Assessing hierarchical model of word of mouth in social media: its implication for entrepreneurs

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Abstract. The purpose of this study is to find out how to assess the hierarchical model by word of mouth on social media. The growth of the Internet and social networking sites made social media word-of-mouth (WOM) has the power to reach more people and is therefore perceived as the most efficient and effective tool for business entrepreneurs for advertising and publicity of their products and services. However, there is lack of consensuses on how to develop strategic social media campaign due to the dynamics of activities based on the platforms. To fill this gap, this study developed an instrument to measure social media WOM activities and test the relationship between these activities using partial least square (PLS). This research uses descriptive analysis method. The finding confirmed the hierarchical relationship of WOM social media activities, namely, “consuming” strongly lead to “contributing” and “creating” activities, and “contributing” influenced “creating” activity. The results of this research is the potential impact to help entrepreneurs who use social media to maintain their relationships with consumers. It can be concluded it is important to administer the three social media WOM activities simultaneously to achieve a consistent social media presence. Experimental and incomplete social media utilization that has been practiced by most entrepreneurs to this day will spare social media marketing full potential.

1. Introduction
A rapid development of the Internet especially social media revolutionized how people access new information. People with Internet access are free to explore the world at little cost from the comfort of their home. Web 2.0 tools, including online discussion forums (e.g. Kaskus), customer review sites (e.g. Femaledaily), blogs (e.g. Wordpress), social media (e.g. Twitter) or newsgroups, provide new and vast platforms for consumers to express opinions and information at any time and from anywhere. This newfound ability to convey opinions across large networks has had a great effect on consumer behavior. In purchase decision process context, for example, word-of-mouth spreading on the Internet influence today customers significantly [1]. Therefore, understanding WOM in social media has now become crucial for any entrepreneurs who want to do business.

Electronic word-of-mouth could be defined as ‘exchanging marketing information among consumers online’ [2]. WOM online messages are not only limited to a statement, but also embody videos, pictures, and all graphics materials. The messages are disseminated to greater masses through a variety of social media. A conceptual of WOM in social media is proposed to be consisted of seeking, giving and passing of opinion [2]. The seeking of opinion drive consumers to consider online review/advice from others before buying a product. Opinion leaders are important influencers on consumers’ decision by giving reviews. While opinion passing behavior is a common thing in social media that could easily reach the receivers. On other hand, another identified set-of-activities is
connecting to commercial pages; publication of content on the walls of commercial pages; and exchange of information on brands, known as three different types of brand-related eWOM practiced on Facebook. Clicking ‘Like’ button in commercial pages is a starting way to connect with the brand. The interaction between brands and their consumers could be then continued through the content publication on the Facebook wall, for example. The last type, brand information exchanges, is delivered by clicking ‘Share’ on the promotional content to make the content published on the consumer’s Facebook wall.

WOM dimension by Chu and Kim [2] and Serra and Soto-Sanfiel, however, is excessively narrow only for Facebook, while each social media has its own unique features which allow its user to do different things such as ‘like’, ‘favorite’ or ‘comment’ in a content, ‘check-in’ in a place, ‘read’ a book, or ‘watch’ a movie. All of these social media activities clearly could not be catered by Chu and Kim [2] and Serra and Soto-Sanfiel dimension. Therefore, Muntinga, Moorman introduced consumers’ online brand-related activities (COBRAs)[3] to define brand-related social media use. This study classified users behavior into three dimensions that imply gradual involvement from low to high brand-related activities in social media named consuming, contributing and creating. Shao also developed a similar model in the user-generated media (UGM) like Wikipedia, YouTube, and Myspace, in which called consuming, participating and producing.

Both of the studies offer a conceptual framework in the same manner. The consuming stage represents a minimum level of usage. It defines participation without really contribute to or create contents. People who consume watch the brand-related videos that companies or other people create, and search the product ratings and comment from others, or conversation among members in an online forum. The contributing or participating type cover user-to-content and user-to-user interactions about the product. It can be signified by a wide range of behavior from joining a conversation on the platform to sharing reviews, pictures, videos, and any other content has created. The highest level of the engagement, creating or producing content, is indicated by actively producing eWOM[4] content for others to be consumed. Users that write a review, upload brand-related video, music, pictures, could be an example of this type.

