

# Applying a multi-dimensional hedonic concept of intrinsic motivation on social tagging tools: A theoretical model and empirical validation

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## ABSTRACT

Participation in and adding content to social tagging tools is important for these tools to achieve their purpose of classifying and organizing information. Users of social tagging tools are driven to participate and add tags by extrinsic and intrinsic motivation. Extrinsic motivation is dominating research as a main predictor of why users use information systems. Social tagging tools, as a subset of social media tools, are distinguished by their unique social aspect that makes intrinsic motivation a potential driver for users to add tags to content. Intrinsic motivation, when applied to social tagging tools, could entail many shades that represent different users' motives for using such tools. In this paper, we add a rich concept of intrinsic motivation to include hedonism as a main predictor of users' behavior on social tagging tools. We empirically validate a previously proposed theoretical model of three dimensional concepts of hedonism with three components describing individuals' hedonic state when interacting with social tagging tools: explorability, curiosity, and enjoyment. After a robust and thorough data analysis using structured equation modeling, the results confirm our theoretical model and suggest using a richer concept of enjoyment to reflect a hedonic dimension when investigating intrinsic motivation with interactive social media tools. Our validated model could be the spark of new factors that have the potential to influence user acceptance of information systems in general and in social media tools. This research contributes to the development of attitude-behavior theories that could explain users' acceptance of dynamic web

## 1. Introduction

For the last two decades, users' acceptance of information systems (IS) has occupied the attention of numerous researchers. To understand the use and acceptance of IS, researchers have embraced motivation theory (Davis, 1993). This theory states that individuals engage in various activities depending on two types of motivations: intrinsic and extrinsic. Intrinsic motivation denotes conditions under which an individual carries out an activity for the satisfaction obtained from the activity itself. On the contrary, extrinsic motivation includes those situations where an individual performs an activity in the expectation of attaining some external paybacks (e.g., money, rewards) other than the benefit of the activity itself on the user. Information system scholars generally assess IS use from a utilitarian perspective and concentrate on the role of IS in refining users' efficiency and productivity at the work setting. Other scholars view user's motives for the utilization of IS

intrinsic with emphasizing on a hedonic aspect, reflecting the users' concept of the enjoyment that they experience when interacting with the information system (Adams, Nelson, & Todd, 1992).

Studies that embraced the utilitarian usage of IS are contingent upon previous practical theories that link users' use of IS with only external benefits. Instances of these theories are Technology Acceptance Model (TAM), cognitive theory, Theory of Reasoned Action (TRA), and Theory of Planned Behavior (TPB) (Ajzen, 1991). To validate the utilitarian side, previous IS usage studies employ static applications such as personal productivity tools including Microsoft Word, and organizational driven software known as Enterprise Resource Planning (ERP) (Brown & Venkatesh, 2005).

Information system researchers have generally recognized the impact of extrinsic motivation in comparison to intrinsic motivation regarding generic technology's use and acceptance (Venkatesh, Morris, Davis, & Davis, 2003). However, latest developments in social

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networking and social media technologies have widened the range of users' motivation to include non- utilitarian goals. The emergence of a new category of interactive tools aims to augment user experience of explorability, enjoyment and curiosity instead of pure utilitarian needs such as efficiency enhancements or productivity. Various tools comprise online social networking websites (For example, Facebook), video sharing tools (For example, YouTube), instant messaging (For example, Facebook and WhatsApp), online website sharing (e.g. Stumble Upon), and photo browsing (For example, Flickr). Such interactive and social media-based tools show that users are willing to use and add their input to these tools without waiting for extrinsic motives or a paycheck. As a matter of fact, users tend to use them for fun or for hedonic reasons.

The prevalent growth of hedonic social media tools, including social tagging, can be realized from their worldwide penetration among on-line users. The use of social media is not only responsible for altering the way individuals consume media and connect, but also has encouraged the worldwide embracement of the internet. Over the past ten years, the use of social media tools among 75% American users who had internet accessibility, has increased from 7% to 65% (Chaffey, 2017). This acceptance of hedonic systems and social media implies that they are tempting and pleasurable to use compared to static applications. Additionally, because of their attractiveness to users, these tools have the potential to attract more industries and generate higher revenue.

Social tagging is one of the social media tools that belong to the Web 2.0 platform. Features of social tagging tools have empowered people to use keyword descriptors for categorizing web content and for mutual and personal management of information resources (Zervas, Sampson, & Pelliccione, 2016). Social tagging tools includes a variety of methods to generate, accumulate and share useful content in an interactive and ingenious way that is richer and more beneficial than prior attempts to organize and categorize web content (Connor, 2007). The wide use of tagging is attributed to the social nature, the flexibility, and the simplicity of such tools in making web content shareable and findable. Users can simply add a tag to numerous information resources such as images, bookmarks, blogs, videos, and Twitter's content. Many web platforms allow users to tag resources including Facebook, Twitter, Diigo, etc. The importance and popularity of tagging are attributed, at least in part, to the benefits users gain from effective sharing and organization of large amounts of information through using tag categories that are accessible from anywhere where there is internet access (Golder & Huberman, 2006). Despite the popularity of these social tagging tools, research on users' acceptance of such tools is not abundant and mostly focus on factors that indicate utilitarian benefits. Previous utilitarian models of users' acceptance of systems may not provide an adequate understanding of hedonic system usage given the motivational differences behind using static system, represented in application such as ERP, and dynamic systems, represented in web applications such as Facebook and Twitter.

This paper is an extension of a previous study (Allam & Shoib, 2013) that proposed a three-dimensional hedonic model of intrinsic motivation that represents the concepts of perceived enjoyment and playfulness presented in extended TAM studies (Van der Heijden, 2004; Adilla-Meléndez, Aguila-Obra, & Garrido-Moreno, 2013; Moon and Kim, 2001). The proposed model has the potential to predict users' behavior on social tagging tools as a set of social media tools. Further, the model supports an earlier study (Allam, Blustein, Spiteri, & Bliemel, 2011) on the effect of hedonic traits on attracting users to accept and use social tagging tools. Our research emphasizes the elements of enjoyment, curiosity, and explorability and their interaction with users' attitude and intention to use social tagging tools. The paper is divided into six sections. The next section reviews the prominent literature on the incentive of users towards IT acceptance. The third section presents the research model and develops the research hypotheses characterizing the relationships depicted in the model. The fourth section describes the research methods used to collect and analyses the data. Section five

covers the data analysis and highlights findings of the research. The final section discusses the results, their implications for research and practice, study limitations, and future research.

