

Understanding user motivation for evaluating online content: a self-determination theory perspective

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In a digital society, people have access to all kinds of electronic information as online users. They have also contributed various content for exchanging ideas in the online community, which has not only extended the traditional knowledge sharing channels, but has also led to concerns about content quality and reliability. The literature suggests that user involvement in collaboratively evaluating the quality of online content for an online community is likely to be an effective means to ease these concerns. However, the understanding of users' intentions to be willing to take part in evaluating online content is still limited. Based on self-determination theory, this study proposes a research model to understand the extrinsic motivation of the user intention. The research model was tested using data collected from 303 participants who were recruited from online communities. The results show that three types of extrinsic motivation, namely identified motivation, introjected motivation, and external motivation, play an important role in user intention of collaboratively evaluating online content. In addition, the research findings suggest that user satisfaction of the three basic psychological needs of autonomy, competence, and relatedness influences different types of extrinsic motivation.

Keywords: extrinsic motivation; intention; online content evaluation; needs satisfaction; self-determination theory

1. Introduction

People increasingly share information and knowledge in online communities with the growth of convenient Internet access. While the amount of online content can increase dramatically in an active user-contribution context, both the quality and reliability of online content have become a concern (Ala-Mutka, Punie, and Ferrari 2009). First, users may find it time-consuming to locate useful content in an online community, causing them to switch to other online communities for information. Second, users can be misled by poor quality or even incorrect content. Therefore, having an effective mechanism for an online community to evaluate the quality of online content would be beneficial to both the community and its users. In other words, if users can obtain useful and helpful content without much searching effort, the community can retain users and therefore increase the likelihood of its success (Chen 2007).

It is argued that accumulated user feedback can be a useful indicator of quality based on the knowledge of a group of users. This is because it is complementary to traditional indicators of online content quality which are mostly based on knowledge possessed by individual users (Chai, Potdar, and Dillon 2009). For example, the use of non-textual information, such as voting and flagging, is

encouraged for predicting the quality of answers (Jeon et al. 2006) and for managing the quality of user comments (Diakopoulos and Naaman 2011). Moreover, Agichtein et al. (2008) investigate the contributions of a variety of textual and non-textual user feedback for quality estimation in community-driven Q&A sites. Their findings indicate that using accumulated user feedback as a quality indicator for user-contributed content returns accurate retrieving results for high-quality content. In practice, there are some successful examples of inviting user feedback to evaluate the quality of online content, such as the Yahoo!Answers' voting system (Bloom, Goh, and Chua 2012) and the Slashdot's distributed moderation system (see Johnston 2010 and Slashdot.org).

Evidence from the literature also shows that user involvement in collaboratively evaluating online content by means of commenting, rating, moderating, etc., can benefit both an online community and its users. For example, in Schroeder and Wagner's (2012) study, 'users acting as the guardian of article' is identified by 83% of participants as being an important governance mechanism on Wikipedia. This may well explain the reason why the quality of Wikipedia entries is found to be better than those in *Encyclopaedia Britannica* (Giles 2005). In addition, user

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ratings of online content are found to have a positive influence on a user's intentional information-seeking behaviour (Sutanto and Jiang 2013). The existence of such influence is probably because user feedback on the quality of online content is highly perceived to be useful by other users who are looking for quality content (Kayhan and Bhattacharjee 2009).

While prior research highlights the importance of user involvement in cooperative evaluation of online content quality by giving feedback (Beschastnikh, Kriplean, and McDonald 2008), user motivation to become involved in this collaborative activity has seldom been investigated, despite the availability of some related studies. Some researchers have examined user motivation to help online communities manage the quality of online content, from the perspective of community moderators or leaders (Alonso and O'Shea 2012; Bateman, Gray, and Butler 2011). As these researchers tend to focus on a small group of privileged users in online communities, the results of their studies may not be applicable to general users who are not moderators or leaders, but who could give feedback (Preece and Shneiderman 2009).

Other researchers investigate user motivation to give comments (Diakopoulos and Naaman 2011), to rate online content (Hong and Park 2011), and to tag online content (Allam et al. 2012). Overall, these related studies have suggested some factors that can significantly affect user motivation to be moderators or leaders who help maintain and sustain online communities, or to use website features such as rating, commenting, and ranking. Some factors include gaining support from other users (Alonso and O'Shea 2012), desire to improve standing and acceptance in the community (Lerman 2007), being helpful to others (Hong and Park 2011), and sense of obligation (Bateman, Gray, and Butler 2011). However, despite these studies involving website features which can be used as a means to collaboratively evaluate the quality of online content, their focus tends to be on user motivation to use these website features as a means of contributing to online content in general, rather than evaluating online content in a more specific way.

Therefore, this study attempts to take a closer look into user motivation to become involved in collaborative evaluation of the quality of online content for the benefits of an online community and its users. To be specific, based on self-determination theory (SDT; Ryan and Deci 2000a), this study examines (1) the effect of different types of motivation on users' intentions to evaluate online content and (2) the effect of contextual support for users' basic psychological needs on each of these types of motivation. Justifications for using SDT in this study are discussed in Section 2, which also explains the research model and the hypotheses for this study. The research methodology and data analysis results are presented in Sections 3 and 4, respectively. In Section 5, research findings are discussed.

The theoretical and practical implications of this study, and future research, are explained in Section 6.

