# TRUST, PSYCHOLOGICAL NEED, AND MOTIVATION TO PRODUCE USER-GENERATED CONTENT: A SELF-DETERMINATION PERSPECTIVE

Xuequn Wang*
Global Institute of Management and Economics
Dongbei University of Finance & Economics
217 Jian Shan Street, Sha He Kou District,
Dalian, China, 116025
xuequnwang1600@gmail.com

Yibai Li
Kania School of Management
The University of Scranton
320 Madison Avenue, Scranton, PA 18510-4602
yibai.li@scranton.edu

## ABSTRACT

As social media grow in popularity, more and more people produce user-generated content (UGC) in various types of social media. Thus, practitioners are interested in how to support people's motivation to produce UGC. While previous literature has examined various factors influencing people's motivation to produce UGC, few studies have examined the role of other participants as well as the social media sites. Based on self-determination theory, our study examines the relationship between content attractiveness, trust, perceived competence and autonomy, individual differences, and motivation to produce UGC. Using social network sites as the context of our study, we tested our hypotheses with U.S. college students, and the results supported our hypotheses. We contribute to the current literature by demonstrating that, when individuals perceive that other participants enjoy their UGC and trust social media sites, the individuals' perceived competence and autonomy are enhanced, which in turn supports their motivation to produce UGC.

Keywords: User-generated content; Self-determination theory; Need for competence; Need for autonomy; Trust; Content attractiveness

## 1. Introduction

The explosive growth of user-generated content (UGC) undoubtedly can be associated with the growth of social media applications in recent years. According to a report from Netpop Research [King et al. 2009], 76% of all U.S. broadband users actively contribute to social media applications. As of January 2013, the number of users of the five largest social networks were, in order, Facebook (1 billion), YouTube (800 million), Google+ (343 million), and both Twitter and LinkedIn (200 million) [Duggan & Brenner 2013]. It is the pervasive adoption of social media applications that has led to the explosive growth of UGC on the Internet. In addition, the availability of social media applications on a variety of mobile devices such as smartphones allows social media users to share their thoughts anytime from anywhere, which further facilitates the production of UGC.

The massive amount of UGC on the Internet forms a powerful force that is changing the existing structure of society and the business world. UGC has created a situation in which the traditional media no longer "own the news" [Charron et al. 2006]. Traditional controlled messages through TV, magazines, and direct mail now have to compete with the trusted words of content contributors on the Internet. Up to now, institutions such as governments, media outlets, retailers, and manufacturers have been the primary drivers of societal change, information dissemination, and new products. However, in the era of social media, the traditional top-down driving forces have been replaced by those from the bottom up. Individual Internet users, the grassroots, are integral to these activities through their spontaneous and real-time participation. Individual customers now can participate in product development and push the pace of innovation [Charron et al. 2006].

* Corresponding author

Many organizations realize the significant business value of UGC, and they would like to be part of this massive social movement. An organization has two ways to embrace social media and UGC: as a social media application provider and as a social media sponsor [Kroenke, 2013]. Social media application providers are the companies that operate social media sites. Facebook, Twitter, Linkedin, Google+, and many other social media sites are in this category [Kroenke, 2013]. Social media sponsors are companies and organizations that choose to support a presence on one or more social media sites [Kroenke, 2013]. For both types of social media participants, motivating users to produce UGC is vital. For social media application providers, the amount of UGC produced in a social media site in a given period indicates the Internet traffic of the site, which directly determines its online advertising revenue and the survival of its business. While social media sponsors enjoy all the benefits of social media and UGC, they also have to make a commitment to invest considerable employee time and other costs to support their social media presence. To justify these costs, social media sponsors need to keep their social media pages active to gain real business value. Therefore, producing UGC is quite important for organizations, and this study focuses on how to motivate users to produce UGC.

Previous literature has examined various factors that motivate people to produce UGC in social media. As discussed in Daugherty et al. [2008], those factors can be divided into one or more of the four types of motivators: utilitarian, knowledge, ego-defensive, and value-expressive. With the utilitarian motivators such as entertainment [e.g., Nardi et al. 2004; Stoeckl et al. 2007], people produce UGC for their own incentives. The knowledge motivators, including information exchange and sharing [e.g., Bowman & Willis 2003; Schmidt & Wilber 2005; Stoeckl et al. 2007], let people produce UGC to gain information and understand the environment. With the ego-defensive motivators such as social interaction [e.g., Bowman & Willis 2003; Trammell et al. 2006], people produce UGC to feel a sense of belonging. Lastly, when motivated by the value-expressive motivators such as self-expression [e.g., Nardi et al. 2004; Trammell et al. 2006], people intend to express their self-concepts and want to feel good about who they are.