## 2. Related work

### 2.1. Motivation to tag

Previous research has identified several motives for users to tag online resources. Dhir, Kaur, and Rajala, (2018) found that habit and hedonic motivation have a significant direct influence on the user's intentions to tag photos. In a similar study, Dhir et al. (2016) identified nine reasons of why users tag photo including likes and comments, social influence, peer pressure, gaining popularity, entertainment, feeling good, social sharing, affection, and convenience. It should be noted that Dhir, in their both studies, used Facebook as one of the applications of tagging on social web. In their study of users' media tagging, Cunningham and Nichols (2008) indicated that one of the reasons individuals use tags in media sites is to be updated on Mainstream Media from other users' tags contents. In their study of video content tagging, Melenhorst, Grootveld, Setten and Veenstra (2008) suggested tagging offers users more maneuverability to organize content of interest. They pointed out tagging makes it easier for users to annotate content, given it requires no system knowledge and no metadata or classification rules, which in turn leads to an easy content retrieval relevant to users' needs. Glassey (2007) claimed tagging offers users a practical means of content navigation similar to their natural way of navigating, classifying, and organizing things. Rainie (2007) pointed out that while tagging enables users to add their own tags to a shared tool of tags, it can categorize users' tags in a better way for future retrieval and better access for other community users. Ames and Naaman (2007) found the easy retrieval, easy searchability, easy recall (e.g., event, person, situation, or place), and contribution to the online community as the main motivations behind users' collaborative photo-tagging. Lee (2006) added to that by indicating 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 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. Social tagging systems offer potential to improve the effectiveness of search engines by combining users' tags with regular key word searches to render more relevant search results (Santos-Neto, Condon, Andrade, Iannitchi, & Ripeanu, 2009; Suchanek, Vojnovic, & Gunawardena, 2008; Golder & Huberman, 2005; Sen, Harper, LaPitz, & Riedl, 2007). Tags help users conduct serendipitous browsing in addition to explore more related information through tag clusters and tag cloud (Quintarelli, 2005; Velsen & Melenhorst, 2009). In the same line, Kroski (2005) indicated that features of tag such as tag cloud and tag maps encourage users to be curious on related tag which helps them explore more information about their chosen topic. Another study by Nov, Naaman, and Ye, (2009) investigated factors associated with users' photo sharing in an online community. The study concluded that users tag photos because they enjoy helping other in finding related information.

### 2.2. Extrinsic motivation in technology acceptance model (TAM)

TAM is a model that pertains to the understanding of information systems' consumption and behaviors linked to acceptance of information technology. Earlier explorations used TAM to predict users' acceptance of numerous information technologies, such as blog participation (Hsu & Lin, 2008), microcomputer technology (Yousafzai, Foxall, & Pallister, 2007), e-mail (Yang & Zhou, 2011), Web surfing (Moore & Benbasat, 1991), and multimedia applications (Liao, Tsou, &

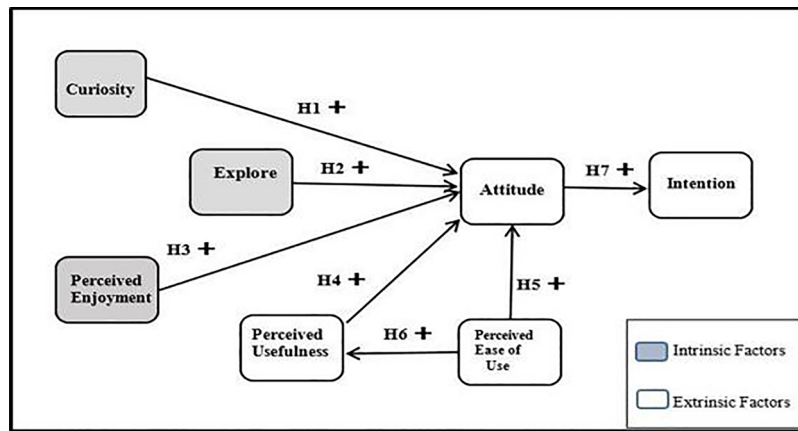


Fig. 1. Proposed Model of Three-Dimensional Intrinsic Motivation.

Shu, 2008). TAM is suggested by Davis et al. (Davis, 1989; Davis, Bagozzi, & Warshaw, 1992) as the version of the Theory of Reasoned Action (TRA) for the area of Information Systems. TAM has main components that affect how users' use a technology: Perceived Ease of Use (PEOU), Perceived Usefulness (PU), attitude, and intention to use a technology. Perceived Usefulness is defined as the users' belief that specific information system will positively affect their job performance, while perceived Ease of Use is extent to which the user believes that the target system will be free of effort (Davis, 1989). Further, Davis defined the concept of attitude as the desirability to use a technology. In other words, TAM postulates that individuals' behavioral intention (BI) to use a technology is decided by their attitude towards using the technology, which in turn is decided by perceived ease of use and perceived usefulness.

### 2.3. Intrinsic motivation dimensions

Though the majority of research regarding users' acceptance of technology focused on the utilitarian theory of using technology and extrinsic motivation within the work setting, other studies showed a major need to include intrinsic motivation as a major factor in attracting users to use technology. Davis et al. (1992) investigated the impact of intrinsic and extrinsic motivation on intent to use computers in the office. Although they linked perceived usefulness to extrinsic motivation, and perceived enjoyment was classed as an intrinsic motivation, they noted that intrinsic motivation facilitated the influence of extrinsic motivation, but extrinsic motivation had the major impact of why users accept technology. Following the same research stream, Teo, Lim, and Lai, (1999) presented a richer insight to the theory of extrinsic motivation and showed its key effect on users' technology acceptance. Other researches employed perceived enjoyment as a substitute for intrinsic motivation and emphasized its main significance for especially for hedonic systems. When individuals are in the flow or hedonic state, they will find the interaction intrinsically interesting, as they are involved in the activity for pleasure and enjoyment rather than expecting extrinsic rewards (Moon & Kim, 2001). Such hedonic or flow state was named perceived playfulness by Venkatesh & Bala (2008) and it represents the intrinsic motivation associated with using a new system. Driven by intrinsic motivation as a possible factor that impacts motivations of the users to use technology, Moon and Kim (2001) utilized the notion of perceived playfulness to propose and verify a multifaceted type of intrinsic motivation that is composed of three dimensions of perceived playfulness as the extent to which web users:

- 1 Perceives that his or her attention is focused on the interaction with the WW
- 2 Is curious during the interaction

- 3 Find the interaction intrinsically enjoyable of interesting (Moon and Kim, 2001, p.3)

The above study (Moon and Kim, 2001) showed that intrinsic motivation, represented in the concept of playfulness and enjoyment, have more influence on attitude than extrinsic motivation, represented in the concept of PEOU, and PU) when interacting with web applications. However, the importance of intrinsic motivation, which typically alternates for perceived enjoyment and hedonism, has been getting less consideration from information system scholars (Van der Heijden, 2004; Wang & Scheepers, 2012). We believe that the adoption of users' intrinsic motivational factors, such as the concept of perceived enjoyment, as a study hypothesis needs more exploration and validation especially when it comes to users' behavior on social tagging tools as a subset of social media technology, given that such tools have more interactive features that users tend to enjoy through content browsing and clicking. Encouraged by the three-dimensional model of perceived playfulness of Moon and Kim (2001), and the 3D-IM of (Li, Hsieh, & Rai, 2009), we propose a three-dimensional hedonic concept of individual's intrinsic motivation to predict user's behavior on social tagging tools. We also proceed and expand our previous research (Allam, Blustein, Bliemel, & Spiteri, 2012; Allam & Shoib, 2013) on investigating the enjoyment aspects of social tagging tools. Our proposed multi-layered model of hedonism includes perceived explorability, perceived curiosity, and perceived enjoyment as proposed ingredients of the hedonic state that users experience when browsing through tagging tools to explore, discover, and add keywords to web content. Further, we borrow TAM's extrinsic motivational factors, PU and PEOU, to compare the impact of both intrinsic and extrinsic motivation on users' acceptance of social tagging tools. In the following section, we will introduce our theoretical model of these three dimensions and hypothesis their potential influence on users' acceptance of online social tagging tools.