2. Theoretical development and hypotheses

2.1. Theoretical background

This study chooses SDT (Ryan and Deci 2000a) as the theoretical foundation to investigate user motivation towards participating in the evaluation of online content. Different types of motivation distinguished by SDT offer an opportunity to gain a deeper understanding of the quality of user motivation to become involved in evaluating the quality of online content. In the literature, many theories have been used to explain how users become engaged in activities in online communities, including social cognitive theory (Lin, Hung, and Chen 2009), theory of planned behaviour (Cho, Chen, and Chung 2010), expectation confirmation theory (Jin et al. 2013), and social exchange theory (Jin, Park, and Kim 2010). Most of these theories make significant contributions to understanding user motivation to participate in online community activities by identifying a series of factors. However, these theories have overlooked the underlying reasons behind motivation (Malhotra, Galletta, and Kirsch 2008). Investigating the reasons behind motivation is useful to understand the quality of motivation that is associated with the degree of volition to act (Deci and Ryan 2000). SDT holds that different types of motivation can be differentiated to reflect varieties in the quality of motivation (Deci and Ryan 2000). In addition, within SDT, the effect of different types of motivation on behavioural intention can be fostered by the environment (Deci and Ryan 2000; Vallerand, Pelletier, and Koestner 2008). This is because an individual is a self-concept in a social context in which one's behaviour occurs (Abrams and Hogg 2001). Particularly, understanding how well one's psychological needs are fulfilled within a social context is helpful in explaining the underlying motivational process from an individual's psychological perspective (Malhotra, Galletta, and Kirsch 2008).

SDT proposes that motivation can broadly be differentiated between intrinsic and extrinsic motivations (Deci and Ryan 2000). Intrinsic motivation refers to doing an activity with volition for the inherent pleasure, satisfaction, and interest of the activity itself (Ryan and Deci 2000a). In contrast, extrinsic motivation refers to doing something because of separable outcomes derived from the activity (Ryan and Deci 2000a). When the interest and enjoyment of engaging in an activity are absent, people engage in extrinsically motivated behaviour by rationalising the behavioural outcomes and then internalising the value and regulations of the behaviour (Vansteenkiste, Niemiec, and Soenens 2010). Based on the variation in the extent of internalisation, a range of extrinsic motivations can be distinguished (Deci and Ryan 2000). In particular, identified

motivation, the most autonomous form of extrinsic motivation, reflects that people understand the significance of behaviour and, as a result, accept it as being personally important and behave accordingly (Deci and Ryan 2000). In addition, introjected motivation occurs when people act to gain pride and self-esteem or to avoid feelings of guilt and shame, where the value of behaviour is not fully accepted as one's own (Vansteenkiste, Niemiec, and Soenens 2010). Furthermore, external motivation involves the least degree of internalisation, where people are motivated to satisfy external demands, such as obtaining a reward or avoiding punishment (Vansteenkiste, Niemiec, and Soenens 2010).

This study chooses to explicitly focus on extrinsic motivation rather than intrinsic motivation for two reasons. First, intrinsic motivation has been widely studied as one of the key motivators of voluntary and collaborative participation in online communities (Vuori and Okkonen 2012; Yu, Lu, and Liu 2010). In contrast, studies on the effects of different types of extrinsic motivation in the online community context relatively remain rather limited (Ke and Zhang 2010). Therefore, focusing on extrinsic motivation can extend the current knowledge in understanding user participation in online communities. Second, intrinsic motivation occurs only for activities that are of intrinsic interest to an individual without feeling reinforced by the environment (Ryan and Deci 2000a). In contrast, extrinsic motivation involves the effect of outcomes engaging in an activity associated with environment, such as gaining rewards and enhancing reputation in a community (Ryan and Deci 2000a). Thus, focusing on extrinsic motivation possibly results in meaningful suggestions on motivating user participation through enhancing extrinsic motivation by means of manipulating the environment.

SDT holds that extrinsic motivation should be studied in more detail to understand the motivational process underlying extrinsic motivation according to the degree to which the motivation is internalised (Ryan and Deci 2000b). Within SDT, the effective functioning of the internalisation process can be fostered by the environment (Deci and Ryan 2000). SDT describes that people tend to internalise the values and regulations of their social groups when they feel autonomous in acting, competent in understanding the values and regulations and enacting them, and related to others in the group or to the group at large (Deci and Ryan 2000). In other words, the contextual support for individuals' basic needs for autonomy, competence, and relatedness represents certain energetic resources that promote a variety of extrinsic motivations (Vansteenkiste, Niemiec, and Soenens 2010). Thus, individuals' psychological needs are employed in this study to help to understand the motivational process because, within SDT, social contexts which support an individual's needs are believed to promote the internalisation of extrinsic motivation (Deci and Ryan 2000).

In addition, understanding of social contexts that support individuals' psychological needs allows for interpreting which dynamics of social context promote extrinsic motivation through satisfaction with the social contextual support for an individual's needs (Deci and Ryan 2000). Some features of online communities, such as allowing voluntary participation, freely expressing opinions, and interaction with others, correspond to support for the basic psychological needs of autonomy, competence, and relatedness. Thus, specifications of the social contexts which can satisfy each basic psychological need may direct practitioners of online communities as to how to motivate users to participate in community activities by adjusting the social contexts to satisfy the users' needs (Vansteenkiste, Niemiec, and Soenens 2010).