One concept similar to self-expression is self-actualization, which can be defined as "working on one's own identity and reflecting on one's own personality" [Trepte 2005, p. 170]. It can be an important motivator to result in certain goals such as seeking recognition and desire for fame [Kollock 1999]. Therefore, self-actualization is quite relevant for UGC production. For example, many people on YouTube and MySpace publish UGC to obtain better fame [Bughin 2007]. By contributing high quality UGC, people may believe that they have made important impacts as efficacious people [Bandura 1995; Kollock 1999]. However, relatively few studies have empirically tested the outcomes of the self-actualization. That is, when people perceive that they produce high quality UGC, will they continue to produce UGC in the future? To fill this gap, we propose content attractiveness[1] as an important concept to examine how other participants' opinions toward UGC can influence people's motivation to produce UGC.

Recent literature has also begun to pay attention to individual characteristics. For example, Yang and Lai [2010] found that individuals' internal self-concept positively affects their UGC production in Wikipedia. Clearly, individual characteristics are important to understand the motivation to produce UGC and more studies are needed [2010]. Based on self-determination theory, we propose two important individual characteristics: competence orientation and autonomy orientation. Lastly, we also apply the concept of trust to examine the role of the social media sites. Therefore, our research question is:

*How can content attractiveness, trust toward the sites of social media, and individual characteristics influence people's motivation to produce UGC?*

We selected social network sites (SNSs) as the context of our study. SNSs are different from other types of social media in that UGC in SNSs often involves personal information (e.g., status, where users are now, and recent pictures), and people may feel more concerned about their UGC produced in SNSs [Dwyer et al. 2007]. In such a context, individuals' trust of social media can be quite important in influencing their production of UGC in SNSs.

Our study contributes to the literature in three ways. First, this paper is among the first studies investigating motivating factors of UGC through the lens of self-determination theory. With this theoretical lens, we identified that perceived competence and autonomy are significantly related to the motivation of UGC, but less discussed in the literature. Second, we proposed an important concept—content attractiveness—and tried to understand how other participants can support people's motivation to produce UGC. Third, we clarified the relationship between trust and individuals' perceived autonomy to understand how social media sites can support individuals' motivation.

[1] Previous literature has used content attractiveness to refer to the degree to which people find the content from the websites to be interesting and attractive [Sutcliffe 2002] and has found that content attractiveness can influence consumers' buying behaviors and their loyalty to the sites [Yap 2002]. In the context of social media, the content is often generated by social media users. Therefore, we define content attractiveness as the degree to which individuals perceive that other participants find the content produced interesting and attractive in social media.

The rest of the paper is organized as follows. We first briefly discuss our theoretical foundation and follow this with the development of the hypotheses. Next, we discuss the method of our study. We conclude with the theoretical implications, practical implications, limitations, and opportunities for future study.

## 2. Theoretical Foundation

Our theoretical foundation is self-determination theory (SDT) [Ryan & Deci 2000], which addresses humans' well-being as well as their basic psychological needs that, when satisfied, support people's autonomous motivation. SDT does not address what initiates people's motivation; instead, it focuses on how to support people's motivation. Therefore, SDT is quite helpful in understanding how to support people's motivation to produce UGC in social media. Previous literature has applied SDT to understand general well-being (Ryan et al. 1995), dedication at work [Vansteenkiste et al. 2007], and learning [Vansteenkiste et al. 2004]. In the context of UGC, SDT has been applied to understanding longitudinal motivation to contribute content in online communities [Wang & Clay 2012] and content contribution behaviors in SNSs after crises [Wang in press].

SDT identifies three essential psychological needs: the need for competence [Harter 1978; White 1963], relatedness [Baumeister & Leary 1995; Reis 1994], and autonomy [deCharms 1968; Deci 1975]. In this study, we focused on the need for competence and autonomy. Need for competence is defined as the desire to achieve optimally challenging tasks [White 1963]; need for autonomy is defined as the desire to feel like the initiator of one's own actions [deCharms 1968]. Also, following previous SDT literature [Ryan & Deci 2000], we used perceived competence to refer to the degree to which individuals' needs for competence are satisfied and used perceived autonomy to refer to the degree to which people satisfy their needs for autonomy. According to SDT, needs for competence and autonomy can support motivation, especially when the motivation is autonomy oriented [Ryan & Deci 2000]. First, people's motivation can be enhanced when people have a higher level of perceived competence. Second, a higher level of perceived competence cannot enhance motivation without a higher level of perceived autonomy. In other words, people must experience competence and their behaviors as self-determined to support their motivation.

In this study, we defined the need for competence as the desire to achieve optimally challenging tasks and attain desired outcomes (e.g., produce interesting and attractive UGC) and the need for autonomy as the desire to experience choices while producing UGC and claim ownership as the initiator of one's own actions (e.g., decide what to produce and how to produce UGC). Because different people likely have different levels of competence and autonomy needs, we also examined two important individual characteristics: competence and autonomy orientation.

## 3. Hypotheses Development

Our study uses individuals' motivation to produce UGC in social media as the dependent variable of our study, which refers to how eager individuals are and how much effort and energy they put in to produce UCG in social media. Below, we developed our hypotheses based on SDT and other relevant literature.

