

Probabilistic measure of factors contributing to social media practices among Facebook users

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ABSTRACT

Social media is the most popular tool to communicate and interact with people nowadays and offers easy access to connect with people anywhere in the globe. This study was conducted to develop a construct about social media practice and explore the probabilistic measure of the factors contributing to social media practices among selected Facebook users. Data was gathered utilizing a structured online survey form from selected 162 online Facebook users who consented to participate in this study. Most of the respondents are male, from 21 to 30 age group, employed and with average social media use of 1 to 4 hours in a day. Out of 30 items in the structured questionnaire, 19 items were retained with eight new factors that served as construct for social media practice (KMO= Bartlett's test of Sphericity= 2109.530, $p=0.000, <0.01$). Proposed model was significant 99% ($p=0.002, <0.01$), chi-square of 19.25 which can explain 6.4% to 13.3% of the variation in social media practice. Eight new components were found to simulate respondent's social media practices. Social media practice varies between males and females while characteristics of age, occupational status and average number of hours spent in social media in a day have no variation.

Keywords: ordinal regression, social media, network, practice.

INTRODUCTION

It was noted that in the past years, blogging has decreased its popularity especially among individuals from teenage to early adult. It was observed in several literatures that the rise of social media use gained its popularity even until today. Social media became part of the life of millions of people around the world. As a result, there is a shift in paradigm from macroblogging using the blogging sites to microblogging using the social media sites such as Facebook, Twitter, Instagram and many more. Truly, social networking websites are the most popular socializing platforms nowadays (Lenhaart, et.al, 2010; Malinen and Ojala, 2012; O'Keeffe and Clarke-Pearson, 2011).

Boyd and Ellison (2007) cited in their article that Social network sites (SNSs) have attracted millions of users, many of whom have integrated these sites into their daily practices. While their key technological features are fairly consistent, the cultures that emerge around SNSs are varied. It was mentioned that majority of the social networking websites support the maintenance of pre-existing social networks helping stranger to connect with people with the same interests such as preferences, activities, and political views. The other type feature diverse audience that aims to attract users based on common language, nationality-based identities, and even religion. Lastly, there are social networking websites which vary in the extent wherein they can add fresh information and communication tools like photo and video sharing to circles, connections and friends.

Social network sites are web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site (Boyd and Ellison, 2007). The article differentiated the use of network and networking because the authors believed that the term “networking” emphasizes relationship initiation, often between individuals who are not familiar with each other. Networking is possible in social network sites, but the authors believed that it is not the primary practice on many of users, nor is it what differentiates them from other forms of computer-mediated communication (CMC).

Published materials found in the World Wide Web present several findings related to the impact of social networking sites to children, young adults and even families (Dowel, Burgess and Flores, 2011; Lenhart, et.al, 2010; O’Keeffe and Clarke-Pearson, 2011), important role of social media as information source for travelers (Xiang and Gretzel, 2009; McCarthy, Stock, and Verma, 2010; Hvass and Munar, 2012; Lanz, Fischhof, and Lee, 2010), role of social media in modern marketing (De Vries, Gensler, and Leefflang, 2012; Evan, 2010; Kirtis and Karahan, 201; Michaelidou, Siamagka, and Christodoulides, 2011; Saravanakumar and SuganthaLakshmi, 2012), and even as public health information (Vance, Howe, and Dellavalle, 2009).

Few published material/literature from other sources are found with regards to describing the social media practices of individuals. The author believe that understanding what are the social media practices would greatly contribute to

the body of knowledge especially those who are interested in targeting individuals who are involved in this kind of platform. This study determined factors affecting social media practices and explored the profile of the respondents if there are variation in the profile characteristics and social media practice utilizing a maximum likelihood estimate.

METHOD

The data in this study was drawn from online active Facebook friends of the researcher who consented to participate in the study. A total of 162 active Facebook users consented to participate in this study utilizing a instrument consisting two parts. The first part is composed of sets of questions that respondents need to fill out in relation to their demographic profile like age, gender, present employment status, and hours in a day of social media use. The researcher believed that these parameters for the respondent's profile are essential in establishing analysis in relation to social media practices.

The last part of the survey questionnaire is a 30-item Likert scale questionnaire which relates to the respondent's social media practice limited to their perceptions about social media, interaction and socialization. The researcher found three variables necessary in identifying the practices of the respondents in relation to social media use. The three variables were carefully examined enable to create a construct. A Likert scale of 1=Strongly Disagree (representing poor social media practice) and 5=Strongly Agree (representing excellent social media practice) was employed.

The first ten items relate to the respondents' perceptions about the media. The intension of the researcher of using this variable as one of the indicators of the social media practices was to understand how social media relates to the personal beliefs of the respondents. Identifying these perceptions helped this research project in terms of identifying whether or not the discussed related studies about social media were significant in the present context and location. A Cronbach alpha of 0.700 was noted after running the set of structured questions to reliability analysis.

