 should be eliminated if their deletion would increase the composite reliability of the construct above the suggested threshold value (Hair et al., 2011). However, some voices advocate lower loadings for exploratory research stages. For example, Straub (1989) and Lewis, Snyder, and Rainer (1995) recommended threshold values of .5 and .45 to be acceptable indicator loadings in

**Table 4**
Average Variance Extracted for Tag/Creating.

| Tag/Create and Share Sub- Model | |
|---|---|
| ATT | 0.72 |
| PEOU | 0.74 |
| ALT | 0.74 |
| Create | 0.75 |
| INT | 0.7 |
| PSN | 0.61 |
| PU | 0.73 |
| SP | 0.74 |
| REC | 0.6 |
| RECOG | 0.6 |
| MGMTS | 0.8 |

**Table 6**
T-Value Parameters for Tag Contribution and Sharing.

| Confidence (P-value) N = 303 | T-Value Parameter |
|---|---|
| 0.1 | 1.64 |
| 0.05 | 1.96 |
| 0.01 | 2.6 |

regard to exploratory research design (Urbach & Ahlemann, 2010). All of the items exceeded the cut-off value of .70, which demonstrates acceptable indicator reliability. It should be noted that the experience construct in both models had a loading value of 1 because it was measured using only one item.

### 5.2. Structured Model

To test the structural model, we conducted two types of validity procedures: convergent and discriminant. Convergent validity refers to the extent to which each item converges with its own construct compared to other constructs. Proposed by Fornell and Larcker (1981), average variance extracted (AVE) is the method commonly used in measuring convergent validity. An AVE above .50 is considered sufficient, and it indicates that a latent variable explains more than half of its indicators' variance, demonstrating sufficient convergent validity. Based on the AVE values shown in Table 4, all of the constructs of the two submodels scored higher than .50, demonstrating high convergent validity.

Finally, discriminant validity refers to the extent to which measures for each latent variable differ from their counterparts, which are measuring other constructs. In other words, it ensures that items of a construct do not measure other constructs unintentionally. One of the measures for discriminant validity is Fornell-Larcker's criterion (1981), which postulates that a latent variable needs to share more variance with its own indicators than with any other latent variable to be valid. Statistically, the square root of the AVE of each latent variable should be greater when correlated with itself than the levels of correlations involving other constructs.

Table 5 shows the construct correlation and square root of AVE for each construct. As shown in the table below, each square root of AVE (shown in bold face values) for each construct when intercepted with itself is higher than its correlation with any other constructs. This fulfills the second condition for discriminant validity.

The next step of the structural model assessment involves the

evaluation of the path coefficients among latent variables. Three checks are recommended for assessing path coefficient relationships: algebraic sign, magnitude, and significance. A path coefficient's magnitude shows the strength of the relationship between latent variables. Paths that show signs contrary to the theoretical model do not support the hypotheses of the model. Path coefficients should be significant at least at the .05 level (Urbach & Ahlemann, 2010). To determine the significance of the model, recent studies (e.g., Hair et al., 2011; Urbach & Ahlemann, 2010) recommend applying resampling techniques such as bootstrapping (Efron & Tibshirani, 1994). The bootstrapping approach is used to assess the t-value significance. The path coefficients for the tag creation and sharing model are summarized in Table 5, along with their respective t-values in parentheses. As indicated, this study used a bootstrapping procedure to assess the t-value. Based on the recommendation by Hair et al. (2011), 5,000 samples were used with a number of cases equal to the observation of 481 in the tag seeking submodel and 303 in the tag create and share sub-model. The critical t-values for a two-tailed test are shown in Table 6.

Fig. 3 shows the structural model for the tag/creating sub-model. As shown in the figure, there are three endogenous variables: attitude, intention to create/share tagged content, and the actual behavior of creating social tags.