### 3.1 Content Attractiveness and Perceived Competence

According to SDT, individuals want to become competent and achieve optimally challenging tasks [Ryan & Deci 2000]. In the context of social media in general and SNSs in particular, people want to produce interesting and attractive UGC. In the process of doing so, individuals need to select relevant content (e.g., upload pictures) or codify relevant content from their minds into content that is placed on SNSs (e.g., update status, write a short paragraph) [Massey & Montoya-Weiss, 2006]. Such a process might be challenging and require much effort [Kankanhalli et al. 2005; Wasko & Faraj 2005]. For example, to write a short paragraph in SNSs, individuals need to have some ideas to share, organize them in a meaningful way, and then post them. In such a process, individuals need to engage in critical thinking. In fact, even a seemingly simple UGC such as uploaded recent pictures still can involve much effort. People need to decide very carefully what pictures to take and spend much effort choosing which pictures to upload. Therefore, producing UGC can be challenging. After doing so, individuals need to evaluate their activities to determine whether they have produced an interesting and attractive piece of UGC. In such a context, content attractiveness can provide relevant feedback and help individuals evaluate whether they obtained their desired outcomes. By perceiving that others enjoy their UGC or think their UGC is interesting, individuals likely feel they have achieved a challenging task and obtained the desired outcomes, enhancing their perceived competence. Therefore, we hypothesize that:

*H1: Content attractiveness is positively related to individuals' perceived competence.*

### 3.2 Trust and Perceived Autonomy

Previous literature has identified three types of trusting beliefs: benevolence, competence, and integrity [Bhattacherjee 2002; McKnight et al. 2002]. Benevolence trust beliefs refer to trustees' caring to act in trusters' interests [McKnight et al. 2002] and reflect on whether trustees' motives are based on altruism [Mayer et al. 1995]. In the context of SNSs, benevolence trust beliefs address how people perceive that their personal information is kept

private and protected. Therefore, benevolence trust beliefs are especially important for social media such as SNSs because produced UGC often contains personal information (e.g., recent pictures). When people perceive that their personal information is safe and protected by social media, their benevolence trust beliefs are probably enhanced. As a result, they would perceive that their UGC will be viewed only by those whom they expect to view it. In such a context, they are more likely to feel that they can control and initiate their UGC production, which enhances their perceived autonomy.

Competence trust beliefs refer to trustees' abilities to meet trusters' needs [McKnight et al. 2002]. In social media such as SNSs, people frequently update their status or upload their recent pictures. Therefore, SNSs need to provide corresponding technological platforms to support people's activities in producing UGC. When people perceive that social media can support their various activities, they probably have a higher level of competence trust beliefs. In such a context, they are more likely to feel that they can produce UGC in the ways they intend, leading to improved perceived autonomy.

Integrity trust beliefs refer to trustees' honesty and keeping of promises [McKnight et al. 2002] and deal with trustees' commitment and reliability. Specifically, integrity trust reflects the degree to which trustees will adhere to a set of rules of interaction acceptable to trusters [McKnight et al. 2001]. In the context of social media such as SNSs, rules of integrity for SNSs refer to: (1) online support interaction among users, (2) participant support to produce various kinds of UGC, and (3) SNSs' use of users' private information. Therefore, integrity trust beliefs for SNSs refer to the degree to which people believe that social media will support their various activities and protect their personal information in the future. SNSs may build integrity trust perceptions by explicitly stating their policies (e.g., user data privacy policies) on their sites and keeping users informed of any change in rules. When people believe that social media will keep their reasonable policies and operate reliably, their integrity trust beliefs toward social media are probably increased. Consequently, people probably feel they can reliably produce UGC in the ways desired in the future, and their perceived autonomy is supported. Previous literature has also found that integrity trust beliefs of an online firm can increase people's willingness to transact with that firm [Bhattacherjee, 2002]. To summarize, we argue that:

*H2a: Individuals' benevolence trust beliefs toward social media are positively related to their perceived autonomy.*

*H2b: Individuals' competence trust beliefs toward social media are positively related to their perceived autonomy.*

*H2c: Individuals' integrity trust beliefs toward social media are positively related to their perceived autonomy.*

### 3.3 Perceived Competence, Perceived Autonomy, and Motivation to Produce User-Generated Content

When people achieve optimally challenging tasks and obtain their desired outcomes, their need for competence is satisfied. In such a context, people probably have the greatest involvement and the strongest interest [Zhang 2008]. In social media, when people produce a piece of UGC and many people like it, the producers of this work likely feel that their needs for competence are satisfied. In such a context, they feel efficacious toward producing UGC and are motivated to produce more in the future. In addition, because people can choose what and how to produce UGC, their needs for autonomy are also satisfied after producing UGC. As a result, individuals probably perceive an internal locus of causality [deCharms 1968] and feel that they can initiate their production of UGC, leading to their motivated production of UGC later. Therefore, we hypothesize that:

