Consumer Engagement in Online Settings: Conceptualization and Validation of Measurement Scales

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This paper addresses the conceptualization, scale development and scale validation related to the study of consumer engagement in online settings. It first reviews this concept and draws attention to the multidimensionality of the construct, considering the underlying cognitive, emotional, and behavioral dimensions of consumer engagement. Then, it presents the foundation of this concept in relationship marketing and adds support to this proposition. Further, it proposes the construction and psychometric assessment of a 37 scales that examine all three dimensions, based on an international sample of 110 respondents who engage with a brand on a social media network. Based on multiple and successive applications of exploratory and confirmatory factor analyses, 11 scales are developed showing strong evidence of reliability and validity measurement of consumer engagement in online settings. The final section includes a discussion of the academic contributions, managerial, implications of the findings and directions for future research.

Keywords: *consumer engagement, online marketing, social media, scale development, scale validation, relationship marketing, multidimensional concept*

JEL Classification: *M31, M10*

1. Introduction

In the last decades, marketing scholars have directed their attention to the nature and dynamics of business-to-consumer relationships. As a result of technological developments, these relationships can be studied particularly in terms of the interactivity promoted in the online settings.

In this framework, consumer engagement is a concept that has gained much traction in scholarly literature meant to explain the interactivity between brand and consumers in online environments and platforms.

The broader theoretical perspectives of this concept were established in consumer culture theory (Arnould and Thompson 2005), service-dominant logic (Karpen et al., 2012; Vargo and Lusch 2004, 2008 a,b), and relationship marketing (Vivek et al., 2012).

The concept of consumer engagement has exhibited significant interest from online marketers, however from a scholarly perspective this concept has not received the proper attention to showcase practitioners' interest and provide new insights.

As a result, there is a limited understanding and measurement in academic literature. Most studies examine this concept from a theoretical or qualitative perspective, with few empirical studies that try to measure and validate a scale for consumer engagement.

Therefore, this study responds to calls for research of this concept, in terms of its conceptualization and measurement through a validated scale (Brodie et al. 2011; Hollebeek, et al., 2014; MSI—Marketing Science Institute 2010, 2014).

Nonetheless, consumer engagement has been perceived as an important metric for establish marketing performance in online settings (Bowden, 2009; Kumar et al. 2010; MSI—Marketing Science Institute, 2010). Moreover, this concept is applicable in social media (Hollebeek, 2014, Brodie et al., 2011a,b) networks which is the reason for establishing this paper's quantitative research in the online setting of business-to-consumer interactions facilitated by Facebook.com, a widely known social media platform.

The concept of "social media" or "social media networks" can be defined as "a group of Internet applications, which are based on technological ideologies and foundations of Web 2.0 that enable the creation and sharing of user-generated content" (Kaplan, Haenlein, 2010, p.61). Existing research show the impact that social media networks have on consumer behavior in online services.

Specifically, interactive social media capabilities can provide a conceptual parallel of the generated and interactive nature underlying the concept of "engagement". By providing access to online content and facilitating communication, social media networks can connect customers with organizations, thus stimulating "consumer engagement" (Van Laer, et al., 2013, p.42).

This paper has three major objectives. Firstly, we aim to offer insights into the conceptualization of consumer engagement in online settings, based on existing marketing literature, to establish the multidimensionality of this concept. Secondly, we aim to explore the foundations of this construct by focusing on the specific conceptual associations with relationship marketing. Thirdly, we aim to propose a validated scale for consumer engagement that can be used in quantitative studies based on the three dimensions associated with this concept, namely cognitive, emotional, and behavioral dimensions. Lastly, we aim to explain the implications and importance of consumer engagement for online marketers.

The next section provides a literature review of consumer engagement and its foundation in relationship marketing. Section three explains the research design and methodology. Section four explores the empirical analysis of the quantitative research of consumer engagement in online settings. Section five reflects on the theoretical contribution of the study, managerial implications, limitations and future research directions of this topic in online marketing.

2. Literature Review

2.1. Conceptualization of Consumer Engagement

Examination of research on engagement in marketing literature indicates different deriving concept, such as "customer engagement behaviors" (Van Doorn et al., 2010), "customer brand engagement" (Hollebeek, 2011), "consumer engagement" (Vivek, 2009), "user engagement" (O'Brien and Toms, 2008, 2010) and the more generic term of "engagement" (Higgins and Scholer, 2009). While most research focuses on intra-individual perspective based on consumer psychology, Van Doorn and his colleagues (2010) chose to focus their study on the company by observing specific effects of customer engagement behaviors from an organizational point of view.

Considering the main purpose of scale validation, to capture a wider and comprehensive vision of how all these forms, in this paper we will discuss and use the term "consumer engagement in online settings".

Several authors have examined this concept based on different research frameworks. For example, O'Brien and Toms (2008, 2010) have contributed to this concept in terms of a qualitative empirical research (2008) and a quantitative empirical study (2010) of user engagement with technology aimed at developing and validating scales for user engagement in online shopping environments. Their result consist of their proposition that user engagement should be studied in relation to six factors that reflect the multidimensionality of this concept (cognitive, emotional, and behavioral): perceived usability, aesthetics, novelty, involvement, focused attention and durability (O'Brien and Toms, 2010, p.60).

Verhoef et al. (2010, p.248) gave an overview of consumer engagement as part of customer management in order to increase the value of an organization through tactics focused on three dimensions: cognitive, emotional and behavioral. In 2011, Brodie et al. (2011b, p.108) developed this concept mentioning its context dependence (particularly to a brand), the interactive, dynamic and iterative nature that this concept tends to exercise, fluctuating intensity, multidimensionality and relationships with various other concepts that act as antecedents or consequences of consumer engagement in brand communities.

Then, still in 2011, Brodie et al. (2011, p.263) published a new study supporting the idea of a complex construct of consumer engagement as "a consumer's co-creative and psychological state that occurs by virtue of interactive experiences with an agent / object focal (e.g. brand) in relationships centered on service".

Similar to Brodie et al. (2011a, b), Bowden (2009, p.64) suggests that consumer engagement is a psychological process that shapes the underlying mechanisms that drives loyalty towards a brand or marketing object, as well as mechanisms that focus on maintaining customer loyalty by repeated purchases. In her research, Bowden (2009, p.65) identifies six elements of the process of customer engagement creation: involvement, calculative commitment, emotional commitment, trust, joy, and loyalty.

