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Effects of Clickbait Headlines on User Responses: An Empirical Investigation

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ABSTRACT

This study investigates the influence of a conventional method of delivering news headlines, clickbait, on online users' perceptions and responses. An experiment was conducted on two groups of news headlines—traditional news and clickbait—to provide empirical evidence of the effects of clickbait on online users. The findings suggest that clickbait headlines can evoke users' arousal and curiosity. In addition, the results from structural equation modeling fill the gap in the literature by providing evidence of the factors influencing users' intention to read and share online news. The results reveal that while the major determinant of users' intention to read news stories is curiosity, perceived knowledge quality appears to be the main factor users consider when sharing online news stories.

Keywords: clickbait; online news; perceived knowledge quality; arousal; curiosity; intention

INTRODUCTION

Internet advertising revenues in the United States have increased to a new high in the first quarter of 2017, hitting a record of \$19.6 billion (IAB, 2018). The trend is increasing, and the strong growth is caused by news media providers' strategies to attract online users to visit their websites (e.g., see Kim & Kim, 2018). One of the most popular strategies that news media websites have employed to capture online users' attention is "clickbait". A clickbait headline is a news headline written with a provocative writing style that encourages users to click on the headline link and to read the news story on a particular website (Chakraborty, Paranjape, Kakarla, & Ganguly, 2016). Examples of clickbait headlines include "*What Happens to this Man INSIDE a Water Balloon Will Blow Your Mind*" or "*8-Year-Old Starts Singing with Her Eyes Closed but When She Opens Her Eyes... My Jaw Dropped! OMG!*" The strategy of using clickbait headlines has become common. Rony et al. (2017) report that 39.26% posts made by unreliable media have clickbait headlines, and even in mainstream media, the ratio is 33.54%.

In general, clickbait headlines exploit a narrative strategy called "forward reference" (Yang, 2011) that provides just enough information to create curiosity and thus arouses users to click on the headline to read further to satisfy their curiosity. However, the main purpose of clickbait headlines is to lure users to a website that collects the view statistics or number of clicks, which are used to generate income from the website's advertising. In addition, the content or full story of a clickbait headline is typically misleading, unverified, seldom corrected, and does not live up to the users' expectations.

Over the years, the number of complaints about clickbait headlines, especially on social network websites, has increased due to its effectiveness at getting users to take notice and create attention. In addition, in some cases, even when online users find that clickbait headlines are annoying, they still click if the level of emotion conveyed in the clickbait headlines is extreme (Reis et al., 2015). Since 2016, such concerns have become more serious and several websites (e.g., FacebookTM and GoogleTM) have declared that they would decrease the reach and prevalence of clickbait headlines (Statt, 2017). For example, Facebook states in their Newsroom that "*People tell us they don't like stories that are misleading, sensational or spammy. That includes clickbait headlines that are designed to get attention and lure visitors into clicking on a link. In an effort to support an informed community, we're always working to determine what stories might have clickbait headlines so we can show them less often*" (Babu, Liu, & Zhang, 2017).

However, while online users have recognized clickbait headlines as spam because of their ill effects, several major news websites still rely on this strategy to attract users to visit their websites. For example, CNNTM appears to be the top publisher that publishes news headlines written using clickbait styles to engage users on FacebookTM (Boland, 2018; Ingram, 2018). As suggested in the marketing domain, appropriately written clickbait headlines can literally appear to be legitimate and effective strategy to boost the number of website visits (e.g., Owens, 2016; Shewan, 2018).

Therefore, it appears that there are mixed effects of clickbait headlines on users. While online advertising has been explored widely in the existing literature, there has been little research examining clickbait headlines in the advertising context; more research is needed to provide a better understanding regarding the effects of clickbait headlines on online users. Accordingly, this study builds on previous studies in online advertising by asking how online users perceive clickbait headlines. Do online users negatively perceive clickbait headlines? What are the effects of clickbait headlines on user intentions?

We distinguish online users' perceptions to traditional news headlines and clickbait headlines based on the framework of cognitive-affective processing (Bagozzi, 1982). In general, we find higher levels of perceived knowledge quality associated with traditional news headlines than clickbait headlines. Our results also suggest that clickbait headlines trigger the levels of users' arousal and curiosity, but also create a risk of disappointing potential users as well. This research extends our understanding of the cognitive-affective process of communication by providing empirical evidence on the use of clickbait headlines. We also contribute to the literature on the relationship among perceived knowledge quality, arousal, and curiosity.