According to Figure 3, 7 out of 10 hypotheses were supported by the structural model. Social presence, perceived ease of use, information refindability, and altruism scored path coefficients of .47, .18, .15, and .29, respectively, with t-values scores of 4.30, 3.37, 3.15, and 3.30, respectively, which were significant at the .01 level. Further, attitude and intention to create and share had path coefficients of .820 and .650 with t-values of 19.6 and 15.12 significant at the .01 level, respectively. Pro-sharing norms scored a moderate path coefficient of .15 with a t-value of 1.97 significant at the .05 level. However, the constructs of reciprocity, management support, and recognition scored low path coefficients of .06, .04, and .04, respectively, with corresponding low t-values demonstrating no significant relationships, leading to the rejection of their hypotheses.

## 6. Discussion and Implications

In this study, we proposed a model for determining employees' contribution and sharing of tags. As indicated before, the tag create/share model had three main dependent variables: attitude, intention to
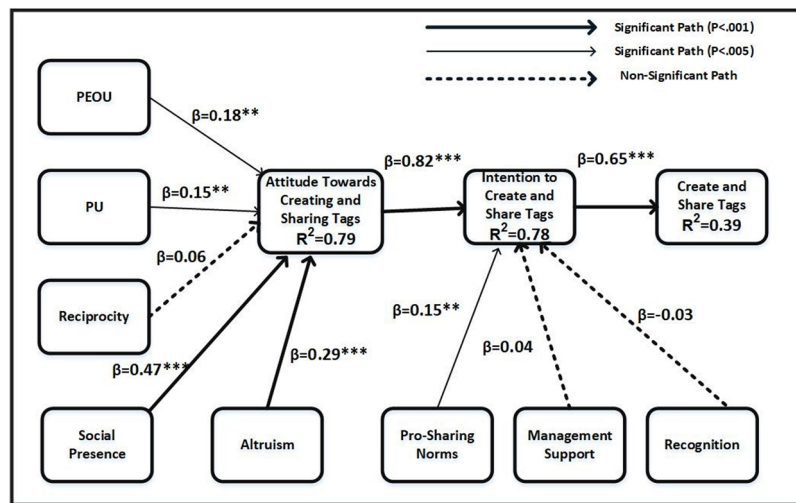
**Table 5**
Construct Correlations for Tag/Create/Share Sub-Model.

| | Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Altruism | **0.86** | | | | | | | | | | |
| 2 | Attitude | 0.72 | **0.85** | | | | | | | | | |
| 3 | Create/Share | 0.62 | 0.71 | **0.84** | | | | | | | | |
| 4 | Intention | 0.78 | 0.79 | 0.69 | **0.88** | | | | | | | |
| 5 | MGMT Support | 0.59 | 0.66 | 0.59 | 0.59 | **0.89** | | | | | | |
| 6 | PEOU | 0.59 | 0.71 | 0.64 | 0.66 | 0.56 | **0.86** | | | | | |
| 7 | Pro-Sharing Norm | 0.63 | 0.64 | 0.58 | 0.64 | 0.73 | 0.53 | **0.78** | | | | |
| 8 | PU (Re-Findablity) | 0.64 | 0.77 | 0.66 | 0.73 | 0.69 | 0.6 | 0.72 | **0.85** | | | |
| 9 | Reciprocity | 0.75 | 0.69 | 0.67 | 0.7 | 0.68 | 0.61 | 0.62 | 0.66 | **0.79** | | |
| 10 | Recognition | 0.58 | 0.66 | 0.57 | 0.61 | 0.71 | 0.56 | 0.6 | 0.73 | 0.67 | **0.77** | |
| 11 | Social Presence | 0.64 | 0.77 | 0.66 | 0.78 | 0.67 | 0.61 | 0.68 | 0.67 | 0.81 | 0.67 | **0.86** |

Note: The diagonal is the square root of AVE.