Customer engagement includes behavioral manifestations with an indirect impact on company performance. With a particular a focus on the behavioral dimension of engagement, Bijmolt et al. (2010) distinguished three general manifestations of the customer engagement: word-of-mouth recommendations, co-creating with the client and the complaining behaviors; and all these aspects affect a brand or company in ways other than buying.

Hollebeek (2011b, p.566) defined consumer brand engagement as "the level of cognitive, emotional and behavioral investment of a customer in brand specific interactions". In addition, the author defines three main themes for this concept: "Immersion", "passion" and "activation". 'Engagement' represents a multi-dimensional concept comprising of relevant cognitive, emotional, and behavioral dimensions (Hollebeek 2011a, b, 2012), although the specific expression of focal 'engagement' dimensions may vary across contexts (Hollebeek et al., 2014).

In a more recent research, Hollebeek et al. (2014, p.154) conceptualize consumer brand engagement with a brand as the "cognitive, emotional and behavioral activity with positive valences for a consumer, activity which may occur during a consumer-brand interaction, or may be related to this interaction". In this paper, the authors also proposed a scaled used to measure consumer brand engagement based on cognitive processing (3 items), affection (4 items) and activation (3 items) (Hollebeek et al., 2014, p.157).

2.2. Relationship Marketing and Consumer Engagement in Online Settings

The origins of consumer engagement are quite unclear. The proactivity of consumers, a characterization that is implicit in this concept, can be assumed that is part both of relationship marketing theory and the service-dominant logic (Grönroos, 1997, 2011; Vargo and Lusch, 2004, 2008a, b).

Each of these marketing insights regard consumers as active participants in their interactions with a brand that may lead to co-created experiences. In today's marketing, consumers are no longer just passive recipients of programs and marketing initiatives, and consumer engagement captures their activation particularly in online settings.

The conceptual foundations of consumer engagement seem to be in the extended relationship marketing theory (Brodie et al, 2011a, b; Hollebeek 2012, p.19). Relationship marketing, characterized by reciprocal, interdependent, committed, and long-term relationships between sellers and buyers, has dominated much of the managerial and academic discussions of the 1990s (Sin et al., 2005, p.185). A relationship marketing orientation has generally been assumed to create a competitive edge for an organization, and to have a positive impact on organizational performance.

Moreover, relationship marketing refers to "all marketing activities aimed at attracting, retaining and developing successful relational exchanges" (Morgan and Hunt, 1994). All these activities are critical for companies that have as their major goal the building of interactive long-term and valuable relationships with their existing and potential customers in networks used for organizing and facilitating the process of value co-creation (Brodie et al., 2011b). As described earlier, in Bowden's (2009) conceptualization of consumer engagement, her focus on mechanisms that drive and maintain customer loyalty further support the foundation of this concept in in relationship marketing.

Considering the conceptualization of consumer engagement in specialty literature so far, it seems that many of the feature of this construct have key basis in relationship marketing. Nevin (1995) notes that the term has become a buzzword, with the concept being used to reflect a number of differing themes or perspectives such as database marketing, electronic marketing, multilevel marketing, customer retention and partnering, and a business philosophy (Sin et al., 2005, p.185).

3. Research Methodology

3.1. Research Hypotheses

The aim of this paper is to determine the dimensions of consumer engagement towards a brand in the online environment, and the components of scale that can be used to measure this concept in the context of quantitative studies. Based on this aim, we have proposed the following research hypotheses:

Hypothesis 1: Determination of scales that measure the cognitive dimension of consumer engagement.
Hypothesis 2: Determination of scales that measure the emotional dimension of consumer engagement.
Hypothesis 3: Determination of scales that measure the behavioral dimension of consumer engagement.

3.2. Research Design

In this paper, we will develop and validate a scale for measuring the concept consumer engagement towards a brand in online settings. As noted in specialty literature (Churchill Jr., 1979), we have designed a large pool of scales to measure this concept and then to further reduce the proposed items in order to reflect the most relevant scales of consumer engagement in an online environment. These elements will investigate the dimensions of the concept and consumer expression of engagement towards a brand in online settings.

3.3. Measurement and Research Instrument

All the constructs examined in this research are newly formed and were studied in the survey according to Table 1.

Research tool implied a survey with 47 questions. The questionnaire consisted of general questions used to profile the respondents (Tables 2 and 3). 37 scales are newly proposed to measure consumer engagement, as follows: 12 scales for the cognitive dimension (abbreviated EC-C), 11 scales for the cognitive dimension (abbreviated EC-E), and 14 scales for the cognitive dimension (abbreviated EC-B). These scales can be seen in table 1, according to their eligibility values of Cronbach's alpha that surpass the accepted level of 0.7.

Table 1. 37 newly proposed scales to measure the multidimensionality of consumer engagement in online settings

Latent dimension	Cronbach's alpha	Item	Scale
CE-C	0.932	CE-C1	I pay a lot of attention to the Facebook page of this Brand.
		CE-C2	I am immersed in browsing on and interacting with the Facebook page of this Brand
		CE-C3	When I am on the Facebook page that I 'like,' I get mentally involved with the company's posts.
		CE-C4	I feel like I learned a lot about the brand and/or its products because of the notifications posted on Facebook.
		CE-C5	I am absorbed in the Brand's page that I 'like' on Facebook.
		CE-C6	Using this Brand's Facebook page stimulates my interest to learn more about the company and its products.
		CE-C7	Time flies whenever I am browsing on the Facebook page of this Brand.
		CE-C8	I use this Brand and its Facebook fan page because it captures my attention.
		CE-C9	This Brand's page that I 'like' on Facebook provides useful information (special offers, company news and announcements, philanthropic efforts,…)
		CE-C10	I find this Brand's Facebook posts to be very useful.
		CE-C11	I make more informed buying decisions because of the Brand-related information I come across on my Facebook feed.
		CE-C12	The Brand's page that I 'like' on Facebook provides accurate information.
CE-E	0.931	CE-E1	It gives me great pleasure to use this brand and interact with it on Facebook.
		CE-E2	The Facebook notifications from this Brand are like my guilty pleasure.
		CE-E3	I'm very interested when I use the Facebook page of this Brand.
		CE-E4	This Brand's Facebook posts are entertaining.
		CE-E5	I am proud to be a fan of this Brand's Facebook page.
		CE-E6	I have an intense interest in this Brand and its activity on Facebook.
		CE-E7	I am enthusiastic about this Brand's posts on Facebook.