### 3. Research model and hypotheses

Fig. 1 demonstrates our suggested model of intrinsic and hedonic motivation. The word hedonism refers to an individual's attempt to maximize the feeling of pleasure by doing a specific action (Veenhoven, 2009). Scholars have found that hedonic motivation to be a major factor on in the acceptance and adoption of online systems (e.g., online games, SNS, location applications) (Laurn, Yang, & Chiu, 2015; Venkatesh, Thong, & Xu, 2012). Further, in the context of the use of social networking sites (SNS), previous studies have found that hedonic motivation has a significant influence on the user intentions to use SNS (Dhir et al., 2018; Mouakket, 2015; Qin, Kim, & Tan, 2016; Sledgianowski & Kulviwat, 2009). Similarly, in the context of

phototagging, people tend to gratify their hedonic needs through phototagging using Facebook (Dhir et al., 2018; Dhir, Chen, & Chen, 2015). Hedonism in the setting of this article implies using and browsing social tagging tool for pleasure or fun through three different hedonic states representing intrinsic motivation: enjoyment, explorability and curiosity. Previous research on social tagging tackled the concepts of explorability, curiosity, and enjoyment that users experience when interacting with tagged resources. For example, Smith (2008) noted that users of tagging get engaged in sessions of exploring through ‘pivot browsing’ which means moving from one information space to another by choosing a new pivot point for exploring the tagged resources. Further, uses of tagging tools are curious to look at tags from different perspectives: who tagged what, what is related to this particular tag, and how it is categorized. Quintarelli (2005) users of social tags enjoys a sense of serendipity by discovering relevant resources in their search tasks. As users start with their own tags, they end up exploring similar tags that might lead them to unexpected but related information about a certain topic. In a similar study, Rainie (2007) noted social tagging can help users stumble upon interesting resources already found by others when dealing with online catalogs like Amazon.com. For example, at Amazon.com, on the “most popular tags” page, a search for things tagged “horror” would result in about three thousand books and movies that presumably belong to the horror genre. Guo, Tan, Chen, Zhang, and Zhao, (2009) noted that tag users rely on information scent provided by various cues in judging information sources and navigating through information spaces. They indicate tags serve as “proximal cues” that provide an information scent to web objects. We propose that three elements, namely Perceived Enjoyment, Curiosity, and Explorability will have a positive influence on users’ attitude to using social tagging tools which. We also propose that Perceived Usefulness and Perceived Ease of Use will positively impact users’ attitude to use social tagging tools. Further, we hypothesize that users’ Attitude will have a positive impact on their intention to use social tagging tools.

### 3.1. Curiosity

We defined curiosity as the power of one’s certainty that using tags and social tagging tools will satisfy their intrinsic drives of curiosity. Allam et al. (2012) demonstrated that curiosity is positively related to users’ attitude to using social tagging tools. In addition, previous research indicated that curiosity appears to augment the quality of the search experience with respect to the time spent and data resources and resulted in a more attentive memory and understanding of new data objects (Menon & Soman, 2002). The concept of curiosity was also explored by Moon and Kim (2001) to define the impact of perceived playfulness on the attitude of users when it comes to using online web applications. They noted that the concept of playfulness could entail several layers, one of which is curiosity, which drives users to enhance their perceived enjoyment, which has a positive impact on their attitude towards using web applications. Accordingly, we propose the following:

**H1.** curiosity has a positive effect on users’ attitude when using social tagging tools

### 3.2. Perceived enjoyment

Perceived enjoyment (PE) is described as the extent to which the actions of interacting with an information system is perceived to be enjoyable irrespective of the expected outcome from using it (Moon & Kim, 2001). Hassan and Nevo (2009) specified that social computing tools, such as bookmarking and social tagging tools, are impacted by a hedonic dimension that is likely to augment employees’ satisfaction and hence improve job performance. In a recent study of technology acceptance, Otieno, Liyala, Odongo, and Abeka, (2016) observed that perceived enjoyment has a positive impact on users’ attitude towards

using hedonic systems. We believe that once users enjoy the act of browsing tags and the related the information resources, they are more likely to explore more tags and hence explore more information objects. Therefore, we make the following hypothesis:

**H2.** Perceived Enjoyment has a positive effect on attitude towards the use of social tagging tools

### 3.3. Explorability

There is a paucity of research on the role of explorability in users’ acceptance of IS due to the static features of previous IS (e.g. Word, ERP Systems, or CRM tools) that did not allow users to explore more information resources. In social media tools (or systems), we believe the dynamic features that are added to such tools encourage users to click on links to explore new information resources that would add to their knowledge. Accordingly, we introduce the concept of explorability as a new layer of intrinsic motivation that could have an impact of users’ attitude and intention to use social tagging tools. We describe explorability as the strength of one’s certainty that interactions with social tagging tools will satisfy their intrinsic motives of exploratory search and browsing for relevant information resources. Exploratory research is composed of two constituents: (1) a search technology to enable the search process; and (2) information objects (e.g., favorite images, email messages, or a list of preferred music files) that must be useful and significant to users to get them engaged in the search process. Moon and Kim (2001) critiqued the generic meaning of perceived enjoyment that users experience when interacting with online application and recommended an in-depth analysis that can reflect the rich nature of the enjoyment that could entail many underlying sub-concepts. They argued that measurements of perceived enjoyment should reflect a comprehensive set of intrinsic motivations, including activity absorption, exploratory behaviors, and curiosity. Hence, it can be argued that individuals using interactive tools may experience multiple layers of enjoyment that need to be explored and verified. Our argument can be supported by a previous study on bookmarking tools (Millen, Yang, Whittaker, & Feinberg, 2007), which noted that users engage in exploratory search journeys through browsing community and co-workers’ collections of social tags and bookmarks to explicitly learn more about relevant topics and explore more relevant information about topics of interest. This leads us to the following hypothesis:

**H3.** Explorability has a positive influence on users’ attitude towards the use of social tags

### 3.4. Perceived usefulness (PU)

Perceived Usefulness (PU) is defined as the degree to which an individual believes that using a particular system would be useful in improving his/her job task (Davis, 1989). In the context of this study, PU is defined as the degree to which the user of social tagging tools believes that using such tools would enhance his project or job tasks. The theoretical foundation of TAM by Davis, Bagozzi and Warshaw (1989) and the revisiting of Theory of Planned Behavior by Taylor and Todd (1995b) show that perceived usefulness has a significant impact on users’ attitude towards IS/IT adoption. PU has been linked with users’ intention to use technology especially in work related context (Hamari & Keronen, 2017). However, recent research on TAM based model showed a correlation between PU and users’ attitude to use hedonic systems (Hamari & Keronen, 2017; Hamari & Koivisto, 2015; Kwon, Park, & Kim, 2014). As social tagging tools help users find related resources, it can be hypothesized that users of such tools prefer to use them because they help them achieve jobs or project related tasks. In accordance with the TAM framework and related prior studies, this study posits this hypothesis:

**H4.** Perceived usefulness will positively influence attitudes toward using social tagging tools

### 3.5. Perceived ease of use (PEOU)

Perceived Ease of Use (PEOU) is defined as the degree to which an individual believes that using a particular system is easy to use (Davis, 1989). In line with this definition, we defined PEOU as the degree to which a user believes that using social tagging tools is easy use. Venkatesh and Davis (2000) found that PEOU get more significant on users' attitude as the length of technology use increased. In the context of hedonic systems, it was found that if users perceive the system easy to use, they could have a positive attitude and increased willingness to use that system (Hamari & Koivisto, 2015, Allam et al., 2012). Further, a positive connection between PEAU and PU was found in a study by Taylor and Todd (1995a) in their comparative study of TAM, TPB, and DTPB. Recent study of TAM (Marakarkandy, Yajnik, & Dasgupta, 2017; Kwon et al., 2014); found that users' perceive the system to be useful if they found it easy to use. If this holds true with social systems, it is worthwhile to test the relationship between the ease of use of social tagging tools with both PU and users' attitude to use. Hence this study posits the following hypotheses:

**H5.** Perceived ease of use will positively influence attitudes toward using social tagging tools

**H6.** Perceived ease of use will positively influence perceived usefulness.

### 3.6. Attitude

Attitude is own opinion on how positive or negative the actual behavior is (Ajzen & Fishbein, 1980). Therefore, attitude towards using social tagging tools includes opinion on whether using such tools is good idea and how much users of tags prefer to use them. Attitude are shaped based on pervious experiences and available affective and cognitive information and was said to have an impact on people behavior towards a certain action (Fishbein & Ajzen, 1975). As per TAM (Davis et al., 1989), individuals' intention is determined by their attitude towards using a system. Attitude is regarded as a major determinant for behavior outcomes in wide IS users' acceptance research including social tagging (Allam et al., 2011, 2012; Dhir et al., 2018; Dhir, 2016), social networking services (Kwon et al., 2014), social world (Mantymaki & Salo, 2011, 2013), online purchase intention (Hamari, 2015), 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 environment (Adilla-Meléndez et al., 2013), modeling user acceptance of social networks (Hossain & de Silva, 2009), and electronic government adoption (Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2017). Further, based on a very recent critical review of the Unified Theory of Acceptance and Use of Technology (Dwivedi, Rana, Janssen et al., 2017), attitude was found to have a direct impact on users' intention to use IS. Based on the TAM and related prior research, this study posits the next hypothesis:

**H7.** Users' attitude positively influence their intention to use social tagging tools

## 4. Methodology

This study aims to investigate user perceptions of collaborative learning technologies. To avoid over generalizations, this study aims to investigate the influence of three hedonic factors, representing intrinsic motivation, on users' attitude and intention to use social tagging tools. The three factors are explorability, curiosity, and enjoyment. In this research, we used a structured questionnaire composed of two stages to

test the proposed model of the study. The first part of the questionnaire measures the constructs included in the research model, while the second part collects demographic information about the participants of the study. The items of the constructs were measured using a seven-point Likert scale, with answer choices ranging from "strongly disagree" (1) to "strongly agree" (7). All constructs derived from the literature, primarily from previously tested survey instruments, were meant to take advantage of well-tested psychometric measures. Most of the constructs were operationalized by modifying previously validated scales. In the trial test, we requested 15 graduate students from the School of Information Management, to fill the questionnaire, and the outcomes exposed satisfactory measurement characteristics for all of the constructs. We also employed qualitative responses from these students to improve the wording of the measurement items. A questionnaire was developed to include all the latent variable of the study. We started by building items (measurement questions) for the three dimensions of intrinsic motivation consist of: Perceived Enjoyment, curiosity, and explorability. We assessed curiosity (3 items) and exploration (3 items) by adapting the items from Moon and Kim (2001). We evaluated perceived enjoyment (PE) (4 items) by using verified scales from Venkatesh et al. (2003). We utilized Davis '(1989) measures of Perceived Usefulness and Perceived Ease of Use, since numerous IS re- searches have validated them established consistent outcomes. With respect to attitude, we revised 4 items presented by Davis et al. (1992) and by Liao et al. (2008). Finally, for the construct of intention to use, we started by using three items in the pilot study, but we eliminated one item that did not show strong composite reliability. The details of the questionnaire items and the source of literature for each construct are presented in Appendix A

### 4.1. Participants and procedures

The study compared the influence of these factors against their extrinsic counterparts of perceived usefulness and ease of use on user's attitude and intention to use social tagging tools. Participants were recruited from online social tagging sites such CiteULike, Twitter, and Flickr. A link to the survey was posted on these sites asking those who use tags to answer a 15-minute questionnaire on their perceptions and their behavior when they use social tags. To ensure the integrity of the questionnaire process, participants were given only one chance to participate in the survey by enabling the IP restriction mechanism that prevents users from retaking the questionnaire. It should be noted that the measurement items were designed to shuffle the questions with every user to prevent possible biased effect.

### 4.2. Demographics

Data collection took place in summer 2016 and lasted two months. The online survey resulted in 187 responses with 174 valid responses. Table 1 shows the characteristics of respondents.

The above table shows that 68% of respondents were males while 32% were female. Further, 73% of respondents are in the age category of 26–40, while 87% have at least an undergraduate degree. About 38% of responded have a master's degree or equivalent, and 22% have a PhD or equivalent. The collective results of demographics show that the diversity of respondents is achieved and the biased effects a special group or from a specific tagging tool do not exist.

Fig. 2 shows the tagging tools reported by the survey respondents. It should be noted that respondents were given the option to choose more than one tagging tools in case they are using more than one. For example, some users reported using LibraryofThings, Twitter, and Flickr. In this study, most users come from the four tagging tools which reflect the popularity of these systems: Twitter, StumbleUpon, Flickr, and Digg.