Therefore, SDT is considered useful for understanding the effect of extrinsic motivation on behavioural intention. In addition, it helps to explain the effect of the social context on the internalisation process in the development of extrinsic motivation, through user satisfaction of the contextual support for the three basic psychological needs (Ryan and Deci 2000a).

2.2. Hypotheses and the research model

According to SDT, motivation can be reflective of one's intention to act (Deci and Ryan 2000). It also posits that people try to rationalise the behavioural outcomes, according to which they act towards behavioural intention (Vansteenkiste, Niemiec, and Soenens 2010). In this sense, each type of extrinsic motivation should contribute to one's behavioural intention (Deci and Ryan 2000). In the context of online communities, when users consciously value the community goal of collaborative evaluation of online content and perceive this goal as their own, their intention to evaluate online content is likely to be enhanced through identified motivation. In addition, introjected motivation can promote users' intentions to evaluate online content if users tend to pursue ego-enhancement from participating in this community activity. Furthermore, gaining rewards such as reputation in online communities, which is considered as external motivation (Lou et al. 2013), is able to drive users to participate in activities in the community (Hung et al. 2011).

It is worth noting that the ways in which different types of extrinsic motivation affect behavioural intention can vary dramatically. To be specific, a type of extrinsic motivation with a higher level of internalisation is likely to contribute to greater behavioural intention (Deci and Ryan 2000). For example, Ke and Zhang's (2010) tests of different types of extrinsic motivation show that identified and introjected motivations are predictive of enhanced users' task efforts in online communities. The sustainability of different types of extrinsic motivation becomes stronger as the internalisation of the values and regulations is fuller (Malhotra, Galletta, and Kirsch 2008). Particularly,

extrinsic motivation with a higher level of internalisation is superior to that with a lower internalisation level when it comes to motivating voluntary activities (Gagné 2003). Since user involvement in the evaluation of online content is voluntary, extrinsic motivation with a higher level of internalisation is likely to strongly predict users' intentions to take part in the evaluation activity.

Thus, following the literature, it is argued that when evaluating online content, the effect of users' identified, introjected, and external motivations on their intention to participate in the activity is positive, though the level of effect may differ. This leads to the following hypotheses:

Hypothesis 1: Identified motivation has a positive effect on a user's intention to evaluate online content.

Hypothesis 2: Introjected motivation has a positive effect on a user's intention to evaluate online content.

Hypothesis 3: External motivation has a positive effect on a user's intention to evaluate online content.

According to SDT, the contextual support for people's needs for autonomy, competence, and relatedness can affect their extrinsic motivation towards their intention to act (Deci and Ryan 2000). That is to say, providing support for autonomy, competence, and relatedness, along with some meaningful rationale for extrinsically motivated behaviour, is likely to promote the internalisation of extrinsic motivation (Johnston and Finney 2010). SDT underscores the role of perceived autonomy played in the internalisation of autonomous forms of extrinsic motivation, which includes identified motivation because perceived autonomy encourages people to actively assimilate the values of regulations (Ryan and Deci 2000b). Thus, it is predicted that increasing perceived autonomy will enhance the identified motivation. In contrast, introjected and external motivations are considered to be controlled forms of extrinsic motivations, with the former focusing on self and other approval and the later on externally administered rewards and punishments (Deci and Ryan 2000). In this circumstance, perceived autonomy is associated with weaker introjected motivation than identified motivation, while it is hardly positively associated with external motivation (Vansteenkiste, Niemiec, and Soenens 2010). According to Deci et al. (1994), introjection is associated with a negative relationship between perceived autonomy and motivation which underlies behavioural intentions. In addition, Deci and Ryan (2002) argue that perceived autonomy should have a negative association with external motivation, which is supported by empirical studies in the health field (Gourlan, Trouilloud, and Sarrazin 2013).

In this study, perceived autonomy refers to the degree to which users believe that they are able to make their own choices with regard to participating in evaluating online content (Deci and Ryan 2000). Generally, participation in an online community is a voluntary activity in which case users would feel that they choose to perform an

activity on their own free will without pressure from others, therefore satisfying their need for autonomy (Gagné 2003). When users are free to make their own choices on whether to evaluate online content, they intend to adapt to the value of this behaviour (Deci and Ryan 2000), which is likely to promote identified motivation, yet decrease introjected and external motivations, towards evaluating online content. Thus, the following hypotheses are proposed:

Hypothesis 4: Perceived autonomy has a positive effect on identified motivation.

Hypothesis 5: Perceived autonomy has a negative effect on introjected motivation.

Hypothesis 6: Perceived autonomy has a negative effect on external motivation.

According to Ryan and Deci (2000b), one's perceived competence facilitates the internalisation of extrinsic motivation. This is because transforming an extrinsic goal into one's own requires that one feel competent with respect to the understanding of the goal (Ryan and Deci 2000a). As a result, perceived competence affects various forms of extrinsic motivation differently, which is dependent on the degree of internalisation for each type of extrinsic motivation. For example, high level of competence may be associated with highly internalised motivation (i.e. identified motivation), whereas a lower level would predict only partially internalised extrinsic motivation, which is referred to as introjected motivation (Ryan and Deci 2000b). In addition, in a controlling context, when one feels competent enough to comply with external rewards or threats, he or she can take action because of the existence of external motivation (Ryan and Deci 2000b).