		CE-E8	I feel excited about this Brand's Facebook notifications.
		CE-E9	The Brand's page that I 'like' on Facebook is fun.
		CE-E10	I feel a bond to this Brand that I "like" on Facebook.
		CE-E11	My emotional attachment to the brand is 1 (weak) to 7(strong)
CE-B	0.943	CE-B1	I don't think I will stop using this Brand's Facebook page in the near future.
		CE-B2	If I was asked, I would love to contribute with different ideas of improvement for this Brand through its Facebook page.
		CE-B3	I will continue to be a Facebook fan of this Brand for the next few years.
		CE-B4	I spend a lot of time browsing through the Facebook posts of this Brand, compared to other brands.
		CE-B5	I am willing to collaborate in different Facebook initiatives with this Brand in the development of new products/services/features.
		CE-B6	I 'liked' posts from this Brand on Facebook.
		CE-B7	In general, I feel motivated to engage actively on the Brand's Facebook page that I 'like'
		CE-B8	Regarding this Brand's Facebook page that I "like" I have … -Read fan comments
		CE-B9	-Responded to fan comments
		CE-B10	-Watched video(s)
		CE-B11	-Shared different posts
		CE-B12	-Liked different posts
		CE-B13	-Played games or other activities
		CE-B14	I would promptly agree to spend time to participate in the new products/services/feature tests for this brand.

Note: CE-C = cognitive dimension of consumer engagement, CE-E = emotional dimension of consumer engagement, CE-B = behavioral dimension of consumer engagement

3.4. Sample and Data Collection

For determining the scales that measure consumer engagement based on the three dimensions established in academic studies, we based the exploration of this concept in an online setting, namely the social network Facebook.com. Moreover, each respondent had to mention his/her preferred brand on this social network.

Thus, respondents have to indicate whether or not they interact with a particular favorite brand on Facebook. We chose Facebook as the online service facilitating the interaction between brands and consumers in an online setting, due to the popularity and adoption of this social media network at an international level. We considered that the choice of an online social media has relevance and interest to both the academic and business environment, but also because "consumer engagement" can be implemented on such online social networks.

In this regard, we have conducted an online questionnaire that included 37 items suggested to study consumer engagement towards a brand in online settings, according to three dimensions associated with this concept in existing studies.

The data collection implied a primary research, via Facebook.com as respondents filled out an online survey from February 10 to April 6, 2015. A web-based consumer survey was used for the data collection. The present research uses as a method the pilot survey, for which the sample is small, not statistically representative and not determined based on an established formula, but rather using a convenience sample technique.

The survey gathered 141 respondents. But given the fact that the questionnaire was applied on an online social network, namely Facebook, a set of questions was established to denote the usability and experience of respondents in relation to this social media network. First, it introduced a question of delimitation of respondents, by the question "Do you have a Facebook profile?". 17 of the respondents answered that they did not have a Facebook profile, and 124 responded affirmatively. Thus, we removed 12% of the total of 141 respondents who answered "no" to this screening question. Next, we examined the data and removed 14 observations (9%) because the respondents did not complete the online questionnaire or mentioned the same answer for all of the questionnaire's scales. Therefore, after these two stages of establishing a database that is appropriate for the analysis, from a sample of 141 respondents we have reached 110 observations that can be examined.

This number of observations is consistent with the premises of a quantitative study carried to accomplish the validation of scales (Hollebeek et al., 2014; Churchill Jr., 1979). Also, it is appropriate for econometric analysis techniques (Hair et al., 2010). Given the aim of this study, to examine consumer engagement towards a particular brand in the online environment created within a social media network, namely Facebook, we have analyzed some questions were included in the survey to denote both brand familiarity of the respondents, and familiarity with this social media network.

Table 2 presents the questions and their associated descriptive statistics.

Table 2. Respondents' familiarity with their favorite brand and Facebook

Questions related to respondents' favorite brand and Facebook	Minimum level	Maximum level	Average	Standard deviation
Brand purchase before Facebook appreciation ('like')	1	7	3.89	2.113
Familiarity with favorite brand	1	7	4.51	1.905
Facebook experience	1	10	6.44	2.878
Weekly spent hours on Facebook	1	30	6.60	5.762
Brand usage before Facebook appreciation ('like')	1	7	3.84	2.016

Thus, table 2 shows that most respondents have long experience with predisposition towards a particular brand in general, and with the use of Facebook, in particular. Therefore, respondents are suitable for the analysis of consumer engagement towards a particular brand to interact within online settings.

Table 3 presents the profile of respondents segmented by sex, country, income level, education level, industry of favorite brand.

Table 3. Demographic profile of respondents

Feature		Frequency	(%)
Sex	Male	68	61.8
	Female	42	38.2
	Total	110	100.0
Annual income level	1 – Less than $25,000	16	14.5
	2 - $25,001 to $75,000	30	27.3
	3 - $75,001 to $125,000	18	16.4
	4 - $125,001 to $175,000	10	9.1
	5 – More than $175,001	12	10.9
	6 – Don't wish to answer	24	21.8
	Total	110	100.0
Education level	1 - High school degree	2	1.8
	2 – Bachelor studies, no degree	2	1.8
	4 – Master or PhD degree	106	96.4
	Total	110	100.0
Country	Australia	4	3.6
	Brazil	2	1.8
	Canada	2	1.8
	Columbia	4	3.6
	Cyprus	2	1.8
	Estonia	2	1.8
	Germania	8	7.3
	Greece	6	5.5
	India	6	5.5
	Indonesia	2	1.8
	Italia	8	7.3
	Holland	2	1.8
	New Zeeland	2	1.8
	Norway	4	3.6
	Poland	2	1.8
	Portugal	4	3.6

	Romania	10	9.1
	Russia	2	1.8
	Slovakia	4	3.6
	Spain	6	5.5
	Sweden	2	1.8
	Thailand	2	1.8
	Turkey	2	1.8
	United Kingdom	4	3.6
	USA	18	16.4
	Total	110	100.0
Industry of favorite brand	1 – Apparel and accessories	24	21.8
	2 – Cosmetics	4	3.6
	3 – Retail stores	12	10.9
	4 – Entertainment and leisure	14	12.7
	5 – Electronics	28	25.5
	6 – Food and beverages	18	16.4
	7 – Publications and magazines	10	9.1
	Total	110	100.0

4. Empirical Analysis

To analyze the data and to establish the most relevant scales to measure consumer engagement in quantitative studies, we used exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), presented in the following sections.