**Table 1**  
Tag Motivation in Relation to the Model of the Study.

Tag Motivation	Study Constructs	Study
Users are driven by hedonic motivation to tag photo on Facebook	Enjoyment	Dhir et al. (2018)
Users enjoy photo tagging on Delicious	Enjoyment	, 2009Nov et al. (2009); McDonald et al. (2012)
Tagging offers users means of content navigation	Explorability	Glasse (2007); , 2006Millen and Feinberg (2006)
Social tags enable information discovery	Curiosity	Lee (2006)
Tags help users conduct serendipitous browsing through tag cloud	Curiosity/Explorability	Velsen and Melenhorst (2009)
tag clouds and tag maps encourage users to explore new topics, people, and resources.	Explorability/Curiosity	(Kroski, 2005)
Clusters of items with the same tags allows users to explore more about their topics from the similar clustered tags.	Explorability/Curiosity	(Quintarelli, 2005)
Tags serve as “proximal cues” that provide an information scent to web objects and provide users a sense of what is relevant to them.	Explorability/Curiosity	(Zhan et al., 2009)

4.3. Data analysis tools

For data analysis, Structural Equation Modeling (SEM) was utilized as it fits the nature of the study in validating latent variable. One of the major advantages of SEM is that a researcher can use it to simultaneously assess two aspects of the model: measurement model, relationship between constructs and measures; and the path model, relationship between the constructs, to test theoretical relationships (Lee, 2007). In addition, we employed a Partial Least Square (PLS), which is an element-based Structural Equation Modeling (SEM) method. PLS is particularly appropriate for hypothetical expansion purposes (Quinlan, 2011) and it accommodates for formative models and suitable for working with theoretical model and building latent variables (Chin, 1998; Jarvis, MacKenzie, & Podsakoff, 2003). Smart PLS was selected as a software tool for data analysis (Ringle, Wende, & Becker, 2015).

5. Results and analysis

5.1. Testing the goodness of fit using chi-square test

To validate the proposed model, we conducted a two-step-modeling approach recommended by Anderson and Gerbing (1988) when dealing with SEM. First, we conducted a Chi-square test to assess reasonableness of the structural constraints on the estimated construct covariances. Only if the results of the Chi-square test turn positive, the structure model will be considered for analysis. In our case the result of the Chi-square test was positive with the dependent variables (attitude

and intention) as shown in Table 3. All the Chi-square values for items of the constructs exceeded the critical value for  $\alpha$  of 5% of 3.841. This means that the null hypothesis (no significant covariance) is rejected and hence we can proceed with the second step to verify the path coefficient for the structure model.

5.2. Psychometric properties

We hypothesized that curiosity, explorability, and enjoyment have a positive impact on attitude which, in turn, positively influences users’ intention to use social tagging tools. All the reflective constructs (latent variables) of the study were tested using PLS measurement model through convergent and discriminant validity for each individual indicator and through composite reliability for a block of indicators. Following the validation guidelines of Straub, Boudreau and Gefen (2004) and Urbach and Ahlemann (2010), it was decided to test the measurement model with regard to their reliability and validity. To test the construct validity of the outer model, the researcher tested the reliability of the exogenous model through internal consistency, indicator reliability, convergent reliability, and discriminant validity. Two methods were used to assess the internal consistency of the measurement model: the traditional Cronbach’s Alpha (CA) (Cronbach, 1951), and composite reliability (Hari et al., 2011). 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 all indicators of one single construct have the same range and meaning. Alpha values

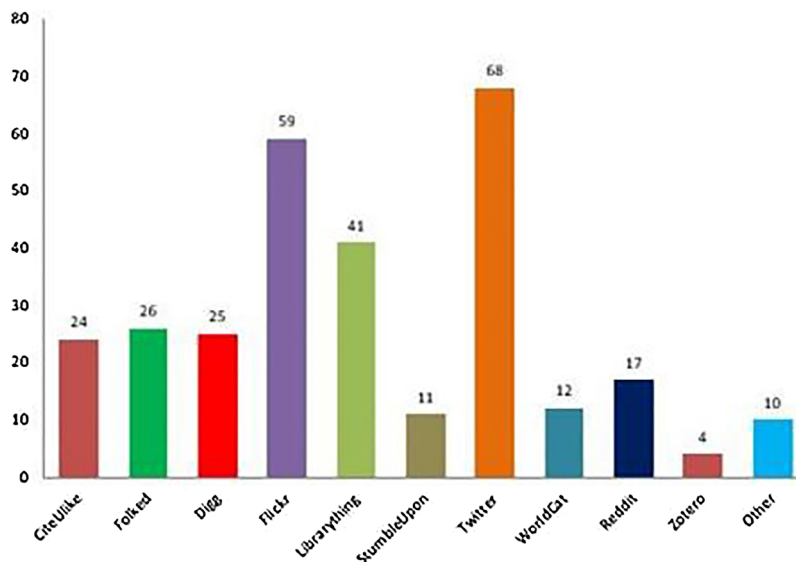


Fig. 2. Tagging tools Reported by the questionnaire Respondents.

**Table 2**  
Users' Profile.

Category		Frequency	Percentage
Gender	Male	118	68%
	Female	56	32%
Age	18–20	3	2%
	21–25	14	8%
	26–30	49	28%
	31–35	57	33%
	36–40	30	17%
	41–45	12	7%
	46–50	6	3%
	51–55	3	2%
Education	High School	3	2%
	Community College	7	4%
	Education Undergraduate Degree	52	30%
	Graduate Degree: Master or equivalent	66	38%
	Graduate Degree: PhD or equivalent	38	22%
	Professional degree: Medicine Law ...etc	8	5%

range from 0 to 1, referring to completely unreliable to completely reliable. Proposed threshold value for more advanced stages of research should be around .800 or .900; and for exploratory research should exceed .700 (Nunnally, 1994). Table 2 shows the CA values and that all the constructs meet the CA threshold for advanced stages of research. 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, Ringle, & Sarstedt, 2011). According to Table 2, the tested model meets the advanced threshold for composite reliability, indicating high reliability of the all the constructs of

the model. 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 a latent variable explains more than half of its indicators' variance, demonstrating sufficient convergent validity. Based on the AVE values shown in Table 2, all the constructs of the models scored higher than .50, demonstrating high convergent validity.

We also tested for discriminant validity which 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 items of a construct do not measure other constructs unintentionally. There are two methods to assess discriminant validity: (1) Fornell and Larcker criterion (1981); and (2) Item cross loadings (Chin, 1998). Fornell-Larcker's criterion (1981) postulates that a latent variable is 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. As seen in Table 2, the square root of each construct is greater when it is correlated with itself than with other constructs. For example, the square root of Attitude is 95% which is higher than the intersection between Attitude and Curiosity. The second method to measure discriminant validity is item cross loadings which postulates that an indicator's loading with its associated latent construct should be higher than its cross loadings with the rest of the constructs (comparing rows in Table 3). Further, each construct loads highest (when comparing columns) with its assigned items. If these two criteria are fulfilled, it can be inferred the indicators of each construct are not interchangeable with other constructs, demonstrating sufficient discriminant validity (Urbach & Ahlemann, 2010). Table 3 shows that item cross loading meet the criteria and hence achieving discriminant validity.