LITERATURE REVIEW AND RESEARCH MODEL

Clickbait headline

Serving as an online tabloid version of traditional news, a clickbait headline provides soft-news content that generally provokes readers' curiosity and then postpones revealing the content of the story. Typically, clickbait headlines are created by a forward-referring narrative writing strategy that exploits a curiosity gap (Loewenstein, 1994) where the headlines provide referencing cues to generate curiosity, which subsequently compels readers to read the full stories by clicking on the link embedded in the headlines to fill the curiosity gap. However, since the true goal is to generate web page views, instead of providing verifiable information, clickbait headlines usually don't live up to the expectation of the readers.

According to the marketing and journalism literatures, few studies have examined clickbait headlines and their consequences. For example, Chen et al. (2015) examined methods to detect clickbait and provided potential cues for recognizing both textual and non-textual clickbait. Blom and Hansen (2015) reported that the forward-referring writing technique can be used to create effective news headlines; however, using such a technique to create clickbait headlines is typically problematic, since the headlines are often considered misleading and deceptive (Chen, Lin, Yen, & Linn, 2011). In addition, Chakraborty et al. (2016) have provided an approach based on text mining to automatically detect clickbait headlines. Anand et al., (2017) employ an approach of artificial neural networks, Recurrent Neural Network (RNN), to extract features from clickbait headlines and identify those that are ambiguous and misleading. Rony et al. (2017) use the distributed subword embedding technique to retrieve a large sample of 1.67 million Facebook posts made by 153 media organizations and find clickbait posts (links or videos) receives more attention (reactions/shares/comments) than non-clickbait posts.

Hypothesis development

This study aims to advance our knowledge of online users' perceptions toward clickbait headlines by testing the proposed hypotheses and research model developed based on theories that explain the interrelationships between users' attitudes and behavioral intentions. In this sense, this research employs the cognitive-affective process of communication model (Bagozzi, 1982) to explain a process that an online user goes through during the evaluation of a clickbait headline. The cognitive and affective aspects are two of the most important factors that explain decision making and behavior in the information systems area (e.g., Davis, Bagozzi, & Warshaw, 1989; Wu & Wang, 2005). This cognitive-affective model is of great value for application in this study since by the nature of online news, both cognition and affect are essential triggers of individuals' attention (Uribe & Gunter, 2007). Figure 1 illustrates the proposed research model of this study. Note that hypotheses H1a, H2a, and H3a are tested separately from the research model.