*H3a: Individuals' perceived competence is positively related to their motivation to produce UGC.*

*H3b: Individuals' perceived autonomy is positively related to their motivation to produce UGC.*

### 3.4 Competence Orientation, Autonomy Orientation, and Motivation to Produce UGC

Competence orientation is derived from the competence subscale of O'Brien and Epstein's [1988] Multidimensional Self-Esteem Inventory. It refers to the degree to which individuals feel that they are effective and are capable of learning new things quickly, are able to master new tasks, and can do well at most activities in general. Therefore, when people have a higher level of competence orientation, they probably have a higher level of need for competence and desire to achieve more optimally challenging tasks than those with a lower level of competence orientation. In social media, people with a higher level of competence orientation want to produce more interesting and attractive UGCs. Thus, their motivation to produce it is likely higher.

Autonomy orientation is derived from the Self-determination Scale [Sheldon & Deci, 1996] and refers to the degree to which people tend to behave in a self-determined way. Therefore, people with a higher level of autonomy orientation have a higher sense of choice regarding their behaviors. In social media, people with a higher level of autonomy orientation are more likely to perceive that their producing UGC is initiated by themselves and feel that they can decide how to produce UGC. Thus, they are more likely to be motivated to produce UGC.

Based on those discussions, we hypothesize that:

*H4a: Individuals' competence orientation is positively related to their motivation to produce UGC.*

*H4b: Individuals' autonomy orientation is positively related to their motivation to produce UGC.*

Our research model is shown in Figure 1.

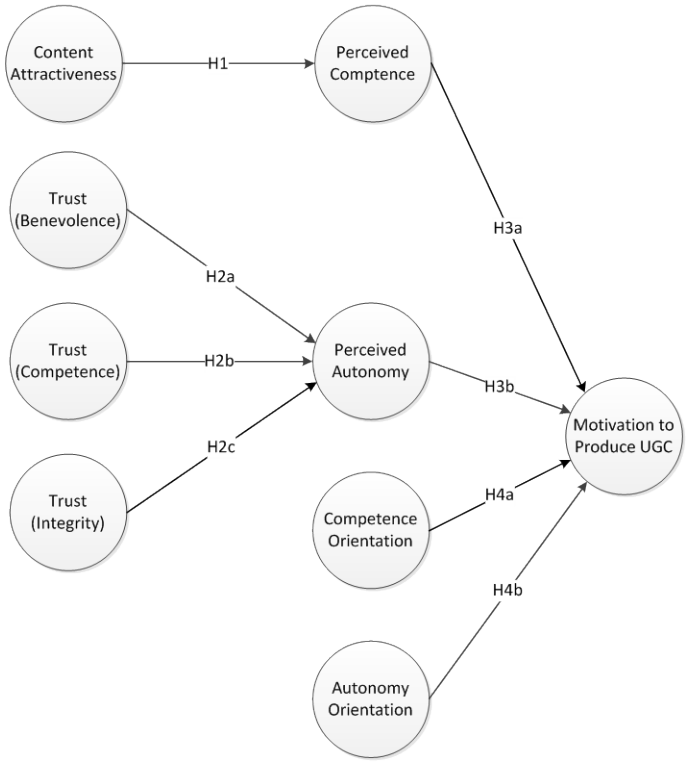


Figure 1: Research Model

## 4. Method

This section describes the context, sample, measures, data analysis and the results of this study.

### 4.1 Context

This study selected SNSs as the context. Specifically, we examined how to support people's motivation to produce UGC on Facebook. Facebook is one of the most popular SNSs in the world. As of September 2012, there were more than one billion active users on Facebook [Jones 2012]. After registration, users can produce various types of UGC, such as recent pictures, updated status, short articles, etc. In Facebook, communications between users are mainly supported through the "wall" feature. Through the "wall" feature, users can view their friends' latest Facebook activitiest and write on their Facebook walls. Facebook is especially popular among college students in U.S. Therefore, it is suitable to use college students to test our research model.

### 4.2 Sample

The sample of this study is collected in an entry level business class at a large state university in the Northwest of the U. S. We recruited 221 students for this study; the average age of the students was 20.06 years old (SD 2.07); 34.8 percent were female. The participants received course credit (less than 1%) as a token of appreciation.

### 4.3 Measures

Since there are no established measurement items for content attractiveness, we developed the scales following the guidelines provided by MacKenzie et al. [2011]. We first defined the conceptual meaning of the construct. As discussed in previous sections, we defined content attractiveness as the degree to which individuals perceive that others find their UGC interesting and attractiveness. Second, we developed the measures for content attractiveness based on previous literature as well as the specific characteristics of SNSs. Third, we invited two experts to assess the content validity of the measures. The measures were then modified based on the experts' comments and feedbacks. Fourth, we conducted a pilot study to pretest our measures. Measures were further modified based on the results (e.g., reliability and construct validity) of the pilot study.