**Table 3**  
Chi-Square Significance Test.

	Chi-Square-Significance	EOU1	EOU2	EOU3	Usefulness 1	Usefulness 2	Usefulness 3	Usefulness 4	Curiosity1	Curiosity2	Curiosity3
Attitude1	Chi Square	108.49	94.98	118.52	129.95	119.52	144.05	101.15	97.99	219.3	150.52
	Asymptotic Significance	0	0	0	0	0	0	0	0	0	0
Attitude2	Chi Square	195.5	231.27	153.47	284.73	124.93	108.52	108.1	90.6	0.524	0.439
	Asymptotic Significance	0	0	0	0	0	0	0	0	0	0
Attitude3	Chi Square	99.72	106.43	110.8	152.5	107.4	162.1	112.08	119.1	123.9	81.3
	Asymptotic Significance	0	0	0	0	0	0	0	0	0	0
Attitude4	Chi Square	145.3	160.21	133.3	164.7	109.02	94.51	85.31	108.1	160.34	73.2
	Asymptotic Significance	0	0	0	0	0	0	0	0	0	0
		Explore1	Explore2	Explore3	Enjoy1	Enjoy2	Enjoy3	Intention 1	Intention 2	Intention 3	
Attitude1	Chi Square	89.73	123.47	134.69	117.52	96.21	118.88	121.4	107.62	77.94	
	Asymptotic Significance	0	0	0	0	0	0	0	0	0.022	
Attitude2	Chi Square	96.68	122.71	135.23	129.9	147.1	178.1	133.1	160.2	157.9	
	Asymptotic Significance	0	0	0	0	0	0	0	0	0	
Attitude3	Chi Square	99.33	116.51	97.9	127.01	113.9	132.3	79.53	147.81	113.48	
	Asymptotic Significance	0	0	0	0	0	0	0	0	0	
Attitude4	Chi Square	96.2	133.3	154.4	129.82	119.92	143.98	100.7	160.83	145.47	
	Significance	0	0	0	0	0	0	0	0	0	

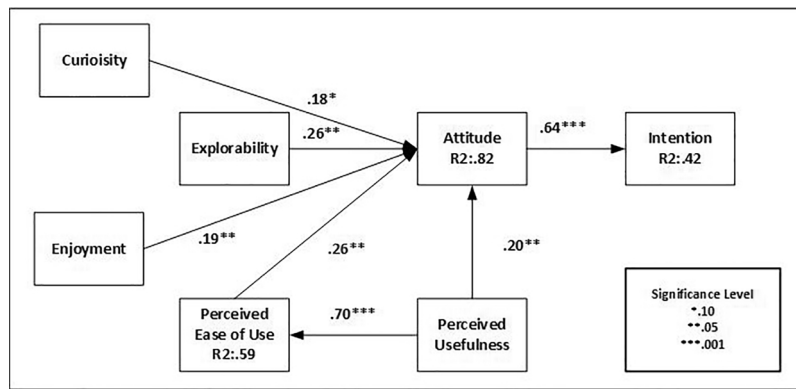


Fig. 3. Hypotheses Testing Results.

5.3. Testing the structural model

Fig. 3 shows the results of the structural model with the path coefficient and the R2 of the dependent variables. The path coefficient signifies the degree of influence of each construct on the dependent variables. We used the bootstrapping approach to assess the *t*-values significance. Based on the recommendation by Hair et al. (Hair et al., 2011), we used 5000 samples with a number of cases equal to our observations of 174. Our critical *t*-values for a two-tailed test were 1.65 (for  $p \leq 0.10$ ), and 1.96 (for  $p \leq 0.05$ ), and 2.58 (for  $p \leq 0.01$ ).

Fig. 3 and Table 4 shows the total effect between the independent and criterion variables including path coefficient, sample mean, standard deviation, T statistics, P values, significance of the relationship, and the supported hypotheses According to Hair et al. (2011) an R2 value of .75, 0.5, or .25 for the affected constructs in the structural model is described as substantial, moderate, or weak, respectively. In the tested model, Attitude, the first endogenous variable of the study, scoring an R2 of .82 and Intention scored a moderate R2 of .42 which is indicative of a positive relationship. As shown in Fig. 3 and in Table 4, the path coefficients for this inner model are shown along with their perspective *t*-value in parentheses. Six out of seven hypotheses are supported with strong statistical significance. As we hypothesized, perceived enjoyment has a strong impact on users' attitude towards using social tagging tools with a path coefficient of .19 and a *t*-value of 2.81 at the .005 level of significance, while explorability has a positive path coefficient of .26 with a *t*-value of 3.02 significant at the .003 level. Additionally, consistent with our hypothesis and consistent with TAM, attitude is positively correlated with intention to use tagging tools with a very strong path coefficient of .64 and *t*-value of 15.78 significant at the .001 level. Curiously, looks relatively significant, does not seem to have a strong impact on users' attitude to tag resources (Tables 5 and 6).

5.4. Comparing the influence of hedonic factors with utilitarian factors

The three proposed hedonic factors of Curiosity, Explorability, and Enjoyment are shown to have a stronger path coefficient on Attitude compared to the path coefficient of both Perceived Usefulness and PEOU. To verify this, we split the model to separate the effects of both hedonic and non-hedonic factors to verify our finding, and the result are shown in both Figs. 4 and 5 below. Fig. 5 shows that the three hedonic factors are responsible for 75% of the variance of Attitude. However, in Fig. 5, the influence of PEOU and Perceived Usefulness, representing the traditional TAM, is shown to explain only 52% of the variance on Attitude. This supports our proposed model of the dominance of intrinsic motivation in motivating users to use online social media in general, and social tagging tools.

6. Discussion

This study investigated the determinants of users' attitude and intention to use social tagging tools. The study used an extension of the well-known TAM (Moon and Kim, 2001; Venkatesh and Davis, 2000) as a base for the theoretical model of the study. All the hypotheses of the study were supported especially the proposed hedonic dimension of the study. Particularly, the study suggests that users' attitude to tag online resources is driven by both intrinsic and extrinsic motivation, and, in return, attitude positively affect users' intention to use such applications. Finally, perceived usefulness has a positive impact on ease of use which is consistent with previous TAM findings. The study is an attempt to empirically validate the different shades of intrinsic motivation. According to the findings, the impact of intrinsic motivation measures manifested in the trio of curiosity, explorability, and enjoyment outweighs the intrinsic motivation measures that were represented in traditional TAM measure of ease of use, and perceived usefulness when

Table 4  
Construct Reliability and Validity.