4.1. Exploratory Factor Analysis

Exploratory factor analysis (EFA) was used to reduce the number of scales assigned to each dimension of consumer engagement to a particular brand in terms of using social networking services. However, before applying this statistical analysis, we examined the reliability of the scales using Cronbach's alpha coefficient. In relation to this coefficient, it is necessary to obtain a score higher than 0.70 (Cronbach, 1970, p. 161) to ensure that the dimensions explored in this research are eligible. Cronbach's alpha coefficients' results appear in table 1.

In this research of scale validation for the three dimensions of consumer engagement, we applied the Promax rotation method and the maximum likelihood extraction technique.

We used the maximum likelihood method of extracting factors as this method reduces any differences that may arise between factors (Conway, Huffcut 2003, p.149). Also, this method is most commonly used for samples which are then evaluated in AMOS for confirmatory factor analysis, namely an analysis technique that will be used in this research.

Fabrigar et al. (1999) argued that if the data are distributed relatively normal, the maximum likelihood technique is the best choice because it "allows the calculation of a wide range of indicators that show matching model and allows statistical testing of the significance of loading factors, correlations between factors and calculation of confidence intervals" (Fabrigar et al., 1999, p.283).

As a rotation method of the EFA, we used the oblique Promax technique because it allows to link factors and reduce interpretability. The role of rotation is to simplify and clarify the data structure. Also, using this method of rotation, research variables were examined in the light of relations between each factor and their corresponding variables by eliminating the relationships that could be shared by several factors (Field, 2013 p.647).

Moreover, to observe the adequacy of the data, we conducted a "Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)" test and obtained a score of 0.812 (above the 0.5 accepted level), which is a very good value, showing the adequacy of the sample used for this analysis (Field, 2013, p.640).

Further, we explored the total variation for the exploratory factor analysis. The criteria used for determining the factors was that each element should have an eigenvalue greater than 1 (Field, 2013, p.642). Also, the eligibility of the factors can also be seen in terms of the variance explained by each resulted factor, exceeding 70%, namely for this first applied EFA the total variance explained is 72.351% (Table 4).

***Table 4.** Exploratory factor analysis results for 3 extracted that explain 37 scales for consumer engagement*

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	17.440	47.135	47.135	16.986	45.907	45.907	14.756
2	5.207	14.073	64.371	8.883	12.811	61.142	14.563
3	4.900	11.734	75.351	7.554	10.633	72.351	14.170

From Table 5, which shows the pattern of factors after rotation and extraction, we notice that certain elements overlap on several factors. Also, the factors that registered loadings below 0.20 were eliminated from this table.

***Table 5.** Scores of 3 factors resulted for 37 scales of consumer engagement*

	Factor 1	Factor 2	Factor 3
CE-B1	**0.398**	**0.231**	
CE-B2	0.603		
CE-B3	**0.742**	**0.291**	**-0.304**
CE-B4	0.554		0.276
CE-B5	0.814		
CE-B6	0.804		
CE-B7	0.825		
CE-B8	0.551		
CE-B9	0.835		
CE-B10	**0.752**	**-0.202**	
CE-B11	0.790		
CE-B12	**0.627**	**0.237**	
CE-B13	0.543		
CE-B14	0.678		
CE-C1			0.805
CE-C2			0.612
CE-C3		**0.200**	**0.660**
CE-C4		**0.217**	**0.736**
CE-C5			0.716
CE-C6			0.861
CE-C7			0.651
CE-C8			0.670
CE-C9		**0.329**	**0.312**
CE-C10			0.716
CE-C11	**0.263**		**0.650**
CE-C12		**0.636**	**0.241**
CE-E1		0.621	
CE-E2	**0.216**	**0.411**	
CE-E3		0.834	
CE-E4		0.895	
CE-E5	**0.208**	**0.731**	
CE-E6		**0.567**	**0.249**
CE-E7		**0.626**	**0.319**
CE-E8		0.582	
CE-E9		0.775	
CE-E10		0.540	
CE-E11		0.843	

Note: CE-C = cognitive dimension of consumer engagement, CE-E = emotional dimension of consumer engagement, CE-B = behavioral dimension of consumer engagement

As it can be noted from the calculations of table 5, the scales studying the behavioral dimension consumer engagement (CE-B) formed factor 1, the ones od emotional dimension (CE-E) formed factor 2, and

the cognitive (CE-C) dimension led to factor 3. Also in this table, can be observed that there are certain scales that present similarities and correlations with more than a factor.

This shows the imperfection of the exploratory factor analysis, imperfection that needs to be corrected by removing those scales that share factor loadings with more than one newly formed variables and do not contribute solely to their belonging dimension.

Thus, we will reapply the exploratory factor analysis, but we will remove from this statistical procedure 5 scales associated with the behavioral dimension of consumer engagement (namely, scales 1, 3, 4, 10, 12), 4 scales associated with the emotional dimension (namely, scales 2, 5, 6, 7) and 5 scales associated with the cognitive dimension (namely, scales 3, 4, 9, 11, 12). These scales were initially presented in Table 1.

To check the relevance of the new exploratory factor analysis (with maximum likelihood extraction method and Promax rotation), we have reapplied a KMO test for which we obtained the result of 0,849 (above the threshold of 0.5 generally accepted). Table 6 presents information related to the extraction and rotation of newly formed factors, denoting the eligibility of these factors in the analysis because of the eigenvalues greater than 1 and total explained variance greater than 70%.