For other constructs, we adopted those items that have been validated in prior studies and used them to create a cross-sectional questionnaire following Dillman [1978]. Specifically, items for perceived competence and autonomy were adopted from Ke and Zhang [2010]; items for competence and autonomy orientation were adopted from existing SDT literature [Reis et al. 2000]; items for trust were adopted from McKnight et al. [2002]; items for motivation to produce UGC were adopted from Ma and Agarwal [2007]. Each item was measured using a 7-point Likert scale with "strongly disagree/agree" anchors. The items used are shown in the appendix.

4.4 Procedures

Data collection was conducted in the laboratories for an entry level business class in order to increase response rate. At the beginning of the data collection, the first author read aloud the purposes and procedures for the study. Then participants visited a website to complete the questionnaire. The questionnaire contained a randomized sequence of measures as well as demographic information questions. A missing answer check was embedded in the survey, so that participants would not miss any questions. Once the questionnaire was completed, participants were thanked and exited the laboratory.

4.5 Analysis and Results

Our research model was tested with partial least squares (PLS), a structural equation modeling method suitable for complex predictive models and theory building [Lohmoller 1989; Barclay et al. 1995; Chin 1998]. SmartPLS version 2.0 [Ringle et al. 2005] was used, with the bootstrap re-sampling method (using 5000 samples), to determine the significance of the paths in the structural model. PLS is a suitable analytical technique for this study for several reasons: First, PLS does not require any multivariate normality assumptions; Second, PLS works well with small-to-medium sized samples [Chin 2010]; Third, PLS is better suited for predictive models, as compared to Covariance-based Structural Equation Modeling whose focus is on model fit [Chin 2010]. The focus of this study is on predicting individuals' motivation to produce UGC; therefore we chose PLS as the analytical tool of this study.

A rule-of-thumb for a PLS analysis is that the sample size needs to be at least ten times the largest structural equation or the largest measurement equation [Gefen et al. 2000]. The largest structural equation in our model, the motivation construct, has four paths in its structural model. Thus, our sample size of 221 exceeds the minimum suggested sample size of 40.

We then examined if common method bias was a concern in this study with two tests of common method variance (CMV) following Podsakoff et al. [2003] and Lindell & Whitney [2001]. First, an exploratory factor analysis of all items extracted eight factors which explain 73.72% of all the variance, with no single factor accounting for significant loadings (at the $p < 0.10$ level) for all items. Second, to detect moderate to small levels of CMV, we also utilized the marker-variable technique [Lindell & Whitney 2001], and selected the second-smallest positive correlation among the manifest variables as a conservative estimate for CMV. After the adjustment, all significant correlations remained significant. Based on the results of these two tests, we concluded that CMV was probably not a concern in this data set.

Following previous literature, we analyzed the data in two stages. The first stage assessed the reliability and the validity of the measurement model, and the second stage examined the structural model [Hulland 1999]. In the first stage, convergent validity was confirmed by satisfying the following criteria [e.g., Hulland 1999; Gefen & Straub 2005]: First, all items loaded significantly on their respective constructs and none of the loadings were below the cutoff value of 0.60 (Table 1). Second, the composite reliabilities (CRs) of all constructs were above .70 (Table 1). Finally, the average variance extracted (AVEs) of all constructs were above the threshold value of .50 (Tables 1). Discriminant validity was established when all correlations between constructs were below 0.85 [Brown 2006] and the square root of AVE for each construct exceeded all correlations between that construct and any other constructs [Gefen & Straub 2005] (Table 2). Thus, our measures demonstrated good psychometric properties.

Next, we examined the structural model. Similar to linear regression, PLS uses path coefficients to examine the construct relationships and test hypotheses. It provides $R^2$ to measure the amount of variance in the dependent variable explained by the independent variables [Gefen et al. 2000]. We first assessed the effects of the two control variables (gender and age) on individuals' motivation. We found that these two variables were not significantly related to individuals' motivation. Therefore, we did not include them in the hypothesis testing.

