A SCALE TO MEASURE CONSUMERS' ENGAGEMENT WITH SOCIAL MEDIA BRAND-RELATED CONTENT

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The purpose of this study is to fill the gap in the literature concerning to the measurement of consumer's engagement with social media brand-related content (hereafter, CESBC). We introduce empirical evidence for the development and measurement of CESBC scale. The scale is based on the consumer's online brand-related framework and comprises three dimensions: consumption, contribution, and creation. We used qualitative techniques to prepare an initial list of items and tested and validated the CESBC scale with confirmatory factor analysis (CFA). Results (n = 2252) confirmed the three-factor structure of the CESBC and indicated its good psychometric properties.

INTRODUCTION

Social media have grown in importance in consumers' lives and influence on their communication habits. With consumers deeply engaging into social media, an increasing share of communication occurs within these new environments (Berthon et al., 2008). Different from the static websites in the early days of the Internet, the interactive nature of social media has ultimately changed the ways in which consumers engage with brands. When using social media on regular basis, consumers are in contact with brands and products by reading, writing, watching, commenting, "Liking", sharing, and in many other different ways.
Despite the growing number of research on the consumers' engagement with brands on social media, its operationalization is largely fragmented and is still at a very early stage (Schultz and Peltier, 2013). In this article we aim to cover the measurement gap with respect to the consumer's engagement with social media brand-related content by developing and validating a scale that differentiates between the levels and types of consumer's engagement with brands on SNSs.
The need of a measurement of consumers' engagement with brands on social media was not unnoticed and has also drawn the attention of scholars. Recently, Hollebeek et al. (2014) developed a scale to measure engagement with a brand within a brand community. The CESBC scale is different form that in two ways. First we seek to measure engagement with social media brand-related content rather than engagement with the brand *per se*; and second we define and measure engagement as a behavioral construct rather than affective/cognitive and behavioral.
This research draws on the consumer's online brand-related activities (COBRA) framework, first introduced by Shao (2009) and later extended by Muntinga et al. (2011). The COBRA framework is an umbrella behavioral construct that encompasses the consumer activities pertaining to brand-related content on social media. Considering the increasing role of

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branding and brand communication on social media, it is of great importance to researchers and practitioners to have a measurement instrument that not only covers a vast range of social media brand-related activities, but also differentiates across different levels of media engagement from the consumer's standpoint. This study is a first step in that direction.

Therefore, the authors extend the COBRA framework by introducing the CESBC scale and discussing its systematic development and validation. To this end, a combination of qualitative and quantitative research methods was employed. For the identification and categorization of individual COBRAs a literature search on the subject was complemented by online focus groups, online depth interviews, and a netnography. Next we performed exploratory factor analysis (EFA) and followed it by confirmatory factor analysis (CFA) to test the factorial validity of scores from CESBC. For reasons of space restrictions, this paper presents mainly the results of quantitative study.

DISCUSSION

Consumer's online brand-related activities

In this study we draw from and extend the works of Shao (2009) and Muntinga et al. (2011). In an exploratory study, Shao delimitated boundaries to the levels of engagement of consumers with user-generated media (hereafter, UGM). The author suggested that individuals engage with UGM in three distinguished ways, therefore by consuming, by participating, and by producing brand related media. Muntinga et al. (2011) advanced the findings of Shao by validating it with 20 consumers using instant message interviews. In their study, the authors coined the framework as COBRA and similarly to Shao (2009) proposed three dimensions: consumption, contribution, and creation.

Although the authors delimitated the COBRA framework, a formal definition was not provided. Therefore, to guide us into the conceptualization and measurement of the framework, we define COBRA as *a set of online activities on the part of the consumer that are related to a brand, and which vary in the levels of interaction and engagement with the consumption, contribution, and creation of media*.

The consuming COBRA type represents a minimum level of consumer's engagement into brand-related activities. It refers to individuals who passively consume brand-related media without participating (Muntinga et al., 2011; Shao, 2009). The consumption of brand-related content include media that are both firm-created and user-generated, therefore, no distinction of communication sources is anticipated. This is the most frequent COBRA type among consumers (Muntinga et al., 2011).