These three social media WOM dimensions named consuming, contributing, and creating are not only have one-way relationship but also interconnected into one another. An individual may initially consume social media WOM in order to seek information without any participation or contribution. However, after breaking through some barriers, they later may participate through interacting with the content and other users. Such consumption can help them familiar with the platform and its environment, which later encouraged them to further increases their participation by contributing. For example, after having an account in a social media, and start to see and learn what his or her friends are posting in their account, it is more likely that the user will also make his or her own post.

Theoretically, the interaction took place in the social media by contributing (e.g. liking, commenting) in a content imply responses to contributors’ social benefit. Such responses would encourage subsequent expected benefit from the contributors. A qualitative study [5] support this supposition in the Facebook context. They called it ‘snowball movement’ in which they found that initially an individual creates an account on Facebook for social connection, but when the user starts forming their network of friends, their social interactions benefit also commence, which in turn, motivate even more to use Facebook. The same response may also happen related to WOM in the social media, to respond to their personal identity development and social integration, contributors may finally feel the urge to make their own contents and become producers. However, it is also noteworthy that not every user follows consuming-to-contributing-to-creating path. A study argued that some users leaped to creating from consuming. Some individuals may become a creator of social media WOM content without prior contribution like commenting or liking other contents, yet these producers are almost certainly ever consuming social media WOM content once before because it is when they start to be familiar with the platform and its features [5]. Put it simply, consumers’ passive activities WOM motivate them into higher levels of activities due to the process of learning while involved in this social media. However, limited studies explore the hierarchical structure of WOM activities in social media.
Driven by the identified gap, this study is intended to (1) examine a hierarchical structure in social media WOM and (2) to assess the model across groups (gender, social media ownership, and use frequency). From the academic perspective, it is highly important for researchers differentiates levels of social media WOM activities from a consumer’s point of view as the basis for further empirical studies based on correlational and dependent relationships among different sets of WOM activities. This study is one of the foremost in that direction, thus playing an important role in advancing the next generation of knowledge development in this area. As it is important, in today’s business landscape, to seize opportunities lied in the consumers’ online activities.

2. Methods

Figure 1 shows the summary of hypothesis in this study. This study argues that WOM in social media could be measured by three different activities (i.e. consuming, contributing and creating) and initial engagement with social media WOM are predicted to be positively related to future social media WOM activities, directly or indirectly.

The data was collected college students who were recruited at five large universities in Bandung, Indonesia. Students, on other hand, are often associated with a social group that has been highly engaged in the online, especially social media, activities. A study [6] stated 72% of young adult population aged 18-29 used social media, while 16% have an account on three or more social medias. Thus, we assume that they are representative of the population we are interested in. To guarantee their eligibility, each respondent is asked whether she or he has been involved in the social media WOM or not. They will be directed to visit an online questionnaire, if they admit that they were involved in activities like consuming, contributing, or creating social media WOM at least once. Online survey speeds the answer and guarantee the anonymity and sincerity of the response. There are 316 respondents participated in the data collection. As stated by a study [7], this is highly accepted number for partial least square (PLS) research since the total respondents exceeded fifty respondents or 10 times the total indicator of a single construct with the highest number of indicators.

Table 1 explains the instrument was used in this research. All of the constructs that could be seen in table 1, were adapted from previous research with minor modifications made for contextual fit. Most of the items were examined in social media, virtual communities, or online environments. As discusses in the literature review, social media WOM in this study are ‘consuming’, ‘contributing’ and ‘creating’. WOM in social media is measured by a range of 1 (never) to 5 (always) that reflect

![Figure 1. Summary of the hypotheses.](image)

Table 1. Research instrument.

| eWOM Activities | Items                                      | Source                        |
|-----------------|--------------------------------------------|-------------------------------|
| Consuming       | • Watch/read product review                | Shao (2009)                   |
|                 | • Read comments on product-related article or review | Muntinga, Moorman, and Smit (2011) |
| Contributing    | • Like/follow a brand page/account         |                               |
|                 | • Rate/comment a product                   |                               |
| Creating        | • Upload product-related video, pictures or images |                               |
|                 | • Publish product/brand-related status, article or review |                               |
semantic differential scale. Based on the definition and characteristics discussed, we interviewed a
group of 30 students and examined these three dimensions to 100 respondents. Only six items were
later generated and confirmed by CFA to measure ‘consuming’, ‘contributing’ and ‘creating’. While
all factors in total accounted for 78.7% of the variance, the Cronbach’s alpha showed a generally
accepted value of 0.746. KMO and Bartlett test of this variable also generated a highly acceptable
result, which was 0.671 for KMO and 15 (df), significant at p < 0.001 for the Bartlett test.