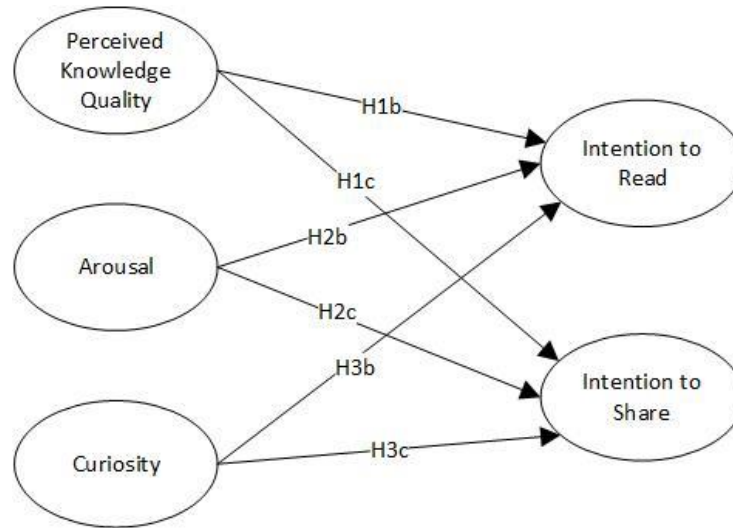


Figure 1. Proposed research model

Regarding the cognitive dimension, the cognitive process is considered as a key element of the mental representations of objects such as knowledge or beliefs (Bagozzi, 1982). This aspect of processing recognizes information of news headlines to form beliefs and judgements. In this study, the cognitive aspect of news headlines is referred to as perceived knowledge quality. Based on the concept of knowledge quality (Chiu, Hsu, & Wang, 2006), perceived knowledge quality is defined as an individual's perception of accuracy and reliability of a news headline. Perceived knowledge quality is expected to be higher in traditional news headlines than in clickbait headlines. This is due to the emotion-eliciting and attention-grabbing nature of clickbait (Grabe, Zhou, Lang, & Bolls, 2000), which can reduce individuals' capability to cognitively process the content described in the headlines (Lang & Dhillon, 1995). Consequently, when the cognitive process capability is limited, individuals may trigger the automatic elaboration to evaluate clickbait headlines as unbelievable and low quality due to their over-exaggerated and provocative characteristics (Gibbons, Lukowski, & Walker, 2005; Grabe et al., 2000).

Thus,

H1a: The level of perceived knowledge quality in clickbait headlines is lower than that of traditional news headlines

In addition, past studies have suggested a positive relationship between the cognitive dimension and behavioral intentions (e.g., Davis et al., 1989) such that perceptions of performance impact users' usage.

Therefore,

H1b: There will be a direct positive relationship between perceived knowledge quality and intention to read news.

H1c: There will be a direct positive relationship between perceived knowledge quality and intention to share news.

Regarding the affect dimension of the cognitive-affect process model, past studies have suggested several aspects of emotional states that influence behavioral intention. Examples of the emotions include happiness, boredom, anger (Lin, Yang, & Chen, 2007), arousal (Uribe & Gunter, 2007), and sadness (Hyo & Glen, 2011). However, according to the nature of clickbait headlines, we consider arousal and curiosity as the main emotions found in news and consequently, include them in our investigation. There are several frameworks in the psychology literature that hypothesize the relationship between emotion and behavioral intentions. However, in this study, we adopt the stimulus-organism-response (S-O-R) model proposed by Mehrabian and Russell (1974) to provide the foundation of the effects of emotion on intentions. The S-O-R framework has been adopted in several areas including computer-human interaction (Koo & Ju, 2010), marketing (Thang & Tan, 2003), and information systems (Éthier, Hadaya, Talbot, & Cadieux, 2006). Overall, the S-O-R model suggests that stimuli (e.g., news headlines) can influence individuals' emotional states (organism), whose response may result in their behavioral intentions (response).

Therefore, we propose the following hypotheses:

H2a: The level of arousal in clickbait headlines is higher than that of traditional news headlines.

H2b: There will be a direct positive relationship between arousal and intention to read news.

H2c: There will be a direct positive relationship between arousal and intention to share news.

H3a: The level of curiosity in clickbait headlines is higher than that of traditional news headlines.

H3b: There will be a direct positive relationship between curiosity and intention to read news.

H3c: There will be a direct positive relationship between curiosity and intention to share news.

METHODOLOGY

Sample

Two hundred and thirteen participants who were undergraduate students at a large U.S. university participated in this study. A unit of course extra credit was given as an incentive for participation. Participants were 18-25 years old. The sample included 85 female subjects (40%) and 128 male subjects (60%).

Stimuli and data collection

An experimental design was conducted in a laboratory to test the hypothesis. The stimuli included eight news headlines. Each news headline consisted of two versions: traditional news and clickbait. The news headlines were selected from legitimate news websites (e.g., www.cnn.com), and then were transformed into clickbait by incorporating common clickbait characteristics which included stop words, hyperbolic words, Internet slang, punctuation patterns, and common clickbait phrases (see Chakraborty et al., 2016). The headlines are presented in Table 1.

Table 1. Experiment stimuli

#	Traditional News Headline	Clickbait Headline
1.	Great acrobat dies while attempting a stunt onstage	SHOCKING: Great acrobat dies onstage after a stunt gone horribly wrong
2.	More teenagers are abusing alcohol than ever before	Is your teenager abusing alcohol? Read this to find out a shocking trend
3.	Teens who read more than 7 books a year score higher on SAT	Teen scores high on SAT after reading more than 7 books a year: Test prep companies hate him
4.	Laughter may boost energy just like moderate exercise	Feeling sluggish? Scientists find that laughter boosts energy just like exercise
5.	Approximately 1 out of 5 people have a sexually transmitted disease	Shocking new study finds that there's a 20% chance you have a sexually transmitted disease
6.	Failed talks bring about more fighting between two countries	BREAKING NEWS: War between two countries continues after peace talks fail
7.	Most parents have looked in children's room without their knowledge	Did your parents snoop in your room? Shocking survey says most have
9.	FBI encourages police in Cincinnati to crack down on stolen car "chop shops"	Uncle Sam to the rescue: FBI encourages Cincinnati police to crack down on stolen car "chop shops"