In this study, perceived competence can be conceptualised as the degree to which users believe that evaluating online content provides them with opportunities to show their capability for carrying out this activity (Deci and Ryan 2000). When users choose to evaluate online content, they have the chance to apply their knowledge to help maintain the online community, so generating a sense of competence (Kayhan and Bhattacharjee 2009). When individuals perceive that they are capable of carrying out an activity, they are motivated to involve themselves in the activity (Montero 2004). In addition, perceived competence is found to make users feel that their engagements are important in order to realise the community value of being a resourceful place (Wang and Clay 2012). For example, users would be willing to rate online content when they perceive their ratings have an effect on others' choices about using online content (Hong and Park 2011). Likewise, users would be more likely to adopt and internalise the goal of collaborative evaluation of online content if they understand the goal and have the relevant knowledge to succeed at this activity (Deci and Ryan 2000). Thus, it is theorised that users' perceived competence is likely to

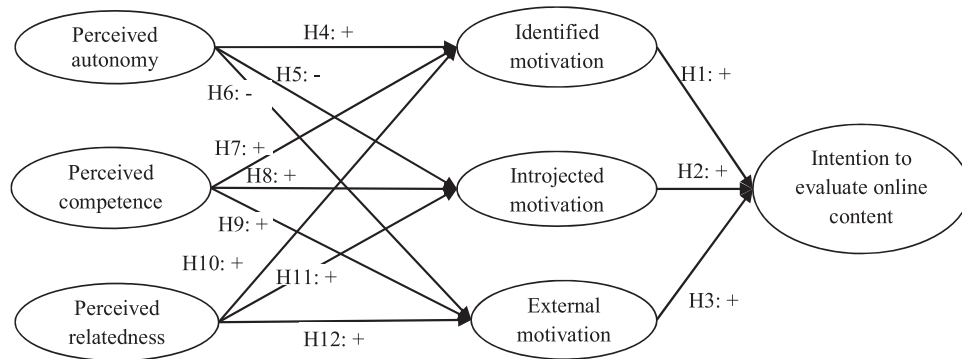


Figure 1. Research model.

Note: + represents a positive relationship and – represents a negative relationship.

promote different types of extrinsic motivation, resulting in the following hypotheses:

Hypothesis 7: Perceived competence has a positive effect on identified motivation.

Hypothesis 8: Perceived competence has a positive effect on introjected motivation.

Hypothesis 9: Perceived competence has a positive effect on external motivation.

SDT suggests that, in addition to perceived autonomy and competence, one's perceived relatedness is also centrally important in understanding the internalisation of extrinsic motivation (Ryan and Deci 2000b). That is to say, individuals are likely to be motivated by endorsing community goals when they feel connected with others in the community (Ryan and Deci 2000b). This is because, when behaviours are not inherently interesting, one of the primary reasons people are willing to perform such actions is because the action is valued by significant others to whom they feel (or want to feel) connected (Ryan and Deci 2000b). Although perceived relatedness has been less studied than perceived autonomy and competence (Vallerand, Pelletier, and Koestner 2008), it is found to be positively associated with identified, introjected, and external motivations in fields such as education (Koh et al. 2010) and health (Gourlan, Trouilloud, and Sarrazin 2013).

Perceived relatedness can be defined as the degree to which users believe that they can establish and maintain connection with others through evaluating online content (Deci and Ryan 2000). Having users involved in the evaluation process of online content avoids creating tensions between those who are given privileges to evaluate online content and those who are not (Johnston 2010). This can create a friendly atmosphere in online communities where a user's need for relatedness is likely to be taken care of. Also, extant research has found that users are motivated to engage in community activities when they feel connected with other users (Roca and Gagné 2008). In other words, when users perceive that they are connected with others, they are likely to be motivated to adopt the values of evaluating online content in order to help maintain a

healthy community where they interact with others. Thus, the following hypotheses are proposed:

Hypothesis 10: Perceived relatedness has a positive effect on identified motivation.

Hypothesis 11: Perceived relatedness has a positive effect on introjected motivation.

Hypothesis 12: Perceived relatedness has a positive effect on external motivation.

The aforementioned hypothesised relationships are summarised and presented in a research model (shown in Figure 1). The research model depicts that user intention to evaluate content in online communities is influenced by three subtypes of extrinsic motivation (i.e. identified, introjected, and external motivation), which can be affected by users' perceptions of the contextual support for their basic psychological needs of autonomy, competence, and relatedness. The following two sections present the methodology and results of evaluating the proposed research model.

3. Research methodology

This study adopts an explanatory and positivist paradigm as the constructs are developed from the literature. In order to measure the proposed research model, a web-based survey was conducted, based on validated measures in extant literature to collect empirical data.

3.1. Measures of constructs

All constructs in the research model are reflective. They were measured by observed indicators which were caused by underlying constructs. Items measuring perceived autonomy, competence, and relatedness were adapted from the Basic Psychological Needs Scales (Deci and Ryan 2012a), which measure the degree to which the basic psychological needs are satisfied (Ryan and Deci 2000a). Items measuring subtypes of motivations and user intention to evaluate online content were adapted from Ryan and Connell (1989) and Zhao, Stylianou, and Zheng (2013), respectively. All measurement items were modified to be

Table 1. Sample demographics and their use of online communities.