PLS or partial least squares, then, was employed in examining the model. Unlike global measure of
covariance-based SEM that is based on the closeness of the model-implied covariance matrix and the
observed covariance matrix, the goodness of fit measures in PLS-SEM is more similar to OLS regression which emphasizes how close the predicted values of the dependent variables are to the
observed value.

Testing the model encompasses the assessment of internal consistency as well as convergent and
divergent validity of the instrument. Composite reliability, average variance extracted (AVE), and
correlations among latent constructs were examined to signify that an underlying construct represent
indicator variables. The acceptable criteria for the constructs in the exploratory research are 0.60 at
least for composite reliability, 0.50 at least for AVE [8], and minimum 0.60 for intended loadings and
minimum 0.40 for cross-loadings [9].

Table 2 shows demographic characteristics of respondents. As depicted in table 2, respondents show different characteristics. Therefore, to test if the PLS model differs between groups for measured
variables, multi-group analysis (MGA) methods in PLS path modelling was used. There are three
groups compared in this MGA:

1. Group based on gender, consist of male and female subsamples.
2. Group based on social media ownership, consist of the user who has only one social media
   (single-media user) and the user who has more than one social media (multi-media user)
   subsamples.
3. Group based on use frequency, consist of social media user who visited his/her account once
   in a day, or two and three days (normal-frequency user) and social media user who visited
   his/her account every hour (high-frequency user) subsamples.

3. Results and discussion

3.1. Results
Composite reliability, average variance extracted (AVE), and correlations among latent constructs
were examined to signify that the construct specifies the measured values and the representative of
variables. The acceptable criteria for the constructs in the exploratory research are minimum 0.60 for
intended loadings and minimum 0.40 for cross-loadings [10], 0.60 at least for composite reliability
[11], and 0.50 at least for AVE [11]. Although Cronbach’ Alpha is often applied to test the reliability
of a construct, it requires an assumption of equal loading and the same variance in all items. In fact, it
difficult to satisfy these assumptions, resulting in a problem when using this method to estimate
reliability construct [12]. Therefore, this study only applies composite reliability to test the constructs’
reliability.

Table 3 demonstrates item measurement loading, composite reliability (CR) and average variance
extracted (AVE). The result of measurement model depicted in table 3 indicates that all items have
loadings higher than 0.600, exceeding the cut-off value. Composite reliability of all construct is
satisfied, showed by the value minimum at 0.797. Both of them examine the internal consistency of
the model. The examination is also confirmed the convergent and divergent validity of the measures
through fair AVE value ranging from 0.663 to 0.847. Additionally, discriminant validity is also
assessed by Monotrait Heterotrait Ratio [13]. Ratio resulted of the maximum value of 0.792, indicated
an acceptable discriminant validity of the constructs [13].

The model is estimated by PLS path modeling and bootstrapping method (500 resample) as
suggested by Hair Jr, Hult [14] to compute the significance of PLS coefficient. This approach depicts
the goodness of fit could be tested by R2 value because PLS does not generate GoF indices [15]. The
R² values can be categorized into three levels of weak (up to 0.190), moderate (up to 0.330), and
substantial (up to 0.670) [16]. The $R^2$ values of the study, indicate the appropriateness of data to explain the proposed model. Contributing ($R^2 = 0.079$) and consuming ($R^2 = 0.189$) are categorized in low level. Creating ($R^2 = 0.357$), however, are between moderate and substantial. The results confirmed the average power of explanatory from the construct on eWOM start from weak to moderate level.

Besides using $R^2$, Chin, Peterson [16] suggested that Stone-Geisser $Q^2$ sample reuse technique could also act as a measurement for the predictive significance. $Q^2$ is estimated from blindfolding method and thus reports cross-validated commonality and cross-validated redundancy of constructs and indicators. It illustrates the goodness of the restructured data using the PLS model and parameters. $Q^2$ value higher than 0 indicates that the model is relevant to predict the factor, while less than 0 value signifies the insufficiency of the value to become factor predictor. The $Q^2$ results of the study are at least 0.055, signaling satisfactory predictive relevance. (see table 2-4).