The next ten questions relate to the respondents' beliefs about the presence of interaction within the social media platform (Fischer and Reuber, 2011). This variable is very important in identifying the social media practices because without this belief that social media is an avenue for social interaction, it is

impossible for someone to sign-up to different social media platforms and create an account without the intention to interact and connect to their friends and colleagues. A Cronbach alpha of 0.734 was noted after running the set of structured questions to reliability analysis.

The last ten questions relate to the respondents' belief about social media as a tool for socialization. Several published studies talk about how social media promotes socialization in different context (Arnett, 1995; Gerson, Lee and Ma, 2012; Kushin and Yamamoto, 2010; Sivek, 2010; Solis and Breakeyridge, 2009; Taylor and Kent, 2010; Wang, Wei, and Yu, 2012). The author believe that this variable is important in understanding the social media practices of the respondents. A Cronbach alpha of 0.806 was noted after running the set of structured questions to reliability analysis.

Factor analysis

While several studies suggest that principal components analysis is an attempt to reduce the number of items in a scale utilized in a certain study, the purpose of employing EFA in this study was to develop construct out of the structured questionnaire. After obtaining the constructs that describe the social media practices of the respondents, the characteristics of the respondents were evaluated to establish relationship with the scale choice threshold obtained from the EFA.

According to Field (2000: 434) strong feelings exist concerning the choice between factor analysis and principal component analysis. Theoretically, factor analysis is more correct, but also more complicated. Practically, however, "the solutions generated from principal component analysis differ little from those derived from factor analysis techniques" (Field 2000: 434). In Rietveld & Van Hout (1993: 268) this is further specified: "the difference between factor analysis and principal component analysis decreased when the number of variables and the magnitudes of the factor loadings increased". In an attempt to resolve problems related to reliability and to generate a better findings and utilizing, exploratory factor analysis was employed.

Based upon a criterion of eigenvalues greater than one, eight factors were defined for the analysis, with 65.53% of the cumulative variance accounted for by these eight orthogonal factors ($KMO=0.814$, $p=<0.01$). Orthogonal rotation was performed using Varimax for ease of interpretation since factors generated in the factor extraction is difficult to interpret. Also, this type of factor rotation restricts the factor to be uncorrelated.

The loading of each item on each factor, eigenvalue and percent of variance accounted for are presented. No item generated more than one factor at .60 or greater. 11 items did not load on any factor on the 0.60 criterion. Factors were examined for a common theme underlying the items loading on each, and a theme was assigned to the new factors accordingly. The new themes for the eight newly developed variables are *Updates*, *Online Marketing*, *Access to Information*, *Life Activities*, *Perception*, *Usage* and *Personal Belief* which are presented in Table 1, factor eigenvalues and the variance accounted for together with the item statements of the newly developed scale.

Table 1. Factor Eigen values

	Factors									
	1	2	3	4	5	6	7	8		
Eigenvalues	7.169	3.702	2.469	1.718	1.282	1.168	1.106	1.045		
Percent of variance explained by factor	23.897	12.341	8.231	5.726	4.274	3.895	3.687	2.483		
Item	Statement	Theme	Component							
			1	2	3	4	5	6	7	8
QS17	Majority of my friends are active in social media.	Updates	.836							
QS14	I watch videos uploaded by friends in social media.		.790							
QS2	Social media helps me in some ways.		.748							
QS8	Social media is a tool to keep myself updated on the latest		.712							

	happenings about my friends.								
QS2 6	Social media is a good marketing tool to promote organizations.	Online Marketing		.7 65					
QS2 5	It is essential for a business to participate in social media.			.7 65					
QS2 7	Social media is the fastest way to promote awareness.			.7 62					
QS2 8	Social media can target people and organizations to promote their products and services.			.6 49					
QS1 0	Social media is a place to meet new friends.	Socialization		.7 12					
QS3 0	Social media promotes harmonious relationship between people in an organization.			.6 22					
QS2 0	Because of social media, I easily establish rapport with people even if we haven't met			.6 05					

	personally yet.								
QS2 1	I update myself in current events through social media.	Access to Information				.755			
QS2 2	I update myself in my friend's activities and significant life events through social media.					.742			
QS5	Posting work related events in social media is just fine.	Life activities					.853		
QS4	Significant life events should be shared in social media.					.692			
QS6	Social media is part of our daily life.	Perception					.810		
QS7	Social media is a tool for socialization.						.672		
QS3	It is okay to access social media even during working hours	Usage						.757	
QS1	Social media is important to me.	Personal Belief							.742

note: $KMO=0.814$, Bartlett's test of Sphericity (chi-square)= 2109.530, $p=0.000, <0.01$

Ordinal regression model

The application of the ordinal logistic regression model is dependent, in large part, on the measurement scale in the outcome variable used in this study and the underlined assumptions. Since the measurement scale of the outcome variable social media practice is ordered, (1 is poor social media practice and 5 is excellent social media practice) the ordinal regression model is the preferred modeling tool in this study. Also, the modeling tool does not assume normality of the data or constant variance, it just require the assumption of parallel lines across all levels of the outcome.