	Category	Frequency (<i>n</i> = 303)	Percentage
Gender	Male	177	58.4
	Female	126	41.6
Age	20 or below	18	5.9
	21–30	233	76.9
	31–40	46	15.2
	41–50	5	1.7
	51–60	1	0.3
	61 or above	18	5.9
Education	Junior high school or below	2	0.7
	Senior high school	19	6.3
	Bachelor's degree	187	61.7
	Master's degree or higher	95	31.4
Purpose of using online communities	Killing time	220	72.6
	Updating news	173	57.1
	Searching for information	167	55.1
	Expressing feelings	63	20.8
	Maintaining relationships	23	7.6
	Not mentioned	18	5.9

used in the context of this study (see the [appendix](#)). After content validity of the adapted and modified measurement items was reviewed and confirmed by senior IS researchers, these items were presented in a self-reported questionnaire as statements using five-point Likert scales, ranging from ‘Strongly disagree’ to ‘Strongly agree’.

3.2. Survey administration

The questionnaire was then designed into a web-based survey. The survey was anonymous, to reduce the response bias because participants may give biased responses if they know the researcher (Andrews, Nonnecke, and Preece 2003). In addition, the survey made it compulsory to answer all questions related to constructs of interest in an attempt to reduce missing data (Andrews, Nonnecke, and Preece 2003), while demographic questions, including gender, age, education, and experience of using online communities, were optional.

In order to reach a wide range of potential participants, this survey was distributed among the top 10 online communities in Taiwan, as indicated by Alexa.com, a Web information company. People share and discuss topics, including news, professional information, and political events in these online communities. The communities also have features such as commenting, rating, and voting, which can be used as a means of evaluating online content. An invitation message regarding the recruitment of participants for the survey was posted on these online communities. The message outlined the objectives of this study, the sampling procedure, protection of participants’ privacy, confidentiality, anonymity, and plans of disclosing survey results, in an attempt to build trust between participants and the researchers (Andrews, Nonnecke, and Preece 2003).

A link to the web-based survey was also included in the invitation message so that interested users were able to participate in the survey by clicking on the link.

In total, 420 attempts were made to participate in the survey with 303 complete responses, yielding a response rate of 72.1%. Table 1 gives the descriptive statistics of the sample. In the 303 respondents, there were more males (58.4%) than females (41.6%). The majority of respondents were aged from 21 to 30 years, which accounted for 76.9%. Most respondents held a minimum of a bachelor’s degree (93.1%), and one-third of them also had a master’s degree or higher.

4. Data analysis and results

Upon completion of data collection, the collected data were analysed following a two-step analytical approach recommended by Hair et al. (2010). A structural equation modelling application, AMOS version 20, was used to validate the measurement model and then test the structural model using maximum likelihood estimation.

4.1. Common method bias

Noting that the cross-sectional data were perceptual, common method bias could be a potential problem. To minimise common method bias, respondents were assured of anonymity before they took part in the survey. After the data were collected, a statistical approach, Harman’s single factor test, recommended by Burton et al. (2006) was used to identify whether there was any common method bias. The results of unrotated principal axis factoring analysis reveal that the first construct accounts for 37.768% of the variance, indicating that common method bias is tolerable in the data set.

4.2. Results of evaluating the measurement model

Confirmatory factor analysis (CFA) was used to evaluate the measurement model by assessing the convergent validity and the discriminant validity of all constructs. The CFA model fit indices listed in Table 4 indicate good model fit: the χ^2/df value normalised by degrees of freedom (χ^2/df) = 1.69, comparative fit index (CFI) = 0.977, Tucker–Lewis index (TLI) = 0.970, and root mean square error of approximation (RMSEA) = 0.048, suggesting adequate model fit.

Following Hair et al.'s (2010) suggestions, convergent validity was tested in three ways. First, the factor loadings of measurement items on its corresponding construct were assessed. As given in Table 2, loadings of all measurement items of all constructs are above 0.7, indicating significant loadings. Second, composite reliability (CR) was examined for each construct which presented the internal consistency of items measuring this construct. Values of CR of each construct exceed the recommended level of 0.7, indicating that items of each construct have high internal consistency. Third, the average variance extracted (AVE) for each construct was calculated, the results of

which show that all AVEs are above the threshold of 0.5. Hence, the CFA results indicate satisfactory convergent validity.

Discriminant validity was assessed by following Gefen, Rigdon, and Straub's (2011) recommendation, which is that the square root of the AVE for each construct should be greater than the correlations between this construct and all other constructs. In Table 3, the square roots of the AVEs are presented in shaded cells in the diagnosis. The correlations among constructs are shown in off-diagonal cells. The square root of the AVE of each construct is greater than its correlations with other constructs, confirming satisfactory discriminant validity.

However, as is also shown in Table 3, the correlations between perceived competence and perceived relatedness, between perceived competence and identified motivation, and between perceived competence and intention are above 0.6. This implies that multi-collinearity might be an issue (Grewal, Cote, and Baumgartner 2004). To detect multi-collinearity, the variance inflation factor (VIF) and tolerance value of each construct were assessed (Grewal, Cote, and Baumgartner 2004). The results show that the

Table 2. Convergent validity.