Experimental procedure

Participants were randomly assigned to one of the experimental conditions—either the traditional news group or the clickbait group. First, the experimental tasks were introduced to participants. Then, participants in each group read two sets of news headlines in random order. Each set consisted of four news headlines. The headlines were presented in blocks with blank images to mimic how the headlines are displayed on legitimate websites. Blank images were used to prevent confounding effects on the outcome. After reading the news headlines, participants completed a questionnaire measuring perceived knowledge quality, arousal, curiosity, intention to share and intention to read news story.

An example of the presentation of a headline is shown in Figure 2.



Figure 2. An example of a news headline presentation in the experiment

Measures

Measurement items from existing literature were used in this study. The measures were assessed by a seven-point Likert scale. Perceived knowledge quality items were developed based on informativity and believability items proposed by Chiu et al. (2006) and Gibbons et al. (2005). Items for arousal were adapted from Deng and Pool (2010). Items for curiosity were adapted from Agarwal and Karahanna (2000). Items for intention to share and intention to read news story were adapted from Chang et al. (2013).

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RESULTS

Manipulation check

A manipulation check was performed to validate the manipulations of news headlines conditions (traditional and clickbait). Three 5-point Likert scale items based on the definition and characteristics which included sensationalism and provocative writing style of clickbait headlines were used to assess the manipulation of the news headlines. A *t*-test revealed that participants exposed to the clickbait headlines identified the clickbait headlines clearly. The result was statistically significant and different between participants in the traditional and clickbait headline conditions ($\text{mean}_{\text{traditional}} = 4.45$ vs. $\text{mean}_{\text{clickbait}} = 4.96$, $t = 9.544$, $p = 0.002$). Therefore, the manipulation was successful.

Measurement model assessment

Construct validity and construct reliability were performed to assess the quality of the research measures. Construct validity is demonstrated when there are relatively high correlations between measures of the same construct (convergent validity) and low correlations between measures of different constructs (discriminant validity). Construct reliability was assessed using composite reliability (*CR*) and Cronbach's alpha. The results reveal that *CR* values range from 0.903 to 0.974 and the Cronbach's alpha values range from 0.786 to 0.965. Both the *CR* and Cronbach's alpha values are above the acceptable level suggested by Hair et al. (1995). According to the results of confirmatory factor analysis, item loading values demonstrate convergent validity since the lowest loading value is 0.638, which is higher than then threshold of 0.6 (Bagozzi, Yi, & Phillips, 1991; Chin, Gopal, & Salisbury, 1997; Straub, 1989).

Furthermore, a discriminant validity analysis was performed to ensure that the constructs differ from each other. The correlation between items in any two constructs should be lower than the square root of the average variance shared by items (e.g., *AVE*) within a construct (Hair et al., 1995). Our results indicate that the square root of the variance shared between a construct and its measurement items is greater than the correlations between the construct and other constructs in the research model.

Therefore, the measures appear to satisfy the criteria for discriminant validity. Detailed scales for each construct are provided in the Appendix.

Hypothesis testing

A series of *t-test* was performed to test H1a, H2a, and H3a. The results are presented in Table 2. Overall, all the hypotheses are supported.

Table 2. Hypothesis Testing Results. * Significant at the 0.05 level

Hypothesis	Mean (Std. Dev.)		t	Sig.
	Traditional News Headline Group	Clickbait Headline Group		
H1a: Perceived Knowledge Quality	4.227 (1.350)	3.529 (1.340)	3.665	< 0.001*
H2a: Arousal	4.146 (0.739)	4.579 (0.581)	-4.603	< 0.001*
H3a: Curiosity	4.489 (1.257)	4.901 (1.260)	-2.308	0.022*