| Measure                              | Items         | Frequency | Percentage |
|--------------------------------------|---------------|-----------|------------|
| Gender                               | Male          | 113       | 36         |
|                                      | Female        | 203       | 64         |
| Social media active use*             | Facebook      | 133       | 42         |
|                                      | Twitter       | 61        | 19         |
|                                      | Path          | 84        | 26         |
|                                      | YouTube       | 126       | 40         |
|                                      | Instagram     | 256       | 81         |
| Content accessed and shared*         | Picture       | 243       | 77         |
|                                      | Video         | 154       | 49         |
|                                      | Status update | 175       | 55         |
|                                      | Article/ News | 155       | 49         |
| Visit frequency                      | Every hour    | 84        | 27         |
|                                      | Every day     | 214       | 67         |
|                                      | Several times a week | 18 | 6 |
| Visit time                           | < 10 minutes  | 105       | 33         |
|                                      | < 30 minutes  | 110       | 35         |
|                                      | < 1 hour      | 60        | 19         |
|                                      | > 1 hour      | 41        | 13         |

**Notes:** * allowed to choose more than one answer

| Table 3. Loading of the item measurement, composite reliability (CR) and average variance extracted (AVE). |
|-----------------------------------------------------------------------------------------------------|
| **Construct** | **Loading*** | **Composite Reliability** | **AVE** |
|----------------|--------------|---------------------------|---------|
| Consuming      | 0.838        | 0.829                     | 0.708   |
|                | 0.845        |                           |         |
| Contributing   | 0.876        | 0.878                     | 0.783   |
|                | 0.893        |                           |         |
| Creating       | 0.892        | 0.899                     | 0.817   |
|                | 0.915        |                           |         |

*: All significant at p < 0.01
Figure 1 shows the summary of result from this study. H1, H2, and H3 depicted in figure 2 examines the relationship between consumption and contribution, contribution and creation, as well as consumption and creation of social media WOM. The relationship testing result shows that the correlation coefficient of all hypothesis is positive of 0.281, 0.460, and 0.272 consecutively, with \( p < 0.001 \) significance.

Table 4 shows path coefficient in the structural model evaluation based on group-specific result. The analysis of bootstrapping with 5000 resample show that consuming significantly \((p \leq 0.05)\) influence contributing in all groups. Meanwhile contributing activities significantly \((p < 0.01)\) influence creating in all subsamples. Consuming also have a significant \((p \leq 0.05)\) effect on creating in the female, single-media user, multi-media user, and high-frequency user subsample. This group-specific comparison of path coefficients proposes a different perspective. Whereas contributing activities give the strongest influence on creating in the male category, a much smaller influence was found in the female category, for example. However, consuming activities have no influence to contributing and creating in the male subsample, as well as the normal-frequency subsample. In respect of the single-media and multi-media user subsamples, the effects are somewhat balanced across the three activities. Table 5 explain group-specific of past estimates and multi-group comparison generated from the parametric approach. The analysis shows that none of multi-group comparison test results has significant differences at 0.05, indicating the robustness of this hierarchical model of social media eWOM.

### Table 4. Group-specific results.

| Latent Variable | Based on Gender | Based on Social Media Ownership | Based on Use Frequency |
|-----------------|-----------------|---------------------------------|------------------------|
|                 | Female          | Male                           | Single-Media User      | Multi-Media User      | Normal-Freq. User | High-Freq. User |
| Consuming       | 0.811           | 0.840                          | 0.797                  | 0.836                 | 0.816             | 0.841           |
| AVE             | 0.682           | 0.725                          | 0.663                  | 0.718                 | 0.690             | 0.726           |
| Contributing    | 0.857           | 0.917                          | 0.890                  | 0.881                 | 0.891             | 0.852           |
| AVE             | 0.749           | 0.847                          | 0.801                  | 0.788                 | 0.803             | 0.743           |
| Creating        | 0.860           | 0.897                          | 0.874                  | 0.876                 | 0.861             | 0.901           |
| AVE             | 0.754           | 0.813                          | 0.776                  | 0.780                 | 0.757             | 0.821           |
| n               | 203             | 113                            | 101                    | 215                   | 243               | 73              |

| Path Coefficient | 0.389^a | 0.475^a | 0.390^a | 0.429^a | 0.448^a | 0.303^b |
|------------------|---------|---------|---------|---------|---------|---------|
| Consuming →      |         |         |         |         |         |         |
| Contributing     |         |         |         |         |         |         |
| Contributing →   | 0.458^a | 0.634^a | 0.534^a | 0.529^a | 0.550^a | 0.513^a |
| Creating         |         |         |         |         |         |         |
| Consuming →      | 0.153^b | 0.063   | 0.322^b | 0.356^a | 0.069   | 0.226^b |

^a\( \geq 0.01 \)