Construct	Items	Factor loading	Mean	Standard deviation
Perceived autonomy	PA1	0.812	3.60	0.764
(CR = 0.815, AVE = 0.687)	PA2	0.847	3.69	0.799
Perceived competence	PC1	0.826	3.46	0.821
(CR = 0.867, AVE = 0.685)	PC2	0.853	3.41	0.908
	PC3	0.805	3.45	0.911
Perceived relatedness	PR2	0.790	3.52	0.887
(CR = 0.872, AVE = 0.694)	PR3	0.843	3.28	0.985
	PR4	0.863	3.39	0.956
Identified motivation	IdeM1	0.754	3.69	0.824
(CR = 0.833, AVE = 0.625)	IdeM2	0.861	3.67	0.871
	IdeM3	0.751	2.43	0.939
Introjected motivation	IntM1	0.900	2.32	0.928
(CR = 0.928, AVE = 0.812)	IntM2	0.936	2.40	0.947
	IntM3	0.866	3.34	0.934
External motivation	ExtM1	0.840	2.87	0.908
(CR = 0.771, AVE = 0.628)	ExtM2	0.742	2.94	1.052
Intention	INT1	0.903	2.93	1.077
(CR = 0.950, AVE = 0.863)	INT2	0.952	2.91	1.065
	INT3	0.931	3.60	0.764

Table 3. Correlation and discriminant validity.

	Perceived autonomy	Perceived competence	Perceived relatedness	Identified motivation	Introjected motivation	External motivation	Intention
Perceived autonomy	0.829						
Perceived competence	0.554	0.828					
Perceived relatedness	0.432	0.601	0.833				
Identified motivation	0.527	0.628	0.561	0.791			
Introjected motivation	0.134	0.275	0.251	0.239	0.901		
External motivation	0.207	0.368	0.320	0.562	0.469	0.793	
Intention	0.479	0.721	0.644	0.486	0.377	0.252	0.929

Note: The diagonal figures represent the square roots of the AVE for each construct.

highest VIF is 2.238, which is below 10, and that the lowest tolerance value is 0.447, which is above 0.1, indicating that multi-collinearity is not a serious issue in the data set.

4.3. Results of testing the structural model

After validating the measurement model, the research model was tested with perceived autonomy, competence,

Table 4. Model fit indices for the measurement model and the structural model.

Model fit indices	Measurement model	Structural model
Chi ²	221.364	403.183
Degree of freedom	131	137
Chi ² /df	1.690	2.943
CFI	0.977	0.933
TLI	0.970	0.916
RMSEA	0.048	0.080

and relatedness being allowed to freely correlate with each other. As shown in Table 4, the fit indices for the structural model include $\chi^2/\text{df} = 2.943$ ($\chi^2 = 403.183$, $\text{df} = 137$), CFI = 0.933, TLI = 0.916; and RMSEA = 0.080. These indices are within acceptable thresholds (Gefen, Rigdon, and Straub 2011), indicating that this model fits the data well. The results of testing the research model are presented in Figure 2 in which the amount of variance explained in each of the endogenous constructs is presented by the R^2 value. The 51% variance of intention to evaluate online content is explained by identified, introjected, and external motivations. While perceived autonomy, perceived competence, and perceived relatedness together accounted for 66% of variance of identified motivation, perceived competence explained 10% and 15% of variance of introjected motivation and external motivation, respectively.

As Figure 2 shows, the effects of three subtypes of extrinsic motivation on users' intentions to evaluate

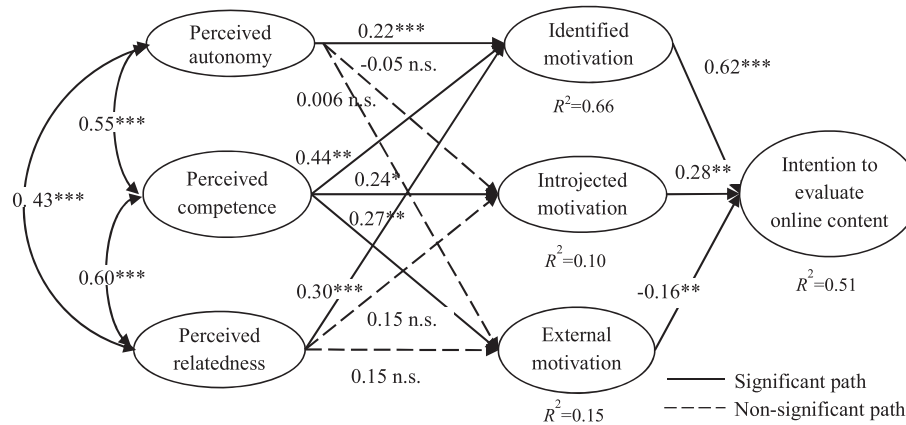


Figure 2. Results of testing the structural model.

Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

Table 5. A summary of hypotheses testing results.

Hypothesised path	Standardised path coefficient	Result
H1: Identified motivation → (+) intention	0.62***	Supported
H2: Introjected motivation → (+) intention	0.28***	Supported
H3: External motivation → (+) intention	-0.16**	Not supported
H4: Perceived autonomy → (+) identified motivation	0.22***	Supported
H5: Perceived autonomy → (-) introjected motivation	-0.05	Not supported
H6: Perceived autonomy → (-) external motivation	0.006	Not supported
H7: Perceived competence → (+) identified motivation	0.44***	Supported
H8: Perceived competence → (+) introjected motivation	0.24*	Supported
H9: Perceived competence → (+) external motivation	0.27**	Supported
H10: Perceived relatedness → (+) identified motivation	0.30***	Supported
H11: Perceived relatedness → (+) introjected motivation	0.15	Not supported
H12: Perceived relatedness → (+) external motivation	0.15	Not supported