The logistic regression model or the logit model as it is often referred to, is a special case of generalized linear model and analyzes models where the outcome variable is a categorical variable. In the common practice, the outcome variable, which is denoted as Y , is a categorical variable and that since this study utilizes the ordinal logistic regression model, the categorical representation of the scales in terms of numbers have meanings. In the case of this research study, as the number increases, the response going towards positive (excellent social media practice).

For logistic regression analysis, the model parameter estimates (α , β_1 , β_2, \dots, β_p) should be obtained and it should determine how well the model fits the data (Agresti, 2007). In this study, the potential explanatory variables were examined to determine whether or not they are significant enough to generate a probabilistic estimation of social media practice.

To make the ordinal regression applicable in this study, the researcher ensured that the assumption of the parallel lines of all levels of the categorical data is satisfied since the model does not assume normality and constant variance (Bender and Benner, 2000). Logistic Regression does not also assume presence of linear relationship among the explanatory and the outcome variable. The outcome variable does not need to be normally distributed. Homogeneity of variance among variables is not needed also, which means that variances across the categories are not needed to be the same or close to each other. Normally distributed error terms are not assumed also in this kind of probabilistic model and the explanatory variables are not assumed to be interval or unbounded (Grim and Yarnold, 1995).

RESULTS

Profile of the respondents

Most of the respondents are male accounting to 84 or 51.9% of the total population followed by female respondents with a total of 78 or 48.1% of the respondents. This shows that in the context of the findings in this study, males are more active in social media than females. With regards to the age of the respondents, it was noted that a significant percentage of the respondents came from the 21 to 30 years old age group accounting to 77.8 percent of the total respondents. The remaining 22% came from 31 to 40 years old age group, followed by 4.9 percent from 41 to 60 years old and 1.2% from each of the age groups below 20 years old, 51 to 60 years old and beyond 60. On the other hand, 82.7 percent of 134 out of 162 respondents of this study are employed and the remaining 10.5% and 6.8% are unemployed and self-employed respectively. Lastly, with regards to the hours spent in using social media, 43.2% or 70 of the respondents spent 1 to 4 hours in social media in a day, 40.1 percent or 65 of the respondents spent a minimum of 5 to 8 hours per day in social media while the remaining 8.6%, 6.2% and 1.9% are respondents who spent at least 9 to 12 hours, 13 to 16 hours and 21 to 24 hours in social media in a day.

Parametric estimation utilizing ordinal logistic regression

The scale choice must be tested for parallel lines. The test for parallel lines showed no statistical difference ($p=0.586>0.05$) which means that we reject the null hypothesis that the location parameters are the same across the response categories as shown in table 4.1. The model is statistically significant at 99% (chi-square = 19.251, $df=5$, $p=0.002$). Findings also show a measure of error (-2 Log Likelihood of 134.331 for Intercept only and 115.080 including the explanatory variables) in the final model. These values show how the model improves the outcome.

The Goodness of fit showed how the data fits with the proposed model. A probability value of 0.319 (Pearson) and 0.266 (Deviance) suggest that we reject the null hypothesis that the data does not fit the model. This suggests that Age, Gender, Occupational Status and Hours Spent in Social Media fit the model. This implies that the four explanatory variables can serve as probabilistic measures to social media practices.

Also, the model can attribute 6.4% to 13.3% of the total variation in the social media practice. Although the variation is low, there is still a substantial amount of variance that the explanatory variables can explain in the model. Findings also revealed that individually, there is a variation in the social media practices of males and females ($p=0.002, <0.01$). It was found out in this study that social media practices vary between males and females. The odds of having an excellent social media practice are higher in males than in females.

Next, age characteristics do not vary in terms of social media practices even if the most active social media users came from the 21 to 30 years old age group. In the study of Lenhart et. al. (2010), it was also found out that people in between 18 to 29 are more active in social media which is similar to the findings of this study. Another realization of this study is that social media practices of employed, unemployed, and self-employed individuals do not vary. Maybe because of the existence of smartphones and cellular data wherein individuals can carry even when they are at work. Lastly the characteristics of the average number of hours spent using social media in a day does not also vary. No matter how few or how many hours an individual spent using social media in a day, still it will not create variation in the social media practice.

CONCLUSION

From the original three components explaining social media practices in a 30-item Likert scale author-structured online survey questionnaire, eight factors were extracted through exploratory factor analysis and where assigned themes namely Updates, Online Marketing, Access to Information, Life Activities, Perception, Usage and Personal Belief. Utilizing an ordinal logistic regression model to simulate the newly developed scale, it was found out that there is a variation between the social media practices of male and female. Respondent's personal characteristics do not signify effect on the social media practices other than gender. Since this study is only contained to the 162 respondents who consented to be part of this study. Future researches can expand the sampling selection to a bigger population and to specific or broader industries. .

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