^b\( \geq 0.05 \)

^c\( \geq 0.10 \)

3.2. Discussion

This study offers a new theoretical perspective on the measurement of social media WOM activities. Critically examination on social media WOM activities makes it possible for this study to offer a basis for correlational study encompassing different sets of WOM activities. The important finding of this study is confirming the three dimension of WOM in social media context: consuming, contributing, and creating. This study suggests that once customers start to consume social media WOM contents, they are most likely to contribute more in the social media WOM activities like liking,
sharing, or commenting on the content. Referred to the U&G theory, it is believed that gratification obtained from an activity have an indirect influence on the later use [17]. These gratifications will transform to be an experience for social media users and control which behavior is chosen as a feedback, either positive (continue using) or negative (stop using). Then, as the satisfaction to the activity increased, they might deepen their involvement to get other needs satisfied. In this way, the satisfaction of consuming social media WOM not only could stimulate consumers to become social media WOM contributors but also social media WOM producers. This result confirms the foundation model of Muntinga, Moorman and Shao who suggested that individuals engage in eWOM differently and the usages will gradually increase if they break through some boundaries.

This study shows some prominent practical implications for entrepreneurs who maintain customer relationship using social media. Although social media has been considered to be an effective tool to market and build product branding, there is no agreement in term of implementation strategy since the dynamic of technology and platform of social media. Most businesses use experimental approach to get intended objectives, resulted in a challenging and costly experience. This study provides assistance to business entrepreneurs on what constitutes the WOM activities in social media generally (i.e., the consuming, contributing, and creating dimensions) and which online activities define those dimensions.

The proposed interdependent framework of social media WOM in this study means entrepreneurs should have a social media campaign that administers the three social media WOM activities

| Relationship       | Comparison                  | diff  | t parametric | Significance |
|--------------------|-----------------------------|-------|--------------|--------------|
| Consuming → Contributing | Female vs. Male            | 0.086 | 0.783        | NSig.        |
|                    | Single-Media vs. Multi-Media User | 0.038 | 0.340        | NSig.        |
|                    | Normal-Freq. vs. High-Freq. User | 0.145 | 1.150        | NSig.        |
| Contributing → Creating | Male vs. Female             | 0.176 | 1.701        | NSig.        |
|                    | Single-Media vs. Multi-Media User | 0.005 | 0.045        | NSig.        |
|                    | Normal-Freq. vs. High-Freq. User | 0.037 | 0.321        | NSig.        |
| Consuming → Creating | Male vs. Female             | 0.090 | 0.762        | NSig.        |
|                    | Single-Media vs. Multi-Media User | 0.005 | 0.045        | NSig.        |
|                    | Normal-Freq. vs. High-Freq. User | 0.157 | 1.182        | NSig.        |

Notes: Sig. denotes a significant difference at 0.05; Nsig. denotes a non-significant difference at 0.05.
simultaneously to achieve a consistent social media presence. For example, entrepreneurs could promote customer opinions to written online as consumers’ review or comments, and facilitate ‘votes’ and ‘share’ feature to social media sites. Many consumers relied heavily on the comprehensive online information of a product as a substitute for unfulfilled self-gathered information [18]. Experimental and incomplete social media utilization will hinder social media full potential. Finding from this study also shows that social media could be an effective marketing tool for new entrepreneurs because this tool builds a network of supporters quickly regardless of customer characteristics (gender, social media ownership, social media use frequency) that is very important for the growth of any businesses. Supporters of a product will keep bringing new customer through giving recommendation for others to use the product. As, a large number of supporters join and make conversation about the product, the name/brand of the product will be known. To this end, social media could help develop a well-maintained customer relationship.

4. Conclusion
The study, in our best knowledge, is one of the first few surveys intended to quantitatively explore social media WOM activities. Three social media WOM activities, “consuming”, “contributing”, and “creating” are confirmed. The differentiation of activities identified in this study will help provide a nuanced understanding of the fast development of technology in social media that generates different user-social media interaction. This study has also outlined a proposed hierarchical structure in social media WOM and assess the structure robustness across groups (gender, social media ownership, and use frequency). The finding confirmed the hierarchical relationship of “consuming” that strongly lead to “contributing” and “creating” activities, and “contributing” that influenced “creating” activity. This finding contributes to a new understanding that to make more WOM in social media, entrepreneurs should encourage customers to consume online marketing contents/information. The more a customer consume these contents, the higher possibility of them to become WOM creator.

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