Notes: Identified motivation R^2 : 0.66. Introjected motivation R^2 : 0.10. External motivation R^2 : 0.15. Intention to evaluate online content R^2 : 0.51.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

online content are significant. While identified motivation and introjected motivation affect intention positively, with $b = 0.62$ ($p < .001$) and $b = 0.28$ ($p < .01$), respectively, external motivation has a negative impact on intention $b = -0.16$ ($p < .05$). Thus, Hypotheses 1 and 2 are supported, but Hypothesis 3 is not. The coefficient of the path between perceived autonomy and identified motivation is 0.22 ($p < .001$), which is both positive and significant, supporting Hypothesis 4. However, the coefficients of the path between perceived autonomy and introjected and external motivations are small and non-significant, which do not support Hypotheses 5 and 6. In addition, the path coefficients between perceived competence and all three types of extrinsic motivations (identified, introjected, and external motivation) are significantly positive, with $b = 0.44$, $b = 0.24$, and $b = 0.28$, respectively, at the significance level of 0.05. This indicates that Hypotheses 7–9 are supported. Moreover, the path coefficient between perceived relatedness and identified motivation is 0.30 ($p < .001$), which supports Hypothesis 10. However, Hypotheses 11 and 12 are not supported because the path coefficients between perceived relatedness and introjected motivation as well as external motivation are statistically non-significant. In summary, at the significance level of 0.05, only 7 out of 12 hypotheses are supported (Table 5).

5. Discussion

The key findings of this study based on the results of testing the proposed research model can be interpreted in two aspects. First, this study shows that extrinsic motivation plays an important role in explaining users' intentions to evaluate online content. Fifty-one per cent of the variance of user intention is explained by the identified, introjected, and external motivations, each of which has a significant effect on intention.

In addition, while the path coefficient between identified motivation and intention is found to be the highest, the path coefficient between external motivation and intention is the lowest. This indicates that a higher level of self-determined motivation is associated with greater behavioural intention. This finding is consistent with SDT theoretically, where SDT posits that greater internalisation is predictive of enhanced behavioural outcomes (Deci and Ryan 2000). It is also in line with prior research empirically, where identified and introjected motivations are found to have a positive effect on behavioural intention, while the effect of external motivation is found to be negative (Ke and Zhang 2010). This further confirms that studying different types of extrinsic motivation is likely to promote an in-depth understanding of the motivational process towards user intention to collaboratively evaluate the quality of online content.

Second, this study shows that user need satisfactions might be important stimulators in the internalisation process of extrinsic motivation, especially for that of identified

motivation. Together, user perception of the contextual support for the three psychological needs of autonomy, competence, and relatedness accounts for 66% of the variance of identified motivation, and their individual impact on identified motivation is positively significant. However, only 10% and 15% of the variance in introjected motivation and external motivation are explained by perceived autonomy, competence, and relatedness, respectively. As expected, perceived competence is found to have influence on three types of extrinsic motivation. This finding is consistent with SDT in that a sense of competence is necessary for the effective functioning of varied types of extrinsic motivation (Deci and Ryan 2012b). In addition, based on this finding, this study agrees with extant research on that perceived competence is an important factor for explaining user behaviour in online communities (Cheung and Lee 2007; Correa 2010).

In addition, perceived autonomy is found to have a significant effect on identified motivation but no significant effect on either introjected or external motivation. This finding is consistent with SDT that suggests that perceived autonomy is primarily associated with identified motivation, rather than with introjected and external motivations. To some extent, this finding is similar to the findings of Yoon and Rolland's (2012) study, where perceived autonomy is found to have no significant impact on knowledge-sharing behaviour in online communities. This may be explained by the notion that voluntary user participation in online communities can usually be encouraged in positive ways, for example by the values of the behaviour, without bringing feelings of negative experience to users (Preece 2001). Another possible explanation may be that when user participation in online communities is voluntary, users are already guaranteed autonomy for taking part in community activities. As a result, the effect of perceived autonomy on introjected and external motivations can be negligible.

Similar to the effect of perceived autonomy, perceived relatedness is found to positively affect identified motivation. However, there are no significant effects of perceived relatedness found for either introjected or external motivation. These findings are in line with SDT in the sense that perceived relatedness alone may not necessarily result in either introjected or external motivation necessarily (Vansteenkiste, Niemiec, and Soenens 2010). The non-significant effects of perceived relatedness on either introjected or external motivation might also be partly explained by the users' purpose of visiting an online community. In this study, merely 7.6% of participants stated that their purpose for visiting the surveyed online communities was to establish or maintain relationships with other users.

In summary, findings of this study suggest that user intention to evaluate online content can be affected by different types of extrinsic motivation, with identified motivation being the best influential and external motivation

being the least. The findings also show that identified motivation is likely to be stimulated by users' perceived autonomy, competence, and relatedness. In addition, perceived autonomy probably also fosters introjected and external motivations besides identified motivation.

6. Conclusion

The increasing use of online communities for information among Internet users raises concerns about the quality and reliability of the content that is made available. Active user involvement is likely to be a long-term, pragmatic, and sustainable mechanism for collaboratively evaluating the quality of online content. Yet, studies are needed to find out the reasons behind users' intentions to become involved in evaluating online content. Drawing from SDT, this study proposes and tests a research model to explain users' intentions to evaluate content in online communities. The research results illustrate that user intention may be affected by three types of extrinsic motivation, which include identified, introjected, and external motivations. In addition, users' perceptions on the contextual support for their basic psychological needs of autonomy, competence, and relatedness are likely to contribute to the formation of the aforementioned three types of extrinsic motivation.