The contributing COBRA type includes both peer-to-peer and peer-to-content interaction about brands (Shao, 2009). This COBRA type does not include one's actual creation, however, consumers who contribute to brand-related content participate on media that was previously created by either a company or another individual. Due to its nature, this is the second most popular type of COBRA (Muntinga et al., 2011).

Finally, the creating COBRA type involves the creation and online publication of brand-related content by consumers. The creating COBRA type represents the strongest level of online brand-related activeness (Muntinga et al., 2011). The content generated by consumers, also known in literature as user-generated content (UGC) (Christodoulides and Jevons, 2011; Daugherty et al., 2008) may be object of further consumption and contribution by others.

In this context, we articulated the COBRA conceptual model as a three-factor framework. Each factor (i.e., consumption, contribution, and creation) is comprised of reflective measurements and should to be positively correlated.

Research methodology

Following a multi-stage process of scale development and validation (e.g., Churchill, 1979) both qualitative and quantitative studies were conducted. The qualitative studies were designed to extend the preliminary set of COBRAs reported in literature (see Li and Bernoff, 2011; Muntinga et al., 2011), consequently aiming at a broader exploration of individual online brand-related activities. For such, the authors used online focus groups, online depth interviews and netnography. The outcomes of the qualitative studies served as a basis for the preparation of an initial pool of 35 items that was used to further develop the measurement instrument to CESBC. Initially we explored the pool of items by performing exploratory factor analysis (EFA) and then the scale was calibrated and tested with confirmatory factor analyses (CFA).

Item reduction and reliability

A questionnaire was next developed from the initial item pool. Respondents were asked to indicate their level of agreement with each of the 35 statements using a seven-point Likert scale anchored at 'not very often' and 'very often'. The respondents were also given the option 'not at all' (coded later as zero).

The questionnaire was pretested using a sample of 48 undergraduate business students. All the students declared to follow brands in different social media channels. Minor changes to the order and wording of questions were made following the pretest.

The main data collection was conducted online. Probability sampling was not used during the recruiting process. Rather, respondents were recruited by extending invitations in several social media channels, online forums, and discussion groups. The final sample was weighted demographically to ensure that its characteristics represent the Internet users in Poland where the data was collected (Fulgoni, 2014; GUS, 2012). No *a priori* behavioral distinction between participants was employed in the sampling strategy (i.e., consumers, contributors, and creators of social media brand-related content) to avoid a skewed distribution of the sample and to ensure that the final instrument could be used with typical consumers independent of their level of engagement with a brand.

The invitation to the survey consisted of an informative text highlighting the broad topic of the study. After clicking on the survey's link, the respondent was redirected to the questionnaire. The survey was divided in blocks. The introduction presented an explanatory text describing the general objectives of the study and distinguished between the three types of COBRAs. The second block consisted of demographic questions. For the next block, the respondents were asked to enter a brand they actively follow on social media. Examples of engagement with brands on social media were briefly described. Additionally, the respondents were also informed that they would be using the chosen brand throughout the entire survey. For capturing CESBC dimensions, three additional blocks were individually presented to the respondents. Each block contained the scale for one single dimension. The order of the CESBC blocks and the scale within each block were randomized to avoid the systematic order effect.

A sample of 2578 consumers participated in the study. Invalid and incomplete questionnaires were rejected (12.65%), resulting in 2252 valid questionnaires (87.35%). Females represented 59.6 per cent of respondents. The majority of the respondents were young people between 26 and 29 years old (53.6%) with mainly higher-education (31.6%) who use Internet daily, on average, for about 1 – 2 hours (50.5%). A total of 299 brands were analyzed spanning a range of industries including apparel and accessories, automotive, beverages, clothing, computer, food, hi-tech, and mobile operators.