Table 6. *Exploratory factor analysis results for 3 extracted that explain 23 scales for consumer engagement*

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	10.619	46.168	46.168	10.155	44.150	44.150	12.618
2	3.824	16.625	61.361	3.420	14.868	59.146	11.955
3	3.479	15.126	76.893	3.064	13.324	73.784	11.720

Table 7 presents the new pattern of the factors resulted from the exploratory factor analysis, based on the remaining 23 scales that show each item's contribution to one dimension. Factor 1 explains the cognitive dimension of consumer engagement, factor 2 explains the emotional dimension, and factor 3 explains the behavioral dimension.

Table 7. *Scores of 3 factors resulted for 23 scales of consumer engagement*

	F1 Cognitive dimension	F2 Emotional dimension	F3 Behavioral dimension
CE-B2			0.575
CE-B5			0.662
CE-B6			0.551
CE-B7			0.689
CE-B8			0.633
CE-B9			0.874
CE-B11			0.587
CE-B13			0.725
CE-B14			0.797
CE-C1	0.801		
CE-C2	0.695		
CE-C5	0.792		
CE-C6	0.946		
CE-C7	0.657		
CE-C8	0.749		
CE-C10	0.571		
CE-E1		0.725	
CE-E3		0.917	
CE-E4		0.895	
CE-E8		0.674	
CE-E9		0.658	
CE-E10		0.595	
CE-E11		0.878	

Note: CE-C = cognitive dimension of consumer engagement, CE-E = emotional dimension of consumer engagement, CE-B = behavioral dimension of consumer engagement

By reapplying this technique, we managed to eliminate the scales did not explain consumer engagement very well. However, due to the results in table 7 and the distribution of elements to the newly formed factors, this study of testing and validating scales that reflect consumer engagement in a relevant and appropriate manned should be extended with a confirmatory factor analysis (CFA). Therefore, the scales remaining in this final result of the EFA will be included into a CFA to reach a small number of scales that will be used to measure consumer engagement in future studies.

4.2. Confirmatory Factor Analysis

As described in the previous section, confirmatory factor analysis was used to detect the most suitable scales to measure and model the consumer engagement in online settings in terms of the cognitive, emotional and behavioral dimensions. The purpose of this procedure is to further reduce the number of scales beyond the eliminations resulted from the application of exploratory factor analysis (from 37 scales to 23 items). The main purpose was to obtain the most relevant scales, both in terms of content, and of number of scales that could be easily introduced in other quantitative studies.

The structure of the factors resulted from the exploratory factor analyses was implemented in a first order confirmatory factor analysis. The accuracy indicators were investigated, however initial results were not satisfactory and the model did not reflect eligibility and the β values of the standardized variables observed in the CFA did not concur to the requirements.

In order to improve the model, first of all, we removed all the variables associated with each relationship between an observed variable and its corresponding latent dimension that registered a standardized regression coefficient less than 0.7 (Hair et al., 2010, p.684).

Using this rule, we removed a set of 12 scales and reapplied the confirmatory factor analysis. As a result, we have reached a number of 11 scales that measure the three dimensions of consumer engagement. The new model meets the prerequisites of a relevant model, as it can be seen in Table 8, in accordance with the recommendations of Hu and Bentler (1999, p.27).

Table 8. Model accuracy for confirmatory factor analysis based on the 11 scales of consumer engagement

Measurement	Measurement model result	Recommended values
χ^2	44.866 (p=0.036. 33df)	$p \leq 0.05$
χ^2/df	1.360	≤ 5
GFI	0.935	≥ 0.90
NFI	0.946	≥ 0.90
RFI	0.910	≥ 0.90
CFI	0.985	≥ 0.90
RMSEA	0.057	≤ 0.10

Note: χ^2 =Chi-square, χ^2/df = ratio of Chi-square and degrees of freedom, GFI = Goodness of fit index, NFI = Normed fit index, RFI = Relative fit index, CFI = Comparative fit index, RMSEA = Root mean square error of approximation.

Table 9 displays the standardized and unstandardized estimates, standard errors, and critical reports (unstandardized estimates divided by the standard errors). The probability value associated with the null hypothesis, according to which the test is zero, is displayed in the column titled 'Significance'. All regression coefficients of this model are significantly different from zero beyond the level of 0,001. Standardized estimates allow the evaluation of the relative contribution of each predictor variable (observable variable) for each outcome variable (latent dimension). Standardized estimates are appear in Table 9.

Table 9. Confirmatory factor analysis results for the 11 scales of consumer engagement

Relationship			Standardized Regression Weights	Unstandardized Regression Weights	Standard Error	Critical Report	Significance
CE-C	→	CEC6	0.829	1.000			
CE-C	→	CEC7	0.716	0.759	0.105	7.247	***
CE-C	→	CEC8	0.796	0.993	0.107	9.308	***
CE-C	→	CEC10	0.793	0.941	0.100	9.443	***
CE-B	→	CEB5	0.896	0.922	0.086	10.746	***
CE-B	→	CEB6	0.701	0.920	0.113	8.138	***
CE-B	→	CEB7	0.854	1.000			
CE-E	→	CEE1	0.802	1.060	0.109	9.757	***

Relationship	Standardized Regression Weights	Unstandardized Regression Weights	Standard Error	Critical Report	Significance
CE-E → CEE3	0.846	0.994	0.094	10.531	***
CE-E → CEE4	0.835	1.000			
CE-E → CEE11	0.797	1.010	0.103	9.820	***

Note: CE-C = cognitive dimension of consumer engagement, CE-E = emotional dimension of consumer engagement, CE-B = behavioral dimension of consumer engagement

Each standardized regression coefficient represents the amount of change in the dependent variable for each change with one unit in the variable that it predicts. For example, the table above shows an increase of 0.716 CE-C7 (scale of the cognitive dimension of consumer engagement) for each increase of 1 in CE-C (the cognitive dimension of consumer engagement).

Figure 6.3.1 presents the results of the confirmatory factor analysis for the scales measuring consumer engagement for a brand in an online setting.