**Fig. 3.** The Research Model with Significant Relationships.

create/share tags, and the actual behavior of creating (contributing) and sharing tags. Further, the proposed model included the following factors to influence employees' attitudes towards creating and sharing tags: social presence, perceived ease of use, perceived usefulness (represented as refindability in this study), reciprocity, and altruism. In addition, three independent variables were theorized to impact employees' intention to create and share tags: pro-sharing norms, recognition, and managerial influence. Last, employees' intentions were hypothesized to impact employees' actual behavior of creating and sharing tagged metadata content. This section will discuss the proposed hypotheses and attempt to answer the study's main question: What motivates employees to participate in social tagging tools by contributing and sharing tags?

### 6.1. Beliefs and Systems in the Tag Create/Share Model

Based on the results, most of our hypotheses were supported. H1 suggests that the perceived ease of use will affect employees' preference to create and share tags. H1 was supported with a beta coefficient of .18, which was significant at the .05 level. This suggests that the perceived ease of use plays an important role in impacting employees' attitudes towards adding tagged content. If employees find the tagging tools easy to use, they are more likely to favorably perceive the act of creating and sharing tags. In this study context, the easier it is for employees to create and share tags, the less time and energy will be spent in meeting their information needs and in making information available to them and their coworkers. Hence, efforts and time could be largely directed towards other work tasks, leading to higher work productivity. More effort should be focused on designing and building tagging tools that are easy to use to help workers use the features of these tools to share their tagged content with others and, hence, to enhance organizational knowledge.

With respect to the role of the system features of PU information (presented in this article as refindability) on employees' attitudes towards creating and sharing tagged content, H2 was supported with a beta coefficient of .15, which was significant at the .005 level. This direct relationship between PU and attitude suggests that when employees perceive social tagging tools to be useful in allowing them to refind previous information resources, they tend to like adding and sharing tags. In other words, employees need to be convinced that tagging tools are useful for them and others in order to prefer using them. This also might suggest that more effort could be put towards improving the connection among tags so employees can locate related information from related tags and hence expand their knowledge base regarding particular topics. For instance, designers of social tagging

tools can apply various association and threshold rules that can yield better search results and make these tools more useful for employees. Further, a reward mechanism could be set for recognizing those who best manage and create tags. With that said, other coworkers can easily find valuable information based on valuable tags, leading to a high quality of information. These results are also in line with previous studies using the TAM that argued that perceived usefulness was a critical factor only in work-related environments (e.g., Venkatesh et al., 2003; Wasko & Faraj, 2005).

Regarding the effect of reciprocity on employees' attitudes, H3 was rejected. Although previous research has argued that a strong sense of reciprocal benefits influences knowledge sharing in work-related communities (e.g., Wasko & Faraj, 2005, and Bock et al., 2005), the current results show that employees may contribute and share tags without expecting reciprocal benefits from others. This might be justified because when creating and sharing tags, employees are not exerting much effort that they expect to be reciprocated by the work community. They create tags mainly for themselves to bookmark certain information so they can go back to it later. While creating tags, they can adjust the settings so that all of their tags are automatically shared with others.

With regard to the role of social presence, H4 was supported with a beta coefficient of .47, which is significant at the .01 level. Employees' attitudes are linearly affected by the perception of social presence that the social tagging tools offer. This finding might indicate that employees prefer creating tags if it helps them become more social, if it helps them connect with others, or if there is a social presence while adding to this tool. Accordingly, we suggest that the sociability features in social media tools make employees like and favor these tools. In other words, if there already tags in the tools, it may give the sense that other employees are actively participating in adding and sharing tags. This can initiate tag flows, allowing employees to add tags since there is a social presence that can help expand this tag stream. More efforts should be made by organizations to encourage those who create tags so that they can increase the number of tagged resources and hence increase tag use. A reword system could be set for those employees who contribute more tagged resources online. In addition, organizations should encourage their employees to use tagging tools so that others feel that these tools are not abandoned and there are people online who use them. Such a finding is consistent with recent studies (Phang, Kankanhalli, & Sabherwal, 2009; Nov et al., 2010) that have stressed the role of sociability in encouraging users to contribute to online forums. If the concept of social presence showed significance with social tagging, it could very well be true with other social media applications such as YouTube, Facebook, and Twitter, which may justify why such social networking tools attract millions of users.