Finally, we computed the scores of consumption, contribution, and creation for each individual by plotting the sum of the Likert scale scores (1-7) for each specific COBRA using the approach suggested by Vernette and Hamdi-Kidar (2013). The mean for consumption was

3.68 (SD = 1.60), for contribution was 2.65 (SD = 1.52), and creation was 2.02 (SD = 1.36). For the descriptive statistics of each COBRA see Table 1.

The usable sample was randomly split into calibration and validation samples (Churchill, 1979; Cudeck and Browne, 1983; Gerbing and Anderson, 1988). Each sample consisted of 1126 consumers. The calibration sample was used to develop the scale, whereas the validation sample was used to verify CESBC's dimensionality and establish its psychometric properties.

The authors first performed an exploratory factor analysis (EFA) with maximum-likelihood extraction method and Promax orthogonal factor rotation using SPSS 21.0 software package. It was employed the factor extraction according to the MINEIGEN criterion (i.e., all factors with Eigenvalues > 1). The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was 0.97 with a significant chi-square value for the Bartlett test for sphericity (χ^2 = 25243.07; $p < 0.001$) indicates that the sufficient correlations exist among the variables (Hair Jr. et a*l.*, 2014). The exploratory factor analysis was appropriate for the data.

Four items demonstrated to have cross-loadings issues and failed to exhibit a simple factor structure. The problematic items were subsequently removed from the analysis. The final structure of CESBC included 31 items, which reflected a three-factor solution, and accounted for 55.33% of the total variance. The internal consistency (Cronbach's alpha) of the CESBC follows: consumption α = 0.90 (12 items), contribution α = 0.93 (11 items), and creation α = 0.94 (8 items). The Cronbach's alpha value for each of the three dimensions demonstrated the internal consistency of the scales (Nunnally, 1978). The correlations between the CESBC dimensions were positive and significant (Consumption−Creation, r = 0.72; Contribution−Creation, r = 0.65; Consumption−Contribution, r = 0.50). The next procedure was to check the hypothesized three-factor structure of the CESBC and to analyze the covariance matrix.

Confirmatory factor analysis (CFA)

Following with the analysis, all latent variables were included in one single multifactorial CFA model in M*plus* 7.2 software. The maximum-likelihood estimator (ML) was used, and the goodness-of-fit (GOF) of the model was evaluated using the chi-square test statistic, the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Values larger than 0.90 for CFI and TLI, and 0.08 or lower for RMSEA or SRMR indicate good model fit (Hu and Bentler, 1999).

Results of the CFA suggested that the three-factor 31-item model had a poor fit to the data. The $\chi^2_{(430)}$ was 3643.40, the CFI was 0.87, the TLI was 0.86, the RMSEA was 0.08; 90% C.I. 0.08 0.09, and the SRMR was 0.06. The next step involved identifying the areas of misfit in the model. To assess the possible model misspecification the authors turned to examine the standardized loadings of the items and modification indices (MI) (Hair Jr. et al., 2014). The authors proceeded with the elimination of items: (a) whose standard loadings were below the 0.5 cutoff; (b) which demonstrated cross-loadings issues that were not detected during the EFA; and (c) which yielded high MI values. After running the diagnostics and eliminating the problematic items, the ensuing three-factor 17-item model yielded a good fit as indicated by the $\chi^2_{(115)}$ 859.26; CFI = 0.95, TLI = 0.94, RMSEA = 0.07; 90% 0.06 0.07, and SRMR = 0.06. Additionally, an alternative CFA was conducted using robust maximum-likelihood estimation (MLM) as the assumption of multivariate normality was violated - as is common with rating scales the data showed to be multivariate kurtotic (for the descriptive statistics please contact the corresponding author). The model yielded good GOF values: $\chi^2_{(115)}$ 557.47; CFI = 0.95, TLI = 0.94, RMSEA = 0.05; 90% 0.05 0.06, and SRMR = 0.06.