Table 1. Descriptive statistics, item loadings, and constructs' AVE and CR

| Scale Item | Item Mean | Item S. D. | Item Loading | AVE | CR |
|---|---|---|---|---|---|
| AO1 | 5.44 | 1.07 | 0.81 | 0.67 | 0.89 |
| AO2 | 5.60 | 0.97 | 0.82 | | |
| AO3 | 5.42 | 1.22 | 0.82 | | |
| AO4 | 5.55 | 1.06 | 0.83 | | |
| AUT1 | 4.92 | 1.39 | 0.91 | 0.77 | 0.93 |
| AUT2 | 4.94 | 1.38 | 0.90 | | |
| AUT3 | 5.16 | 1.20 | 0.83 | | |
| AUT4 | 5.05 | 1.32 | 0.87 | | |
| CA1 | 5.15 | 0.96 | 0.82 | 0.69 | 0.90 |
| CA2 | 5.00 | 0.97 | 0.85 | | |
| CA3 | 4.64 | 0.92 | 0.84 | | |
| CA4 | 4.88 | 0.95 | 0.81 | | |
| CO1 | 5.67 | 1.11 | 0.89 | 0.74 | 0.92 |
| CO2 | 5.76 | 1.01 | 0.92 | | |
| CO3 | 5.57 | 1.08 | 0.84 | | |
| CO4 | 5.59 | 1.21 | 0.80 | | |
| COM1 | 4.97 | 1.16 | 0.90 | 0.79 | 0.94 |
| COM2 | 4.85 | 1.16 | 0.93 | | |
| COM3 | 4.88 | 1.20 | 0.88 | | |
| COM4 | 4.57 | 1.17 | 0.82 | | |
| MOV1 | 5.27 | 1.35 | 0.93 | 0.85 | 0.92 |
| MOV2 | 4.96 | 1.33 | 0.91 | | |
| TB1 | 4.37 | 1.35 | 0.88 | 0.76 | 0.93 |
| TB2 | 4.50 | 1.24 | 0.90 | | |
| TB3 | 3.98 | 1.39 | 0.86 | | |
| TB4 | 4.39 | 1.20 | 0.85 | | |
| TC1 | 5.07 | 1.13 | 0.75 | 0.56 | 0.84 |
| TC2 | 4.80 | 1.22 | 0.83 | | |
| TC3 | 4.93 | 1.36 | 0.67 | | |
| TC4 | 4.47 | 1.23 | 0.75 | | |
| TI1 | 4.38 | 1.23 | 0.86 | 0.78 | 0.94 |
| TI2 | 4.23 | 1.31 | 0.88 | | |
| TI3 | 4.43 | 1.18 | 0.90 | | |
| TI4 | 4.25 | 1.25 | 0.90 | | |

Table 2. Correlation between constructs, and square-root of AVEs

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 Autonomy Orientation | **0.82** | | | | | | | | |
| 2 Competence Orientation | 0.64 | **0.86** | | | | | | | |
| 3 Content Attractiveness | 0.28 | 0.34 | **0.83** | | | | | | |
| 4 Motivation to Produce UGC | 0.39 | 0.40 | 0.52 | **0.92** | | | | | |
| 5 Perceived Autonomy | 0.35 | 0.22 | 0.42 | 0.45 | **0.88** | | | | |
| 6 Perceived Competence | 0.20 | 0.17 | 0.50 | 0.36 | 0.52 | **0.89** | | | |
| 7 Trust (Benevolence) | 0.19 | 0.12 | 0.45 | 0.39 | 0.43 | 0.44 | **0.87** | | |
| 8 Trust (Competence) | 0.28 | 0.30 | 0.49 | 0.50 | 0.36 | 0.38 | 0.50 | **0.75** | |
| 9 Trust (Integrity) | 0.10 | 0.10 | 0.42 | 0.34 | 0.37 | 0.42 | 0.76 | 0.54 | **0.89** |

H1 states that content attractiveness is positively associated with perceived competence, which is supported ($b$ = 0.500, $p$ < 0.001). H3a states that trust (benevolence) is positively associated with perceived autonomy. This hypothesis is supported ($b$ = 0.310, $p$ < 0.01). H3b posits that trust (competence) is positively associated with perceived autonomy. This hypothesis is supported ($b$ = 0.190, $p$ < 0.05). H3c states that trust (integrity) is positively associated with perceived autonomy. This hypothesis is not supported ($b$ = 0.031, $p$ > 0.05). H3a argues that perceived competence is positively associated with the motivation to produce UGC. This hypothesis is supported ($b$ = 0.153, $p$ < 0.05). H3b suggests that perceived autonomy is positively related to motivation. This hypothesis is supported ($b$ = 0.284, $p$ < 0.001). H4a argues that competence orientation is positively related to motivation. This hypothesis is supported ($b$ = 0.240, $p$ < 0.01). H4b posits that autonomy orientation is positively related to motivation. This hypothesis is not supported ($b$ = 0.107, $p$ > 0.05). These results are illustrated in Figure 2.