On a different note, H5 proposes that employees' beliefs regarding altruism may affect their attitudes towards creating and sharing tagged content. This hypothesis was supported with a significant path coefficient of .29 and a t-value of 3.30, which were significant at the .001 level. Generally, previous studies have emphasized the importance of egoistic motives, but contrary to expectations, this study showed that people actively participated in tagging tools to increase the welfare of others. In other words, people who are adding tagged content did not expect to receive direct rewards; rather, they were motivated intrinsically to contribute knowledge to others because they enjoy helping others. This sounds logical if we compare this hypothesis with the previous hypothesis of reciprocity. Simply put, employees will add, create, and share tags to help other coworkers find information just for the sake of helping them without expecting any reciprocal benefits.

### 6.2. Organizational Effect on Intention to Create Tags

H6 proposes that pro-sharing norms can positively affect employees' intentions to add and share tagged content. Although the direct relationship between pro-sharing norms and attitude was shown to be weak, this hypothesis was supported with a path coefficient of .15, which was significant at the .05 level. It can be concluded that if companies adopt a culture of collaboration and sharing, it can boost employees' future contributions to social tagging tools. Again, organizations should share the best practices used by those who create and share quality tags with other coworkers to help promote such behavior. Many employees will do what others do if such behavior is rewarded by the organization. This may suggest the need for a good communication mechanism on the tagging community site to share the names of good taggers so others can copy their sharing practices and expand the tagged knowledge base. Hence, organizations can nurture a knowledge-sharing culture, which can boost employees' knowledge quality. These results are in line with those of previous studies (e.g., Goodman & Darr, 1998; Kankanhalli et al., 2005) that argued that pro-sharing norms are key factors in employees' knowledge contributions and sharing behavior.

H7 hypothesized that employees' perceptions of managerial support will affect their intentions to contribute and share tagged content. H7 was not supported. Hence, it can be argued that employees' future tag sharing behavior will not be affected by whether managers push for tagged metadata contributions. Again, the act of tagging directly benefits an employee and may have a relative impact on his/her overall job performance and managerial support. We may expect managerial support to be a vital component for other work-related tasks, but according to the study, employees will create and share tags for mainly personal purposes.

Regarding the influence of organizational recognition on employees' intentions to create tagged metadata content, H8 was also not supported. Although previous organizational IS research has advocated the power of social recognition and monetary reward in organizational knowledge sharing (e.g., He & Wei, 2009; Kankanhalli et al., 2005; Bock et al., 2005), this study's results showed no significant relationship between recognition and employees' future tag creation and sharing behaviors. Employees may not seek direct recognition from their organization for creating tags to locate their personal information. Employees may seek recognition on a different level but will not do so officially from their organization. Such findings agree well with other hypotheses of altruism. In other words, an employee will intend to share his/her tags with others not for a direct reward from the organization but rather because of his/her participation in the social community or because he/she just wants to help others to find useful information.

### 6.3. The Effect of Attitude on Intention to Create/Share Tagged Content

H9 suggests that individuals' attitudes will positively impact their intention to create and share tags through social tagging tools. The positive influence of attitude on intention, as confirmed by the TAM (Davis et al., 1989), was supported in this study. It was found that employees' attitudes will impact employees' intentions to contribute and share tagged content. Hypothesis 9 was strongly supported with a beta coefficient of .792 with a t-value of 19.6, which is highly significant at the .001 level. In other words, employees' optimistic attitudes towards this tagging approach affects their intention. The results showed that PU, PEOU, social presence, and altruism all accounted for a considerable proportion of the variance in ATT. Therefore, organizational communities should focus on these factors to help users form a positive attitude and strong preference, further improving their willingness and intention to tag and share information resources.