Furthermore, in this figure, we can observe the correlations between observable and latent variables of consumer engagement. The most pronounced correlation registered a score of 0.744 which is created between the cognitive and behavioral dimensions of consumer engagement, the correlation between the emotional the behavioral dimensions got a result of 0.691, whereas the correlation between the cognitive and behavioral dimensions registered a level of 0.683.
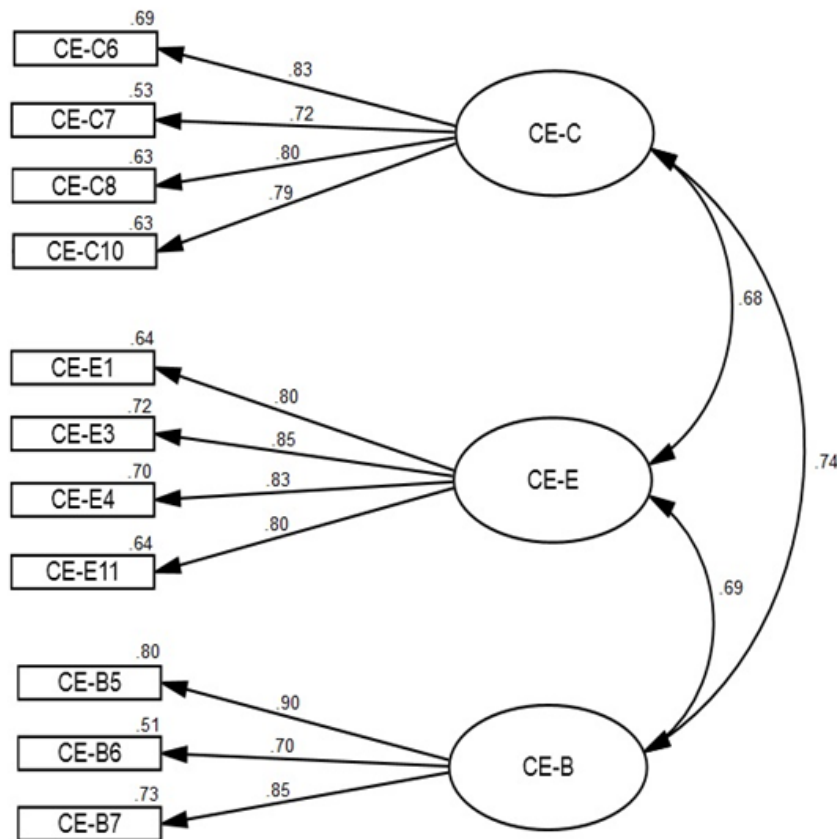

Figure 1. *Confirmatory factor analysis results for the 11 scales of consumer engagement*
Note: CE-C = cognitive dimension of consumer engagement, CE-E = emotional dimension of consumer engagement, CE-B = behavioral dimension of consumer engagement

Table 10 presents the latest version of the set of scales by which we will measure cognitive, emotional and behavioral dimensions of consumer engagement for a certain brand using the online social media service, Facebook. We also studied the relevance of the new scales by calculating Cronbach's alpha which yielded values greater than the threshold value of 0.7 (Cronbach, 1970, p. 161).

Table 10. *Final set of 11 scales used to measure consumer engagement based on the cognitive, emotional and behavioral dimensions*

Latent Dimension	Cronbach's alpha	Item	Scale
CE-C	0.896	CE-C6	Using this brand's Facebook page stimulates my interest in learning more about the company and its products.
		CE-C7	Time flies whenever I visit this brand's Facebook page because I want to find out more.
		CE-C8	I use this brand and I visit its Facebook page because it captures my attention with useful information.
		CE-C10	It seems to me that this brand's Facebook posts are very useful.
CE-E	0.900	CE-E1	I am very pleased to use this brand and interact with it on Facebook.
		CE-E3	I am very enthusiastic whenever I use this brand's Facebook page.
		CE-E4	The Facebook's posts that I received in my feed from this brand are fun.
		CE-E11	My emotional attachment to the brand I interact with on Facebook is… 1 (weak) to 5 (strong).
CE-B	0.889	CE-B5	I am willing to collaborate in various Facebook initiatives with this brand in developing new products / services / features.
		CE-B6	I have "Liked", "Commented" and/or "Shared" different posts on this brand's Facebook posts.
		CE-B7	In general, I feel motivated to actively engage with Facebook posts from this brand I like on social media.

Note: CE-C = cognitive dimension of consumer engagement, CE-E = emotional dimension of consumer engagement, CE-B = behavioral dimension of consumer engagement

To validate the first order confirmatory factor analysis, we have evaluated the model's constructs based on convergence validity, discriminant validity and reliability (Table 11). Table 11's results were obtained using the standardized regression estimates and the results of the correlations between latent variables.

Table 11. *Confirmatory factor analysis results in terms of convergence validity, discriminant validity and reliability*

Latent Dimensions	CR	AVE	MSV	ASV	Correlations between factors		
					CE-B	CE-C	CE-E
CE-B	0.860	0.675	0.554	0.516	**0.821**		
CE-C	0.865	0.616	0.554	0.510	0.744	**0.785**	
CE-E	0.892	0.673	0.477	0.472	0.691	0.683	**0.820**

Note: CR= Composite Reliability values, AVE = Average Variance Extracted; The diagonal values (in bold) are the square root of AVE (AVE = $\sum L_i^2 \ / \ (\sum L_i^2 \ + \ \sum Var \ (E_i))$)

Reliability was examined in terms of the values of composite reliability (CR). These values are calculated using the extracted variance (Hair et al., 2010, p.680):

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n}$$

$$CR = \frac{(\sum_{i=1}^n \lambda_i)^2}{(\sum_{i=1}^n \lambda_i)^2 + (\sum_{i=1}^n \delta_i)}$$

where AVE= Average Variance Extracted, CR = Composite reliability values, λ = standardized factor loading, n = number of items, δ = variance's error.

Based on the values calculated in Table 11, we can observe that all the values are higher than the acceptable levels of 0.6 (Bagozzi et al., 1991, p.431) or 0.7 (Gefen et al., 2000, p. 37), considering the fact that the values range from 0.860 to 0.892, thus fulfilling the condition of reliability of the consumer engagement scales examined through this CFA. Also, the reliability of the scales also emerges from the calculated Cronbach's alpha coefficients (Table 10) which shows substantially higher scores than the threshold 0.7, namely 0.896 for the cognitive dimension of consumer engagement, and 0,900 for the emotional dimension, and 0.889 for the behavioral dimension.