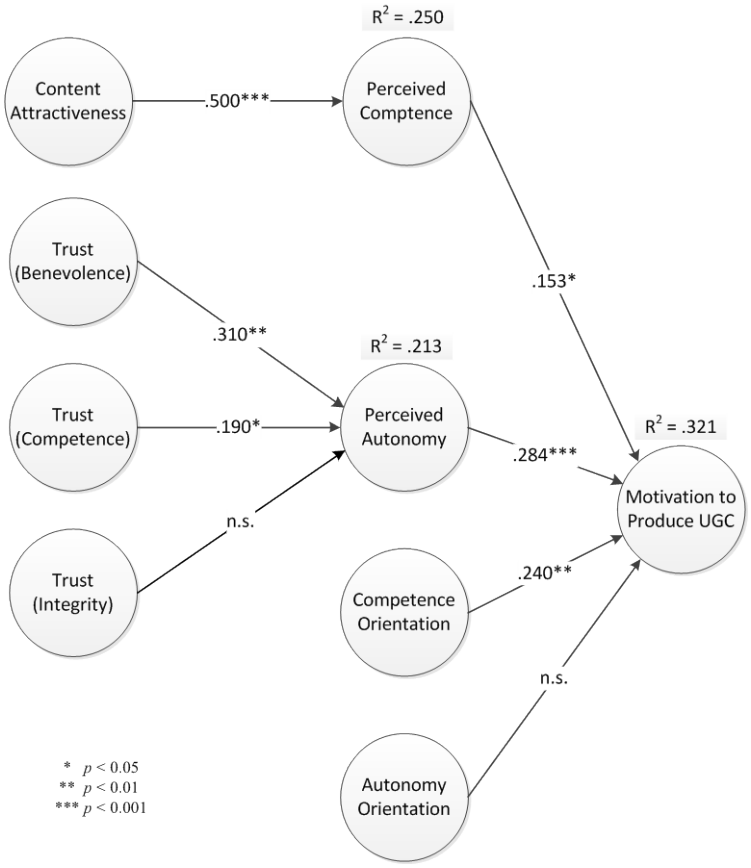


Figure 2: Model Results

Finally, we assessed the predictive quality of our model using the Stone-Geisser ($Q^2$) test [Geisser 1975; Stone 1974]. When $Q^2$ is above 0, the model has estimation relevance; values under 0 imply that the model lacks estimation relevance, leading to a doubtful determination of the latent variable. The $Q^2$ for trust (benevolence) is 0.591; the $Q^2$ for trust (competence) is 0.281; the $Q^2$ for trust (integrity) is 0.624; the $Q^2$ for content attractiveness is 0.481; the $Q^2$ for perceived competence is 0.623; the $Q^2$ for perceived autonomy is 0.602; the $Q^2$ for competence orientation is 0.562; the $Q^2$ for autonomy orientation is 0.444; the $Q^2$ for motivation is 0.551. Therefore, our model overall has good predictive relevance.

**5. Discussions**

In this study, we try to understand how other participants and the sites of social media can help support individuals' motivation to produce UGC. Based on SDT and other relevant literature, we develop hypotheses to examine the relationship among content attractiveness, trust, perceived competence and autonomy, individual differences, and motivations to produce UGC. We tested our model with data collected from U.S. college participants, and most of our hypotheses are supported. Specifically, content attractiveness is positively related to

perceived competence (H1); benevolence (H2a) and competence (H2b) trust beliefs are positively related to perceived autonomy; perceived competence (H3a), perceived autonomy (H3b), and competence orientation (H4a) are positively related to motivation to produce UGC. In our results, integrity trust beliefs are not significantly related to perceived autonomy, so H2c is not supported. One possibility is that Facebook has established a set of policies regarding how it operates and protects users' private data, and users do not feel concerned about Facebook's integrity. Our results also show that autonomy orientation is not significantly related to motivation to produce UGC, so H4b is not supported. One potential reason is that Facebook provides different ways for users to produce UGC, and even people with lower levels of autonomy orientation can still experience choices when producing UGC.

5.1 Implications for Theory

Our study has several important implications for research. First, we extend previous SDT literature and confirm SDT in the context of social media. Specifically, we show that individuals' perceived competence and autonomy are positively related to their motivation to produce UGC. In other words, we highlight that humans' psychological needs (i.e., the need for competence and autonomy in this study) as suggested in SDT are indeed important in supporting individuals' motivations to produce UGC in social media.

Second, our study proposes the concept of content attractiveness and demonstrates that it can support people's perceived competence. We argue that, after individuals produce UGC, they need to know whether they have done a good job and produced something interesting and attractive. Therefore, content attractiveness functions as a type of feedback and allows individuals to know whether others perceive their content as interesting and attractive. Thus, by letting individuals know that others think their UGC is interesting, individuals' needs for competence are satisfied, which in turn supports their motivation to produce UGC.

Third, our study demonstrated that, for social media such as SNSs in which UGC may involve personal information, individuals' trust beliefs toward social media can influence their perceived autonomy. We argue individuals can feel that by trusting social media their information is protected and they can produce UGC in the various ways they want. In such a context, individuals' perceived autonomy is enhanced, which in turn helps to maintain their motivation to produce UGC.

Fourth, our study shows that individual characteristics can also be important to support individuals' motivation to produce UGC. Our results demonstrate that individuals' competence orientation is positively related to their motivation to produce UGC. This result shows a simple psychological phenomenon: those who want to achieve more will produce more. Because different people probably have different levels of competence needs, researchers may want to take those differences into consideration when examining motivation to produce UGC.