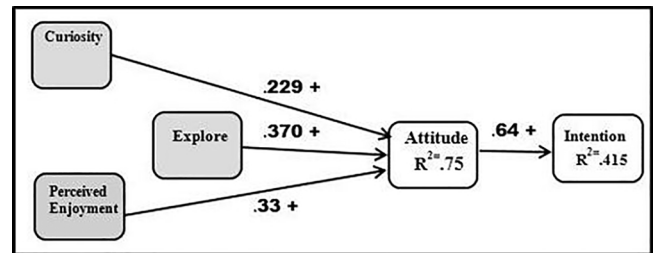
	Alpha	CR	AVE	ATT	CUR	EXP	INT	PEOU	PE	PU
<b>Attitude</b>	<b>0.85</b>	<b>0.85</b>	<b>0.91</b>	<b>0.95</b>						
<b>Curiosity</b>	<b>0.78</b>	<b>0.78</b>	<b>0.87</b>	0.81	<b>0.93</b>					
<b>Explorability</b>	<b>0.77</b>	<b>0.81</b>	<b>0.87</b>	0.84	0.8	<b>0.93</b>				
<b>Intention</b>	<b>0.78</b>	<b>0.79</b>	<b>0.76</b>	0.64	0.69	0.64	<b>0.87</b>			
<b>Perceived Ease of Use</b>	<b>0.79</b>	<b>0.79</b>	<b>0.88</b>	0.83	0.79	0.82	0.59	<b>0.94</b>		
<b>Perceived Enjoyment</b>	<b>0.82</b>	<b>0.82</b>	<b>0.88</b>	0.84	0.83	0.79	0.65	0.8	<b>0.94</b>	
<b>Perceived Usefulness</b>	<b>0.85</b>	<b>0.85</b>	<b>0.91</b>	0.83	0.76	0.76	0.58	0.77	0.86	<b>0.95</b>



**Table 5**  
Items loadings and Correlations.

	Attitude	Curiosity	Perceived Ease of Use	Perceived Enjoyment	Explorability	Intention	Perceived Usefulness
ATT1	0.87	0.78	0.77	0.74	0.73	0.56	0.74
ATT2	0.85	0.67	0.71	0.76	0.68	0.53	0.75
ATT3	0.90	0.66	0.70	0.71	0.79	0.58	0.70
CUR1	0.68	0.81	0.62	0.70	0.64	0.51	0.65
CUR2	0.64	0.84	0.71	0.68	0.70	0.64	0.61
CUR3	0.69	0.84	0.64	0.68	0.65	0.58	0.62
EOU1	0.72	0.62	0.83	0.68	0.71	0.41	0.65
EOU2	0.72	0.65	0.86	0.67	0.67	0.53	0.60
EOU3	0.65	0.72	0.83	0.65	0.69	0.56	0.68
PENJ 1	0.60	0.61	0.59	0.80	0.63	0.48	0.61
PENJ 2	0.68	0.78	0.70	0.81	0.63	0.62	0.59
PENJ3	0.64	0.57	0.55	0.78	0.63	0.47	0.62
EXP1	0.54	0.54	0.57	0.56	0.74	0.50	0.49
EXP2	0.79	0.70	0.75	0.71	0.87	0.58	0.71
EXP3	0.73	0.73	0.70	0.70	0.88	0.52	0.67
INT1	0.46	0.54	0.45	0.50	0.53	0.80	0.46
INT2	0.60	0.58	0.58	0.57	0.56	0.85	0.51
Usefulness1	0.68	0.62	0.62	0.71	0.70	0.49	0.84
Usefulness2	0.75	0.68	0.69	0.81	0.66	0.50	0.90
Usefulness3	0.75	0.68	0.69	0.81	0.66	0.50	0.90
Usefulness4	0.76	0.69	0.71	0.75	0.65	0.54	0.89

users interact with social tagging tools. It should be noted that concepts of curiosity, explorability, and enjoyment exist in social navigation systems and they were proposed by previous studies as key motivators to tag resources, but they were not empirically validated. For instance, previous studies (i.e. Millen & Feinberg, 2006) investigated users' behavior with tagging tools found that users are curious to explore the collections of bookmarks for others. Further, the study showed that users' most frequent method to browse bookmark is by clicking on another person's name, followed by browsing bookmarks by selecting a specific tag from a tag cloud. Similarly, interactive tools can be used to enhance the concepts of exploring, curiosity, and enjoyment. For instance, a study by (MacDonald, Park, & Chae, 2012) demonstrated a system called AMARA, which is an embedded interactive agent that asks users a series of simple questions on users' current feeling, preferences, and interests in art. The agent system then maps the answers to social tags, which are then used to retrieve and display relevant



**Fig. 4.** The Effect of Hedonic Factors on Attitude and Intention to Use Social Tagging Tools.

artworks which appeal to users. Such interactive systems could enhance users' enjoyment and engagement and assist users in discovering their known and unknown preferences (MacDonald et al., 2012). This study

**Table 6**  
Path Coefficients for the Hypotheses.

	Path Coefficient	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values	Hyp/Supported
Curiosity -> Attitude	0.18	0.12	0.075	1.69	0.092	H1/yes
Explorability -> Attitude	0.26	0.22	0.072	3.02	0.003	H2/yes
Perceived Enjoyment -> Attitude	0.19	0.19	0.068	2.81	0.005	H3/yes
Perceived usefulness-> Attitude	0.26	0.30	0.067	4.30	0.000	H4/yes
Perceived Ease of Use -> Attitude	0.20	0.16	0.057	2.8	0.005	H5/yes
Perceived Ease of Use -> Perceived usefulness	0.77	0.77	0.026	29.38	0.000	H6/yes
Attitude -> Intention	0.64	0.65	0.041	15.78	0.000	H7/yes

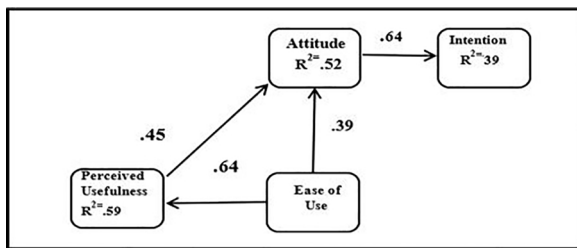


Fig. 5. Extended TAM Results.

may be the first to shed the light on and validates new dimensions of users' feeling of enjoyment that is associated with social tagging tools. The findings of this study suggest that, although taggers are motivated by the ease of use and the usefulness of social tagging tools, they are more motivated by the feelings of explorability, curiosity, and enjoyment that they perceive when they use social tagging tools. In other words, users tag resources because they find such tools enjoyable and fun to work with. The findings of the study is consistent with recent studies that found that the hedonic aspects to be significant in motivating users to use social media applications (e.g. [Baptista & Oliveira, 2015](#); [Morosan & DeFranco, 2016](#); [Mouakket, 2015](#); [Qin et al., 2016](#)), and so significant in photo tagging on Facebook ([Dhir, 2016](#); [Dhir et al., 2018](#)). Further, the study showed that TAM traditional framework of perceived ease of use and perceived usefulness still significant when it comes to users' acceptance of social media tools. This is consistent with previous study on users' acceptance and adoption to social media tools (e.g. [Allam et al., 2012](#); [Huang, Lin, & Chan, 2012](#); [Mouakket, 2015](#); [Qin et al., 2016](#))