### 6.4. The Predictive Power of the Tag Create/Share Model

After analyzing most of the factors, it is worthwhile to ask one final question: how appropriate is the proposed theoretical model for explaining employees' tag contribution and sharing behavior in social tagging tools? Represented by H10, the goal of this research question is to analyze the relationship between employees' behavioral intentions and actual tag creation and sharing behavior via social tagging tools. Based on the results, it was found that employees' behavioral intentions have a strong and significant effect on employees' actual tag creation and sharing behavior. The results demonstrate that the intention → create relationship is .598 (p-value < 0.001), which supports H10. This finding is consistent with previous TAM and IS research (Davis et al., 1989; Hsu & Lin, 2008; Moon & Kim, 2001).

### 6.5. Theoretical Contributions

First, this study contributes to the existing literature investigating participation with social media tools (namely, social tagging) within the organizational environment. Most of the research done in this area has focused on studying the benefits of social computing tools inside organizations and has lacked a theoretical grounding in users' motivation for participation (e.g., Brzozowski, 2009; Chua, 2007; Damianos, Cuomo, Griffith, Hirst, & Smallwood, 2007; Gibson & Teasley, 2006; Rowlands & Hawking, 2008; Smith, 2008; Warner & Chun, 2009). By using common motivational theories and extracting key factors in knowledge sharing through a thorough literature review, this study theorized and validated a theoretical model of what motivates users to use and add tagged content to ESTTs. Although the study model was meant to target ESTTs, the models can be applied to other collaborative enterprises and social media tools.

Second, research on knowledge contribution and sharing, although it is considerably abundant, may partially fit social media applications, which are distinguished by their interactive nature which accentuates the layers of sociability and hedonism attracting users to use them, demanding a set of more fitting factors (Allam et al., 2012). This study claims to be among the few studies that explore and validate an assorted combination of relatively new factors that fit the nature of ESTTs and explain employees' tag participation and sharing behaviors. These factors are social presence and information refindability. Such findings can lead to an intuitive rationale. That is, if these factors show a positive influence on employees' tag contribution and sharing behaviors using ESTTs, they may be positive for other enterprise social media applications, such as wikis, blogs, and mashups. A validation of these factors on other social media applications can help improve the productivity of these applications in the enterprise context.

Third, this study is unique in proposing and empirically validating new shades and layers of IT usefulness that accentuate the real benefit of social tagging applications and possibly social media in general. Most IS research has dealt with the concept of usefulness from a general perspective that puts all IT applications on one equal level of usefulness without looking at the contextual differences among such applications

(e.g., Bagozzi, 2011; Davis, 1989; Davis et al., 1989; Fang, Chan, Brzezinski, & Xu, 2006). To offer more context-specific user benefits, this study contextualized the concept of perceived usefulness from the standpoint of social tagging applications in that it focused on the main motivations that make people use such tools. In particular, the research proposes and validates fresh constructs tailored to social tagging, namely, information refindability.

Fourth, since this study extensively reviewed past IS research on technology acceptance and on social media knowledge seeking and contribution, it adds more grounding and support, as well as further refines the topic of IS participation in the enterprise social media context. However, enterprise social media is a new phenomenon that requires more investigations and validation to determine the generalizability of the findings.

Finally, this study is among the few studies to venture into quantifying the concept of sociability, which, in this study, was manifested through the concept of social presence. Previous studies have suggested including the element of sociability as a major factor in knowledge contribution and sharing tools but have lacked empirical evidence of the significance of sociability (e.g., Preece, 2000; Preece & Shneiderman, 2009). Using the definition of social presence from previous studies, the current study developed new measures that were refined through multiple content validity stages. Finally, the measures were empirically validated through a large study of 481 employees in two different IT companies. The new measures can be used to assess the concepts of sociability in other enterprise social media applications, such as enterprise blogs and wikis.