6.1. Implications for research and practice

Findings of this study have significant implications for both research and practice. First, this study shows that SDT can be a valuable theory for investigating the quality of user motivation towards users' behavioural intention to participate in online communities by applying a motivational process. This motivational process describes the effect of contextual support for users' psychological needs on different types of extrinsic motivation, which, in turn, affects user behavioural intention. Particularly, this motivational process involves an individual's psychological perspective. This study empirically tests such a motivational process in the context of user participation in evaluating content in online communities. Researchers who are interested in investigating user motivation to take part in other activities in online communities may consider applying the motivational process described in SDT in their studies.

Second, this study enriches the literature on user motivation, especially extrinsic motivation, to take part in activities in online communities, by empirically demonstrating that user intention is a result of multiple types of extrinsic motivation. A multifaceted extrinsic motivation provides different aspects for understanding users' intentions to participate in online communities. Therefore, researchers who intend to explain or predict user intention to participate in online community activities may consider SDT as a theoretical framework to conduct an in-depth investigation of extrinsic motivation in their studies.

Third, this study suggests how contextual support for users' basic psychological needs can promote different types of extrinsic motivation, enriching the understanding of the internalisation process of extrinsic motivation. Users' satisfactions with the need for autonomy, competence, and relatedness are three likely contributors of identified motivation. In addition, their satisfaction with the need for competence contributes to not only identified motivation, but also introjected and external motivations. These findings suggest that contextual support for users' needs could be applied in studies of extrinsic motivation based on SDT in understanding other activities in online communities.

Finally, the findings of this study have important implications for the practitioners of online communities because they provide strategic insights into how to encourage collaborative user evaluation of online content for the community to succeed. For example, to promote the effectiveness of user involvement in evaluating online content, the settings of online communities should encourage users' tendency to fully endorse the values of the behaviour and to avoid bringing negative feelings to users. To this end, it may be necessary to explicitly state the importance of the user evaluation of online content in the community guidelines in order to make users aware of the value of their active participation in the evaluation activity. In the guidelines, the voluntary nature of user participation should be emphasised. In addition, an online community should consider providing community norms and website features that help to enhance users' feeling of competence to a certain level so that users can be encouraged to assimilate the values and regulations of community activities. Moreover, an online community needs to maintain their autonomous features and provide users with possible chances to establish connections among other users.

6.2. Limitations and future research

While the results of this study provide meaningful implications for both academics in the IS field and practitioners of online communities, there are certain limitations which suggest potential topics for future research. First, the empirical data were collected from online communities on a variety of topics, which constrains the application of the results of this study to websites with similar goals and features. However, online communities for different industries can vary in the content they provide for their users. Thus, a further study may focus on the content of online communities for a specific industry to gain a deeper understanding of user motivation to evaluate the quality of online content in particular topics related to such an industry. Second, the empirical data were collected during one period of time, which might be inadequate to capture possible dynamics of user intention. Hence, a longitudinal study in the future possibly enriches the findings of this study by observing

changes in behavioural intention over time. Third, the data were gathered in a Taiwanese society, which could represent one particular cultural context. This implies that the results and implications of this study may need to be interpreted carefully if applying them to other cultures. As a result, future research may consider testing the research model in the social contexts of different cultures.

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Appendix. Measurement items

Intention to evaluate online content (adapted from Zhao, Stylianou, and Zheng 2013)

- (1) I intend to get involved in evaluating online content.
- (2) I predict that I will get involved in evaluating online content.
- (3) I plan to get involved in evaluating online content.

Identified motivation (adapted from Ryan and Connell 1989)

I would get involved in evaluating the content in online community

- (1) ... because of the value of getting users involved in evaluating online content.
- (2) ... because getting users involved in evaluating online content is helpful for finding quality of online content.
- (3) ... because of the similarity of my values and those represented by the mechanism of getting users involved in evaluating online content.

Introjected motivation (adapted from Ryan and Connell 1989)

I would get involved in evaluating online content in an online community

- (1) ... because I will feel bad if I don't.

- (2) ... I will feel ashamed of myself if I don't.
- (3) ... because it bothers me when I don't.

External motivation (adapted from Ryan and Connell 1989)

I would get involved in evaluating online content

- (1) ... because evaluating online content is required when visiting an online community.
- (2) ... because evaluating online content is compulsory in an online community.

Perceived autonomy (adapted from Deci and Ryan 2012a)

- (1) I would like to have some choices on how I get involved in evaluating online content.
- (2) Whether I get involved in evaluating online content should be my own choice.

Perceived competence (adapted from Deci and Ryan 2012a)

- (1) I think I would be pretty good at evaluating online content.
- (2) I believe I would do pretty well in evaluating online content, compared to other users.
- (3) After being involved in evaluating online content for a while, I believe I would feel pretty competent in doing it.

Perceived relatedness (adapted from Deci and Ryan 2012a)

- (1) I would like chances to interact more often with other users who are also involved in evaluating online content.
- (2) It is likely that other users who are also involved in evaluating online content and I could become friends if we interacted a lot.
- (3) I feel close to other users who are also involved in evaluating online content.

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