Regarding the research model, structural equation modeling was conducted to evaluate the causal relationships between the constructs using SmartPLS 2.0. The results indicate that all the paths are statistically significant at the 0.05 level. Figure 3 summarizes the results of the hypothesis tests for the research model, including standardized path estimates, *t*-values, and the amount of variance explained in each endogenous variable (R^2). With respect to the variance explained, perceived knowledge quality, arousal, and curiosity together contribute to approximately 50% of the variance in intention to read and 18% of the variance in intention to share, respectively. All the R^2 values of the endogenous constructs in the model exceed the 10% threshold recommended by Falk and Miller (1992), suggesting that the model is well-specified. In general, the results indicate that perceived knowledge quality produces the strongest impact on intention to share (std. coefficient = 0.262) and curiosity generates the strongest effect on intention to read (std. coefficient = 0.474).

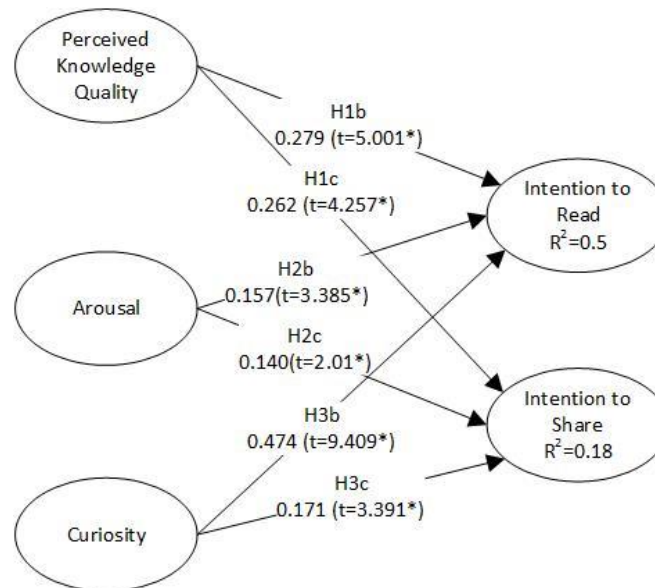


Figure 3. Research model hypothesis testing results (overall data set)
 (* $p < 0.05$)

DISCUSSION AND CONCLUSION

Overall, the results suggest that all the hypotheses are statistically significant at the 0.05 level. Traditional news headlines are found to have higher levels of perceived knowledge quality than clickbait headlines. However, as expected, the levels of arousal and curiosity of clickbait headlines are significantly higher than those of traditional news headlines. Regarding the research model testing, the results reveal that all three factors (perceived knowledge quality, arousal, and curiosity) are significant determinants of intentions; however, their effects are at different levels. Perceived knowledge quality is found to be a major determinant of online users' intention to share news headlines. On the other hand, curiosity is found to be a strong determinant of intention to read. Arousal is also found to influence intentions, but its effects are not as strong as those of perceived knowledge quality and curiosity. The results of this study confirmed that, according to the cognitive-affective process of communication model (Bagozzi, 1982), both cognitive and affective aspects play roles in shaping user responses in the online news context. This study extends findings of earlier research that have largely investigated the affective dimension of user responses (e.g., Lee & Ma, 2012).

From a theoretical perspective, this study provides the following contributions. First, this research extends previous studies by investigating a type of conventional

news headline, clickbait. In general, clickbait headlines are found to affect readers differently from traditional news headlines.

According to the cognitive-affective process of communication model, while perceived knowledge quality, as a factor in the cognitive aspect, is higher in traditional news headlines than in clickbait headlines; the levels of affective factors, such as arousal and curiosity of clickbait headlines, are also higher than in traditional news headlines. To the best of our knowledge, this study provides empirical evidence in an experimental setting of the effects of clickbait headlines that have not been studied in the literature, demonstrating potential implications for future research. Second, this study demonstrates that the cognitive-affect model can serve as a useful theoretical framework for predicting online users' intentions to read and share news stories in the online news context. By explicating how cognitive and affective factors influence behavioral intentions, future research could build upon the results of this study by investigating components of online news headlines that affect perceived knowledge quality, arousal, and curiosity. Third, perceived knowledge quality, arousal, and curiosity are confirmed as antecedents to intentions to read and share. While these relationships have been supported by previous studies in the online news area, this is the first investigation in which these relationships are validated in the context of clickbait.