### 6.6. Implications for Practice

This study has several valuable implications for practice. First, it offers insights for administrators and managers of public organizations who run social media platforms to learn newer strategies and techniques for gaining and keeping existing knowledge contributors and encouraging the generation of new content through the collaborative tagging of valuable information resources. Specifically, the findings call for more attention to be paid to individuals' productivity (personal and work productivity) with tagging applications to entice users to add more tagged content. Thus, collecting, displaying, and updating tagged content are critical activities for encouraging the viewing of tagging activities among community members. This also suggests the need to educate users on the benefits of online tagging tools, including increased productivity in retrieving information resources, which can help increase employees' personal productivity in achieving their daily information tasks, especially if these tags are relevant to their peers' information pursuits. Moreover, the significance of PU may suggest that developers of ESTTs should work on making these platforms more useful and efficient by setting a threshold value to control the number of association rules that control tags in order to improve the information retrieval process and make the tagging experience for employees more useful.

Second, the findings underscore the importance of the ease of use as an influential factor in determining users' attitudes towards seeking and creating metadata-tagging knowledge for tagging systems. This suggests that managers of enterprise tagging tools should focus on maintaining user-friendly applications to encourage taggers to add and share content, especially for new users who are not familiar with tagging features. This finding also suggests that social tagging developers should work on simplifying employees' operations by using visualization techniques that can reduce users' burdens and thereby promote employee adoption. One of the suggested techniques is to offer users referential suggestions for the promotion of hybrid tagging approaches. Further, organizations should focus on offering courses and training sessions to their employees to help them become more comfortable using social applications, which can lead to more use and more collaboration. Other techniques may include offering brief introductions or

demonstrations through short videos in the main page that can be helpful for users to gain deep insight into how the system works.

Third, since the results showed that employees are driven to contribute tagged content because of their belief in altruism, management can work on stimulating the feelings of enjoyment that contributors perceive when using their tags to help others. This can be achieved by connecting knowledge contributors to knowledge recipients with a chance to express their appreciation for the tagged resources being shared. Such connections can be made by adopting positive feedback systems by which recipients can leave positive messages for the tagger, which can increase the tagger's feelings of enjoyment in helping others and hence reinforce more contribution behavior.

Fourth, while reward and recognition do not seem to stimulate employees' metadata contributions in ESTTs, pro-sharing norms were shown to be a potential player in motivating employees to create and share tagged content. Management can work on adopting a culture of contributing and sharing among their employees through open office space to help employees help each other on work-related tasks. Another approach to adopting a pro-sharing culture is encouraging employees to transfer information across departments to help promote sharing norms. Finally, management can take advantage of the attractiveness of YouTube to show role model video segments of ideal work environments that promote the concept of pro-sharing norms.

Finally, according to the study's findings, social presence has the highest influence on employees' attitudes towards creating and sharing tags. Interestingly, the power of social presence exceeds the power of traditionally established TAM concepts of perceived ease of use and perceived usefulness. As such, it can be concluded that employees enjoy contributing tags mainly because of the presence of other employees on the ESTTs. In other words, if there is no audience to sing for (i.e., to add tags for), the tag contributors will lose interest in contributing tags to information resources. It can also be concluded that users add tags if they feel that their tags are useful to other users, which could work as a self-reinforcing factor for adding more tags. The finding also suggests that management should make sure the tagging tools have enough employee presence to entice contributors to create and share more tags to benefit other employees and entice them to find tagged resources. This can be done by holding live events and training courses on the ESTTs' features to gather enough employees to discover the tools and explore their benefits. Inviting sufficient numbers of employees to use ESTTs can add more activity to the tagging tools and help motivate tag contributors to add more tags to information resources. Further, to encourage taggers to add tags to information resources, ESTT tech staff can add rating systems for tags that are used by the greatest number of people. For example, a "like" feature could be used for tags that attract the greatest number of employees. Such rating approaches can work as a reward procedure that encourages taggers to add more tags. Additionally, developers of social tagging tools can enhance social presence elements by adding social features to ESTTs. Social features refer to applications that enable users to create profiles, social connections and memberships within communities and allow for user-generated content (Lyons, Lessard, & Marks, 2011). Such features can encourage users to increase their time on ESTTs, which can lead to more seeking, contributing, and sharing activities. In conclusion, this study offers great implications for the improvement and development of resource tagging approaches, thus further boosting global knowledge discovery, sharing and innovation in organizational communities.