The convergent validity is the extent to which different approaches for building the model show the same results. The convergent validity was assessed for the measurement scales using two criteria suggested by Fornell and Larcker (1981, p.45): (1) all standardized estimates of the model should be significant and above a value of 0.7 (condition which is fulfilled and shown in Table 11 and Figure 1); and (2) the average variation extracted (AVE) for each variable should exceed the variance occurred due to the construct's measurement error (i.e. AVE should exceed 0.5). Again, the fulfillment of this condition can be noted based on the results obtained in Table 11, considering the fact that the lowest level of AVE was registered for the cognitive dimension of consumer engagement with a score of 0.616.

Discriminant validity assesses the extent to which a concept and its indicators differs from another concept and its corresponding indicators. Discriminant validity was evaluated using the recommended criteria (Fornell, Larcker 1981, p.45): the square root of the average variance extracted should exceed the correlation shared by a latent variable with the other constructs of the model. Also, in light of the criteria suggested by Hair et al. (1998, p.612), the correlation coefficients between constructs should be less than 0.9 and in Table 11 we can observe that this condition is met for the validity of the 11 proposed scales, determined as eligible to measure consumer engagement.

Table 11 presents two more indicators, namely MSV (Maximum Shared Squared Variance) and ASV (Average Shared Squared Variance). Both indicators show how a variable can be explained in another variable. The discriminant validity is certified because all AVE values are greater than MSV, but also higher than ASV (Hair et al., 2010, p.654). In other words, the following conditions are met: $MSV < AVE$ and $ASV < AVE$.

5. Conclusion

5.1. Theoretical Contributions

The first and most important theoretical contribution of this work is to develop a concept that recognizes and responds to the calls for research of Marketing Science Institute (2010, 2014) to propose scales for measuring the engagement of consumers in the online settings and to add to the conceptualization of this emerging concept.

The conceptualization and the proposed scales for consumer engagement towards a brand in an online setting offer new and important perspectives for the academic literature in developing this concept in online marketing. Thus, through this research we have reaffirmed the multidimensionality of this concept and we have proposed new extension of the theoretical and practical framework on measuring consumer engagement in online marketing.

The proposed conceptualization and scale of consumer engagement contribute novel insights to the emerging 'engagement' literature in marketing. Moreover, this paper also adds to a broader academic perspective of interactive relationships in online environments.

This study regarding the validation of scales proposed for a new digital marketing concept followed certain steps which were aimed at establishing the most relevant measurement elements for applications and inclusions in future quantitative research. The conceptualization of the scales was the result of a series of exploratory factor analyses and confirmatory factor analyses to better understand the factor structure, dimensionality and items that best reflect consumer brand engagement in an online setting.

By proposing a conceptualization and a scale for measuring consumer engagement within online settings, this research provides a number of insights into the nature and dimensionality of developing this concept. Moreover, this work reaffirmed consumer engagement's theoretical relevance for the study of interactive relationships between consumers and brands. This conceptualization of consumer engagement contributes to the reiteration of the importance of a broad understanding of the interactions and connections between consumers and certain brands or products, but also between consumers about different brands.

5.2. Managerial Implications

In addition to theoretical contributions, this research also presents a series of implications for marketing practitioners. Firstly, through the conceptualization of consumer engagement, this paper provides managers with improved insights of this emerging construct. This concept can be adopted in various online settings and campaigns that have a broader relationship marketing spectrum, with a focus on improving consumer engagement with a brand or marketing object.

Secondly, online business and marketing programs can benefit from the implementation of this proposed scale for consumer engagement in online settings. Most importantly, by adopting this scale managers can gain insights into consumers' cognitive, emotional, and behavioral focal points of engagement. Specifically, in today's highly competitive business environment, managers face extra challenges of how to

attract the most relevant consumers, how to best retain their most profitable ones who may at any time exhibit switching behaviors, and how to persuade loyal consumers to up-selling, cross-selling, or increased purchasing frequencies.

Thirdly, the scale developed and validated in this research for measuring consumer engagement towards a brand in online settings will generate significant managerial insights with potential on improving an organization's performance and enhancing consumer loyalty for a brand. In today's business environment, customer engagement is suggested to generate improved organizational performance, including sales growth, competitive advantage and superior profitability (Kumar et al., 2010; Hollebeek, 2011).

5.3. Limitations and Future Research Directions

As with any study, there are some limitations to the generalizability of the findings. This research focused only on the social media network, Facebook. Thus, this aspect should be extended to include other social media platforms or multi-brand sites to explore consumers' engagement in different online settings. Moreover, the research can also be expanded to focus solely on one brand and test the proposed scales in that context.

This direct quantitative research has limitations in terms of the convenience sampling technique regarding the selection of respondents, especially regarding the lack of representativeness of a population because this research was conducted at an international level. Considering the fact that this study implied an international sample, the size of the sample is relatively small, and thus could have impacted the results and scale validation. As with most online consumer surveys, the sample was skewed toward younger, more educated demographics. Nonetheless, such consumers are the main target audience for online marketers, however, a larger sample size might have resulted in stronger results

Future studies should explore the proposed measurement scales for consumer engagement in relation to other concepts, like involvement, loyalty, word-of-mouth, commitments, co-creation, participation, and so on.

Acknowledgement

References

Arnould, E. and Thompson, C., 2005. Consumer Culture Theory (CCT): Twenty Years of Research. *Journal of Consumer Research*, 31(4), pp.868-882.

Bagozzi, R. P., Yi, Y. and Phillips, L. W., 1991. Construct validity in organizational research, *Administrative Science Quarterly*, 36, pp.421–458

Bijmolt, T., Leeflang, P., Block, F., Eisenbeiss, M., Hardie, B., Lemmens, A., Saffert, P. 2010. Analytics for customer engagement. *Journal of Service Research*, 13 (3), pp. 341-356

Bowden, J., 2009. The process of customer engagement: a conceptual framework. *Journal of Marketing Theory and Practice*, 17 (1), pp. 63-74

Brodie, R., Hollebeek, L., Juric, B. and Ilic, A., 2011a. Customer Engagement Conceptual Domain, Fundamental Propositions, and Implications for Research. *Journal of Service Research*, 14 (3), pp. 252-271.