The next step was to calculate the construct reliabilities (CR) of the three dimensions of CESBC. The reliability for consumption was 0.88, for contribution was 0.92, whereas for

creation was 0.93. The CR values exceeded the threshold of 0.7 (Hair Jr. et al., 2014), thus demonstrating the internal consistency of the three subscales. All of the loadings estimates were statistically significant and greater than 0.63. The *t*-values ranged from 30.92 to 105.56 ($p < 0.001$). These results provide evidence of convergent validity (Hair Jr. et al., 2014). In terms of discriminant validity, we calculated the average variance extracted (AVE) for each construct. The AVEs were 0.54 (consumption), 0.65 (contribution), and 0.68 (creation) respectively. The AVE values were later compared with the square of the estimated correlation between constructs (MSV) (Hair Jr. et al., 2014). The AVE were greater than the MSV values, therefore discriminant validity was supported. Finally, the correlations between the COBRA dimensions were as follows: Contribution−Creation, r = 0.77; Consumption−Contribution, r = 0.65; and Consumption−Creation, r = 0.51. The correlations were positive and significant. The reliability and validity outcomes resulting from the CFA are presented in Table 2. The results of the analyses – a three-dimensional, 17-item CESBC scale are summarized in Table 1.

CONCLUSIONS

Theoretical contributions

The COBRA framework is a behavioral construct that comprises the consumer's engagement with brands on social media. This is the first study of its kind that has approached the scale development of the COBRA construct. In order to develop a parsimonious, valid, and reliable scale to measure the consumer's engagement with brands on social media the authors of the current study used a combination of qualitative and quantitative research methods. The results empirically demonstrate that CESBC is a three-factor framework that includes the consumption, contribution, and creation dimensions. These three dimensions cover from lower to higher levels of consumer's engagement with social media brand-related content. Furthermore, this high range of scope of the CESBC highlights the broad usability of the instrument to quantify and measure consumer's behavior *vis-à-vis* brands on social media.

Managerial contributions

Although companies have been using social media channels as part of their marketing and advertising communication agenda, research on consumer behavior related to brands on social media is still in its early stages (Burmann, 2010; Yadav and Pavlou, 2014). Before managers can more confidently employ on social media marketing and branding they need to understand how consumers behave and interact with brands on those channels. The CESBC scale should assist on this matter. This research provides clear guidance on what constitutes the COBRA construct (i.e., the consuming, contributing, and creating dimensions) and what online activities define those dimensions. The dimensions of CESBC provide managers with the conceptual instrument to delineate the consumers' social media behavior pertinent to brands according to their level of engagement. On the other hand, the underlying subscales (in this case, each individual item within a dimension) provide managers with specific social media brand-related activities they could pursue.

Limitations and further research

This study is not without limitations. Therefore, the restrictions of our research can provide guidelines for future studies. First, is necessary to address that the list of COBRAs presented in this study is not final. With the constant changes and adaptations of websites and Web 2.0 services, new activities pertinent to the three dimensions of CESBC are likely to emerge. Second, during quantitative study the data was not factored for the consumer's prior brand usage. Although we provided the scores of consumption, contribution, and creation for each

individual, the results presented in this article should be interpreted with care. Further researchers should address this limitation. Finally, this research was conducted in a single country. Although social media channels are similar across the globe, the authors encourage other researchers to undertake replication studies in other countries to assess the equivalence of CESBC across nations and cultures.

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Table 1. Descriptive statistics for the items of the CESBC, factor loadings (completely standardized lambda X), and explained variance on each item (R^2) for the final three-factor 17-item model