5.2 Implications for Practice

Our study also has important implications for practice. First, because content attractiveness can enhance individuals' perceived competence, practitioners may want to facilitate other participants to interact with those individuals who produce UGC and show their interests in UGC. For example, practitioners can design social media sites and add a quick function to "like" the content (e.g., "like" button in Facebook) or create a set of predefined figures (e.g.,  ,  ) so that other participants will find it easier to show they have a positive reaction to the UGC produced. Additionally, moderators of social media sites may want to monitor the comments for UGC consistently and remove those highly negative comments to avoid making those individuals who produce the UGC feel bad and less competent.[2]

Second, individuals' trust beliefs toward social media are important to enhancing their perceived autonomy and supporting their motivations to produce UGC, especially when UGC involves personal information. Therefore, practitioners need to enhance individuals' benevolence and competence trust beliefs. For example, practitioners might pay more attention to the security issue and show individuals how their personal information and produced UGC can be protected from unauthorized viewing. In addition, practitioners might want to design the websites and allow individuals to produce UGC in different ways and more conveniently so that people can decide how to produce UGC.

5.3 Limitations and Opportunities for Future Studies

Our study is not without limitations. First, we collected our data from U.S. college students. While college students represent a major portion of Facebook users, our results could be limited. Future studies can test our model in other populations from other countries to examine whether our results still hold. Second, we used SNSs as the context of our study; future studies can examine other types of social media (e.g., YouTube) to see whether, for example, trust beliefs are still important to support people's motivations to produce UGC. Third, we only examined two important individual differences: competence and autonomy orientation. Future studies could examine other individual differences (e.g., causality orientation). Besides, content attractiveness only presents one aspect of the

[2] Of course, this action may not be ethical or legitimate, and local contexts (e.g., culture, laws) need to be considered.

influences of other participants, and future studies can examine other ways in which other participants can influence people's motivation to produce UGC, such as the frequency of interaction in social media sites, previous interaction experiences, etc.[3]

According to SDT, people's psychological needs are hypothesized to be universal. In other words, the relationship between the need satisfaction and motivation is proposed to apply across ages, genders, and cultures [Ryan & Deci, 2002]. However, the way these needs are satisfied depends on age, gender, and culture. Future studies could examine how individuals' needs for competence and autonomy are satisfied in other countries.

**6. Conclusion**

An increasing amount of UGC is produced in various types of social media, and that UGC is important for organizations that operate social media. Thus, practitioners are interested in knowing how to support individuals' motivations to produce UGC. This study tried to examine the role of other participants and the sites of social media in supporting people's motivations to produce UGC within the context of SNSs. Hypotheses developed based on SDT were tested and confirmed. Future studies could examine other types of social media and other individual differences or could test our research model with other populations.

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[3] We thank one reviewer for pointing out this issue.

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## APPENDIX A: MEASUREMENT

**Trust (Benevolence) [McKnight et al. 2002]**

TB1 I believe that Facbook would act in my best interest.
TB2 If I required help, Facebook would do its best to help me.
TB3 Facebook is interested in my well-being, not just its own.
TB4 Facbook is open and receptive to my needs.

**Trust (Competence) [McKnight et al. 2002]**

TC1 Facebook is competent and effective in providing services.
TC2 Facebook has the ability to meet most of my needs.
TC3 Overall, Facebook is a capable and proficient Internet service provider.
TC4 In general, Facebook is very knowledgeable about the law.

**Trust (Integrity) [McKnight et al. 2002]**

TI1 Facebook is truthful in its dealings with me.
TI2 I would characterize Facebook as honest.
TI3 Facebook would keep its commitments.
TI4 Facebook is sincere and genuine.

**Content Attractiveness (Self-developed)**

CA1 Many people like what I share in Facebook.
CA2 People think what I share in Facebook is interesting.
CA3 People find my posts valuable in Facebook.
CA4 There are many people visiting what I share in Facebook.

**Perceived Competence [Ke & Zhang 2010]**

COM1 By using Facebook, I can show my friends what I know.
COM2 By using Facebook, I can show my friends something that I know well.
COM3 By using Facebook, I can show my friends the new knowledge that I have recently learnt.
COM4 By using Facebook, I can show my friends the skills that I am good at.

**Perceived Autonomy [Ke & Zhang 2010]**

AUT1 I feel Facebook is a place where I can freely express my ideas and opinions.
AUT2 In Facebook, I can freely express what I think.
AUT3 I feel free to post information on Facebook.
AUT4 In my experience of Facebook, I feel free to say what I want to say.

**Competence Orientation [Reis et al. 2000]**

CO1 I feel that I am a person of worth, at least on an equal basis with others.
CO2 I feel that I have a number of good qualities.
CO3 I am able to do things as well as most other people.
CO4 I take a positive attitude toward myself.

**Autonomy Orientation [Reis et al. 2000]**

AO1 I always feel like I choose the things I do.
AO2 I do what I do because it interests me.
AO3 I am free to do whatever I decide to do.
AO4 I feel pretty free to do whatever I choose to.

**Motivation to Produce User-Generated Content [Ma & Agarwal 2007]**

MOV1 I will keep updating my space in Facebook.
MOV2 I will keep putting more information which is available to other members in Facebook.