This study also provides practical implications that are of interest of online news website managers. First, while clickbait headlines have been recognized as spam by online users (e.g., Potthast, Köpsel, Stein, & Hagen, 2016), our results indicate that clickbait headline can be perceived positively if they are created properly. Clickbait headlines appear to be an effective strategy to increase online users' arousal and curiosity. This study provides opportunities for future research to examine specific characteristics of clickbait headlines that can evoke online users' arousal and curiosity. Second, our results indicate that about 50% of variance explained in intention to read is contributed to perceived knowledge, arousal, and curiosity; and that curiosity is the strongest predictor of intention to read. Therefore, rather than using the traditional forward-reference technique to arouse users which may raise skepticism, news website managers should employ strategies that generate curiosity in the headlines. This would be a more effective strategy to draw users' attention without risk of disappointing the users when they read news stories. Third, while curiosity is found to influence intention to read; the cognitive aspect factor, perceived knowledge quality, appears to be a stronger predictor of intention to share news headlines (or stories). Therefore, in addition to creating curiosity headlines, news website managers should consider providing quality content in the headlines which would encourage them to share the headlines. This can subsequently give the websites more chances to reach a larger group of viewers and thus generate higher revenue.

As with all empirical studies, there are certain limitations of this investigation. First, since the nature of the data collection process required an experimental setting, the hypothetical tasks in the experiment may present an artificial environment for online news. Future studies may need to investigate such effects of clickbait headlines in the field setting. Second, we focused on only certain characteristics of clickbait headline in our stimuli manipulations.

Additional research can therefore explore different sets of clickbait characteristics, especially the sensationalism aspects. Third, we investigated online news in general. Future research can explore further how clickbait headlines in specific news categories influence online users to better understand the effects of clickbait. This empirical study is one of the first to experimentally investigate clickbait headlines. While clickbait headlines have reportedly been recognized as misleading and deceptive, if they are carefully developed and appropriately used, clickbait headlines can be an effective strategy to attract online users given the intense competition in today's online market environment.

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APPENDIX. CONVERGENT AND DISCRIMINANT VALIDITY

**Instrument, factor loadings, composite reliability (CR), Cronbach's Alpha,
and average variance extracted (AVE).**

Construct and Items	Factor				
	1	2	3	4	5
Perceived Knowledge Quality					
<i>The information in these news headlines is accurate.</i>	0.711	0.053	0.077	0.187	0.146
<i>The information in these news headlines is reliable.</i>	0.748	0.014	0.092	0.244	0.146
CR = 0.945, Alpha = 0.885, AVE = 0.896					
Arousal					
<i>These news headlines make me feel calm/excited.</i>	0.028	0.753	0.135	0.203	0.123
<i>These news headlines make me feel unaroused/aroused.</i>	0.010	0.778	0.164	0.166	0.086
CR = 0.903, Alpha = 0.786, AVE = 0.823					
Curiosity					
<i>Reading these news headlines excites my curiosity.</i>	0.260	0.320	0.638	0.399	0.094
<i>Reading these news headlines makes me curious.</i>	0.208	0.249	0.871	0.340	0.140
CR = 0.958, Alpha = 0.912, AVE = 0.919					
Intention to Read					
<i>I am planning to read the stories of these news headlines.</i>	0.236	0.171	0.191	0.885	0.238
<i>I intend to read the stories of these news headlines.</i>	0.243	0.215	0.192	0.866	0.254
<i>I will click these news headlines to read the stories from the websites.</i>	0.292	0.234	0.203	0.726	0.301
<i>I will expend effort to read the stories from the websites.</i>	0.245	0.156	0.230	0.743	0.317
CR = 0.974, Alpha = 0.965, AVE = 0.906					
Intention to Share					
<i>I would share at least one of these news stories with others via the Internet.</i>	0.196	0.148	0.143	0.184	0.847
<i>I intend to share at least one of these news stories in my social media.</i>	0.163	0.079	0.067	0.228	0.917
<i>It is likely that I would share at least one of these news stories in my social media.</i>	0.119	0.053	0.043	0.195	0.837
<i>I plan to share at least one of these news stories in my social media in the future.</i>	0.190	0.084	0.040	0.226	0.914
CR = 0.970, Alpha = 0.959, AVE = 0.891					