## 7. Implications of findings

This study further adds to the IS literature in two ways. It assesses users' acceptance and adoption to social tagging applications in different environments and different tagged artifacts such as Twitter, Facebook, Flickr, and Librarything. Findings of users' acceptance in such tools may be used to further understand and theorize users' behavior in other social media platforms. Moreover, this study may be the first to investigate and decompose the concept of hedonism into three layers. We developed and validated a three-dimensional hedonic model for intrinsic motivation combining Curiosity, Explorability, and Enjoyment as major determinants of the use of social tagging tools. With the increase of the use of social media tools, such findings may be used as determinants of users' behavior in such tools. We extend our ongoing proposition that the traditional concept of perceived enjoyment and intrinsic motivation is not sufficient in measuring the richness and interactivity of social media applications. We also posit that existing studies of intrinsic motivation used simple perceived enjoyment because of the static nature and simplicity of traditional applications which did not demand users' interaction socially with other users. The current interactive and vibrant nature of social media applications is different from traditional ones in that they include features that are considered a stimulus for fun, pleasure and joy to help attract today's busy and sophisticated users. Further, our study is consistent with previous studies ([Allam et al., 2012](#); [Li et al., 2009](#); [Moon & Kim, 2001](#); [Adilla-Meléndez et al., 2013](#)) that support the significant impact of the hedonic aspects in social media applications. Our study also confirms prior studies on TAM with attitude as the main predictor of users' intention to perform a specific behavior.

This study suggests practical implications for practitioners and organizations in encouraging the use of social tagging tools. Administrators of such systems can draw more use of goal-oriented systems by offering more entertaining and fun-to-use features that attract users. For example, avatar-like tools and virtual training applications can be directed towards training employees on certain skills that

are needed for work related tasks. Further, injecting more hedonic features in social media applications can encourage users to extend their sessions on social media systems and hence increase the amount of social interaction among users. If utilized properly, such interaction can lead to more collaboration and sharing on work related or personal tasks, which can be interpreted in increasing users' collective intelligence. With regard to enterprise social tagging tools, organizations can use the concept of curiosity and explorability to cultivate a learning and sharing environment among their employees. For example, organizations could design social media systems that target the exploratory and curiosity instincts in employees, helping them to learn more and hence share their knowledge with their colleagues. This could help companies utilize their resources effectively and add to their social capital.

## 8. Study limitations and future direction

Although the model of the study was supported by the results and findings, we acknowledge that social tagging is just one portion of social media and the results may not be generalized to all social media tools such as blogs, wikis, and video sharing sites. However, the preliminary results show a good potential to include the hedonic components as main factors influencing users' acceptance of technology, especially in social media as a whole, since they share the same main stream of sociability. We also think that if this proposed model worked with social tagging tools, it can be more significant with video sharing sites, given that these sites feature more interesting tools that nurture users' explorability and curiosity instincts. Our next step is to test the three-dimensional hedonic model on other social media tools such as YouTube and Facebook (each application to be studied alone) to further confirm and extend our model. We expect that the three-dimensional model of the study may witness the dominance of one or more dimensions when testing them with other social media sites such as Facebook since users only tag photo. For instance, users of Facebook may use photo tagging features for curiosity and explorability purposes more than the feeling of enjoyment. Additionally, Facebook users may be enjoying the act of adding tags to photos rather than clicking on other users' tagged photos. A possible intuitive research step could entail the motivating difference between users who add tags to photo versus users who click on tagged photo on Facebook. Although the paper explores new layers of intrinsic motivation, it does not eliminate an interaction between intrinsic and extrinsic motivation in impacting users' behavior towards tagging. For example, there could be a strong link between explorability and PEOU in shaping a user's motive to tag resources and this can be a next step in our future studies. But in this paper, we are proving a richer shade of intrinsic motivation that is composed of three new dimensions that are so apparent in social media interactive content: explorability, curiosity, and enjoyment. An extension of this study could entail the association between these dimensions or other utilitarian dimensions (such as perceived findability and retrievability) in directing taggers to tag resources.

## 9. Conclusion

This study draws on motivation theory and proposes a three-dimensional model for hedonic intrinsic motivation and applies it to social tagging tools. We asked online users about their perceptions of six aspects of social tagging tools: curiosity, enjoyment, explorability, attitude and intention to use. Our results showed users' positive feedback for the concepts presented through the model. Further, we empirically measured the effect of three aspects of tagging tools (curiosity, explorability, and enjoyment) on users' attitude. Our results favored enjoyment and explorability with significant influence on attitude. Consistent with prior studies on technology acceptance (e.g. [Venkatesh et al., 2003](#), [Davis, 1989](#)), our model showed strong correlation between attitude and intention to use social tagging tools. We conclude

that hedonic intrinsic motivation should be considered as a major factor when assessing users' acceptance of technology. Further, we emphasize the multi-layered hedonic aspect of social media applications as a potential drive for users' adoption of such interactive tools. The findings

suggest that organizations can utilize the multi-layered hedonic aspect to their benefit to motivate employees to increase their use of social media tools and hence cultivate collaboration among employees and improve overall performance.

## Appendix A

Table A1

Table A1

Measurement Items.

Construct	Indicators	Reference
Curiosity (CUR)	CUR1: Using tags stimulates my curiosity CUR2: Following people's tags is interesting CUR3: Using tags arouses my imagination	Based on Moon & Kim (2001)
Explorability (EXP)	EXP1: Using tags leads to my exploration EXP2: Clicking on tags enables me to find related items and topics EXP3: Clicking on tags helps me get various topics in a much different way than traditional search tools	Based on Moon & Kim (2001)
Perceived Enjoyment (PENJ)	PENJ1: I find using tags to be enjoyable PENJ2: The actual process of using tags is pleasant PENJ3: The process of using tags is interesting	Based on Davis et al. (1992); Adilla-Meléndez et al. (2013)
Attitude (ATT)	ATT1: I like using tags ATT2: Using tags is desirable for me ATT3: Using tags is a good idea ATT4: I will maintain a positive attitude toward using tags	Davis (1989); Liao et al. (2008)
Perceived Usefulness (PU)	PU1: Using social tagging tools improve my performance in this course PU2: Using social tagging tools is useful to me in this course PU3: Using social tagging tools helps me accomplish my task effectively PU4: Using social tagging tools makes my work easier in this course.	Davis et al. (1989); Adilla-Meléndez et al. (2013)
Perceived Ease of use(PEOU)	PEU1: It is easy to get social tagging tools to do what I need to do PEU2: Social tagging tools is easy to use PEU3: My interaction with social tagging tools is clear and understandable PEU4: It is easy to become skillful at using social tagging tools.	Davis et al. (1989); Adilla-Meléndez et al. (2013);
Intention (INT)	INT1: I intend to click(use) on tags in the future INT2: I predict I would click (use) on tags in the future	Davis et al. (1989); Sun and Zhang [45]

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