ITEM		*Calibration sample (n = 1126)*			*Validation sample (n = 1126)*			*Full dataset (n = 2252)*		
		$(\lambda_x)^b$	R^2	*M (SD)*	$(\lambda_x)^b$	R^2	*M (SD)*	$(\lambda_x)^b$	R^2	*M (SD)*
Consumption										
Cons1	I read posts related to Brand X on social media	0.83	0.68	3.79 (1.99)	0.82	0.68	3.89 (1.94)	0.83	0.68	3.84 (1.97)
Cons2	I read fanpage(s) related to Brand X on social network sites	0.83	0.69	3.78 (2.06)	0.84	0.71	3.90 (2.05)	0.84	0.70	3.84 (2.05)
Cons3	I watch pictures/graphics related to Brand X	0.64	0.41	4.22 (1.89)	0.66	0.43	4.34 (1.90)	0.66	0.44	4.28 (1.90)
Cons4	I follow blogs related to Brand X	0.63	0.39	2.70 (1.88)	0.63	0.40	2.81 (1.90)	0.64	0.41	2.76 (1.90)
Cons5	I follow Brand X on social network sites	0.87	0.76	3.66 (2.04)	0.86	0.74	3.76 (1.97)	0.86	0.74	3.71 (2.01)
Contribution										
Contr1	I comment videos related to Brand X	0.85	0.73	2.16 (1.63)	0.84	0.71	2.27 (1.72)	0.85	0.72	2.22 (1.68)
Contr2	I comment posts related to Brand X	0.87	0.76	2.35 (1.69)	0.90	0.80	2.43 (1.76)	0.88	0.78	2.39 (1.73)
Contr3	I comment on pictures/graphics related to Brand X	0.87	0.75	2.17 (1.68)	0.86	0.74	2.26 (1.71)	0.87	0.75	2.22 (1.70)
Contr4	I share Brand X related posts	0.89	0.79	2.43 (1.76)	0.88	0.78	2.52 (1.80)	0.89	0.79	2.47 (1.78)
Contr5	I “Like” pictures/graphics related to Brand X	0.62	0.39	3.34 (2.00)	0.63	0.40	3.40 (2.02)	0.63	0.39	3.37 (2.01)
Contr6	I “Like” posts related to Brand X	0.67	0.45	3.20 (1.98)	0.67	0.44	3.28 (1.99)	0.67	0.44	3.24 (1.98)
Creation										
Creat1	I initiate posts related to Brand X on blogs	0.89	0.78	1.94 (1.55)	0.90	0.78	1.95 (1.52)	0.89	0.80	1.95 (1.54)
Creat2	I initiate posts related to Brand X on social network sites	0.87	0.76	2.01 (1.58)	0.90	0.76	2.17 (1.70)	0.89	0.79	2.09 (1.64)
Creat3	I post pictures/graphics related to Brand X	0.87	0.76	1.98 (1.54)	0.82	0.76	2.19 (1.67)	0.84	0.71	2.08 (1.61)
Creat4	I post videos that show Brand X	0.83	0.69	1.96 (1.53)	0.85	0.69	2.11 (1.60)	0.84	0.71	2.03 (1.57)
Creat5	I write posts related to Brand X on forums	0.80	0.65	1.96 (1.53)	0.80	0.65	2.11 (1.60)	0.80	0.64	2.04 (1.57)
Creat6	I write reviews related to Brand X	0.75	0.57	1.91 (1.52)	0.69	0.57	2.04 (1.61)	0.72	0.52	1.97 (1.56)

Note: Calibration sample $\chi^2_{(115)}$ 564.31, CFI = 0.95, TLI = 0.95, RMSEA = 0.05; 90% 0.05 0.06, SRMR = 0.06; Validation sample $\chi^2_{(115)}$ 557.47, CFI = 0.95, TLI = 0.94, RMSEA = 0.05; 90% 0.05 0.06, SRMR = 0.06; Full dataset $\chi^2_{(115)}$ 719.47, CFI = 0.93, TLI = 0.92, RMSEA = 0.05; 90% 0.04 0.05, SRMR = 0.05;

Table 2. Reliability and validity of the CESBC

	ALPHA	CR	AVE	MSV	Contribution	Consumption	Creation
Contribution	0.92	0.92	0.65	0.59	*0.80*		
Consumption	0.88	0.88	0.54	0.42	0.65	*0.77*	
Creation	0.93	0.93	0.68	0.59	0.77	0.51	*0.83*

Note: The square root of the AVE values are marked in italics.