### 6.7. Limitations and Future Research

As with most studies, the limitations of this study will need to be addressed in future studies. First, the data were collected from two IT companies to rule out any unnecessary bias effect that might exist when relying on one set of data from one company. However, the external validity of the results cannot be generalized to most companies that use STTs. This study's model needs to undergo further testing and

verification in more companies. Further, the two companies used in this study are IT-oriented, which may reflect higher tag usage and creation patterns than there would be in non-IT-oriented companies. More companies with different business models are needed to thoroughly test and validate the study's model. Additionally, this study's model was tested in two IT companies in the private sector. It would be worthwhile to test the model on companies in the public sector to discover potential differences in user tagging behavior in different organizational contexts. Second, because respondents mainly used two enterprise tagging systems (SharePoint and Lotus Connections), the results cannot be generalized to all enterprise social tagging tools. Future studies can replicate this study using data from different organizational contexts with different social tagging tools to offer more generalization of the results and further ensure the validity of the two submodels of the study. Third, while testing the proposed model, we tested the goodness of fit for an alternative model that includes two interrelated sets of variables on the attitude construct, namely, PEOU, PU (refindability) related to reciprocity and altruism. The chi-square test showed significance, but this can change the TAM model focus and affect the direction of this study. Such findings could be approached in an extension of this study. Fourth, the study depended mainly on survey questions to understand employees' actual use and contribution behavior with enterprise social tagging tools. A natural next step is testing and validating this model on employees' actual seeking and contribution behavior using real tagging data from employees' log files, which is similar to what was done in a study conducted by Pan and Millen (2008). This could contribute to further validating the model of this study or could open additional insight into why employees share knowledge in public organizations.

Fifth, this study is consistent with most IS research using a quantitative data analysis method for measuring the impact of assorted factors on users' attitudes, intentions, and actual use of IT applications. However, a qualitative interview with those who seek and create tags may enrich the understanding gathered from the survey data. Fourth, while reward and recognition do not seem to stimulate employees' metadata contributions in ESTTs, pro-sharing norms were shown as a potential player in motivating employees to create and share tagged content.

## 7. Conclusion

This study was introduced with a general question: What motivates employees to use enterprise social tagging tools? As the title of the paper indicates, companies can have online tagging and information classification tools, but without enough content in them, such tools may be abandoned due to the diffusion of their information classification goals. It is imperative that organizations encourage a flow of contributions of employees' generated tagged content, but the question is how can this be done? To answer this question, this research proposed and empirically validated a belief-based and socio-organizational (combining social and organizational factors)-oriented model of potential factors that could drive employees to contribute and share tags using STTs. The results suggested that employees are driven to contribute tagged metadata content by social presence, perceived ease of use, information refindability, and employees' belief in altruism. Additionally, pro-sharing norms were shown to affect employees' intentions to create tagged content. Notably, social presence, which is one of the prominent attributes of social media, seems to be the secret ingredient for invigorating employees' attitudes towards sharing their knowledge with their colleagues. Although the effect of sociability on social media sounds logical, no study (at least to the researcher's knowledge when this study was conducted) tested this important element using empirical data. Accordingly, this study is considered one of the first attempts to use empirical data to test the effect of sociability (as manifested through the construct of social presence) on employees' attitudes towards and use of social tagging applications.

## Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.ijinfomgt.2020.102148.

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