Brodie, R., Ilic, A., Juric, B. and Hollebeek, L. 2011b. Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, vol. 66, no. 1, pp. 105-114

Churchill Jr., G. A., 1979. A Paradigm for Developing Better Measures of Marketing Constructs, *Journal of Marketing Research*, 16(1), pp.64–73

Conway, J. M. and Huffcut, A.I., 2003. A Review and Evaluation of Exploratory Factor Analysis Practices in Organizational Research, *Organizational Research Methods,* 6(2), pp.147-168.

Cronbach, L. J. 1970. *Essentials of psychological testing*. New York: Harper and Row.

Fabrigar, L. R., Wegener, D.T., MacCallum, R. C. and Strahan, E. J., 1999. Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4 (3), pp.272-299

Fabrigar, L. R., Wegener, D.T., MacCallum, R. C., and Strahan, E. J., 1999. Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4 (3), pp.272-299.

Field, A., 2013. *Discovering Statistics using SPSS*. 4 Edition. London: Sage Publications

Fornell, C. and Larcker, D. 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, pp. 39-50.

Gefen, D., Straub, D.W. and Boudreau, M.-C. 2000. Structural equation modeling and regression: guidelines for research practice. *Communication of the Association for Information Systems*, 4 (7), pp.1-77.

Grönroos C., 2011. Value co-creation in service logic: A critical analysis. *Marketing Theory*, 11(3), pp.279-301

Grönroos, C., 1997. Value-driven relational marketing: From products to resources and competencies. *Journal of Marketing Management*, 13, pp. 407–419.

Hair, J. F., Anderson, R. E., Tatham, R. L. and Black, W. C., 1998. *Multivariate data analysis* (5th ed.). Englewood Cliffs: Prentice Hall

Hair, J., Black, W., Babin, B. and Anderson, R. 2010. *Multivariate data analysis (7th edition.).* Upper Saddle River, NJ, USA: Prentice-Hall, Inc.

Higgins, E.T., Scholer, A.A., 2009. Engaging the consumer: The science and art of the value creation process. *Journal of Consumer Psychology,* 19 (2), pp.100–114.

Hollebeek, L. 2012. The customer engagement/value interface: An exploratory investigation. *Australasian Marketing Journal* (AMJ), 21(1), pp.17-24

Hollebeek, L.D., 2011a. Demystifying customer brand engagement: Exploring the loyalty nexus. *Journal of Marketing Management,* 27 (7–8), pp. 785–807

Hollebeek, L.D., 2011b. Exploring customer brand engagement: Definition & themes. *Journal of Strategic Marketing*, 19 (7), pp. 555–573

Hollebeek, L.D., Glynn, M.S. and Brodie, R.J., 2014. Consumer Brand Engagement in Social Media: Conceptualization, Scale Development and Validation. *Journal of Interactive Marketing*, 28, pp.149–165

Hu, L. and Bentler, P., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), pp.1-55.

Kaplan, A.M. and Haenlein, M., 2010. Users of the World, Unite! The Challenges and Opportunities of Social Media, *Business Horizons*, 53(1), pp.59–68

Karpen, I., Bove, L. and Lukas, B., 2011. Linking Service-Dominant Logic and Strategic Business Practice: A Conceptual Model of a Service-Dominant Orientation. *Journal of Service Research*, 15(1), pp.21-38.

Kumar, V., Aksoy, L., Donkers, B., Venkatesan, R., Wiesel, T., Tillmanns, S., 2010. Undervalued or overvalued customers: capturing total customer engagement value. *Journal of Service Research*, 13 (3), pp. 297--310

Marketing Science Institute, 2010. *2010-2012 Research priorities*. Cambridge, MA: Marketing Science Institute, [online] Available at: http://www.msi.org/research/index.cfm?id=271 [Accessed 6 March 2014].

Marketing Science Institute, 2014. *2014-2016 Research priorities*. Cambridge, MA: Marketing Science Institute, [online] Available at: http://www.msi.org/research/2014-2016-research-priorities/tier-1-understanding-customers-and-the-customer-experience/ [Accessed 12 March 2015]

Morgan, R.M., Hunt, S.D., 1994. The commitment-trust theory of relationship marketing. *Journal of Marketing,* 58, pp.20–38

O'Brien, H., Toms, E., 2008. What is user engagement? A conceptual framework for defining user engagement with technology. *Journal of the American Society for Information Science and Technology*, 59 (6), pp. 938-955.

O'Brien, H., Toms, E., 2010. The development and evaluation of a survey to measure user engagement. *Journal of the American Society for Information Science and Technology*, 61 (1), pp. 50-69.

Sin, L., Tse, A., Yau, O., Chow, R., Lee, J. and Lau, L., 2005. Relationship marketing orientation: scale development and cross-cultural validation. *Journal of Business Research*, 58(2), pp.185-194.

Van Doorn, J., Lemon, K.E., Mittal, V., Nab, S., Pick, D., Pirner, P., Verhoef, P.C., 2010. Customer engagement behavior: Theoretical foundations and research directions. *Journal of Service Research*, 13 (3), pp. 253–266.

Van Laer, T., De Ruyter, K., and David Cox, D., 2013. A Walk in Customers' Shoes: How Attentional Bias Modification Affects Ownership of Integrity–Violating Social Media Posts, *Journal of Interactive Marketing*, 27, pp.14–27

Vargo, S. and Lusch, R., 2004. Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68 (1), pp. 1–17.

Vargo, S.L. and Lusch, R.F., 2008a. Service-Dominant Logic: Continuing the Evolution, *Journal of the Academy of Marketing Science*, 36 (1), pp.1-10

Vargo, S.L. and Lusch, R.F., 2008b. Why Service?, *Journal of the Academy of Marketing Science*, 36 (1), pp.25-38.

Verhoef P.C., Reinartz W., Krafft M., 2010. Customer Engagement as a New Perspective in Customer Management, *Journal of Service Research*, August 2010 13(3), pp. 247-252

Vivek, S., Beatty, S.E. and Morgan, R., 2012. Customer Engagement: Exploring Customer Relationships beyond Purchase. *Journal of Marketing Theory and Practice*, 20 (2), pp.122–146.