VALIDATING THE CONSUMER ENGAGEMENT WITH SOCIAL MEDIA BRAND-RELATED CONTENT (CESBC) SCALE: EVIDENCE FROM THE CROATIAN MOBILE TELECOMMUNICATIONS SECTOR

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Abstract

Social media has intensified the need for theoretically grounded and psychometrically sound measures of consumer engagement with brand-related content. Although engagement is widely studied, its operationalisations vary substantially across studies and contexts, which complicates cumulative knowledge development and cross-country comparison. This study validates the consumer engagement with brand-related social media content (CESBC) scale, which captures three behavioural levels of engagement (following/consuming, reacting/contributing, and creating) in the Croatian mobile telecommunications market. Data were collected through an online survey of Croatian mobile-network users; after restructuring responses to the brand level and applying established data-screening procedures, the analytic sample comprised 294 brand evaluations provided by 172 respondents. The CESBC scale demonstrated strong internal consistency (Cronbach's α = 0,90–0,96; composite reliability = 0,90–0,96) and adequate convergent validity (AVE = 0,64–0,80), with all standardised loadings exceeding 0,70. All reliability and validity coefficients are rounded to two decimals. Overall model fit was, however, only marginal (CFI = 0,883; TLI = 0,866; RMSEA = 0,120), and discriminant validity was not supported between the reacting and creating dimensions (latent correlation = 0,91; HTMT = 0,91), indicating that these two active behaviours are empirically redundant in this context. Brand equity was clearly distinct from all engagement dimensions. Nomological validity was supported: engagement was positively associated with consumer-based brand equity, with following (consumption) emerging as the only unique predictor once shared variance among dimensions was accounted for. The study contributes the first Croatian language validation of CESBC, documents a transparent and replicable validation workflow, and provides evidence that the contribution–creation distinction may collapse in low-base-rate service categories such as the one studied here.

Keywords: Customer Engagement, Social Media, COBRAs, CESBC, Scale Validation, Brand Equity, Telecommunications, Croatia
JEL Classification: M31, C83, C38

1. INTRODUCTION

Social media environments have become central infrastructures for brand communication, community building and value co-creation. In these environments, consumers do not merely receive firm created messages but also consume, interact with, and produce brand-related content. Consequently, engagement has become a key construct for explaining downstream outcomes such as brand equity, loyalty and advocacy (Appel et al., 2020; Pansari & Kumar, 2017).

Despite the popularity of engagement research, the field remains characterised by conceptual and operational fragmentation. Engagement has been approached as a psychological state, a relational process, and a set of observable behaviours, often with limited alignment between conceptual definitions and measurement strategies (Brodie et al., 2011; Dessart et al., 2016). Recent systematic reviews confirm that this heterogeneity has not abated: measurement approaches continue to proliferate across digital settings, and competing scales remain only loosely comparable (Obilo et al., 2021; Roopak & Chakrabarti, 2024; Srivastava et al., 2023). The fragmentation is particularly visible in social media research, where indicators range from platform-native metrics (e.g., likes and shares) to self-reported behavioural frequencies and attitudinal scales, reducing comparability across studies and contexts (Eigenraam et al., 2018; Ndhlovu & Maree, 2022).

A practical implication of this measurement diversity is that findings may not generalise across countries, platforms and industry settings. Cross-country comparison and replication require instruments that are not only reliable and valid in a given setting but also culturally adapted and, ideally, tested for measurement invariance (Cheung & Rensvold, 2002; Vandenberg & Lance, 2000). For smaller European markets, validated engagement instruments remain scarce, even though such markets can differ from more frequently studied settings with respect to media-use patterns, language, and competitive dynamics.

To address these issues, this study validates the Consumer Engagement with Social Media Brand-Related Content (CESBC) scale in Croatia. The CESBC scale operationalises engagement as a behavioural ladder aligned with the consumption–contribution–creation logic of online brand-related activities (Muntinga et al., 2011; Schivinski et al., 2016). Specifically, the scale measures (1) following/consuming brand content, (2) reacting/contributing through lower-effort interactions, and (3) creating brand-related content through higher-effort production.

The empirical context is the Croatian mobile telecommunications category, in which brand

communication is highly visible and frequently mediated through digital channels. Beyond establishing the factorial validity and reliability of the Croatian CESBC version, the study examines convergent, discriminant and nomological validity by relating engagement behaviours to consumer-based brand equity, a core marketing asset reflecting the value of brands in consumers' minds (Aaker, 1991; Keller, 1993; Yoo & Donthu, 2001).

Accordingly, the manuscript contributes to engagement measurement research in three ways. First, it provides the first Croatian-language, culturally adapted behavioural engagement instrument suitable for research in a small European market. Second, it documents a transparent validation workflow – including translation, data screening, full confirmatory factor analysis (CFA) reporting, and multiple discriminant validity diagnostics (DeSimone et al., 2015; Meade & Craig, 2012). Third, it adds to the nomological network of CESBC by testing its association with brand equity in a service category, and it reports a substantively important finding: the contribution and creation dimensions may not be empirically separable in this context.

2. CONCEPTUAL BACKGROUND

Engagement is commonly conceptualised as an interactive, co-creative phenomenon that extends beyond transactions. Within the service and relationship-marketing traditions, engagement has been defined both as a motivationally driven state and as a set of behavioural manifestations directed toward a focal object such as a brand (Brodie et al., 2011; van Doorn et al., 2010). From a behavioural perspective, customer-engagement behaviours represent voluntary, non-transactional activities that may contribute to value creation for the customer and the firm (Pansari & Kumar, 2017; van Doorn et al., 2010).

In social media environments, these behaviours are often discussed through the lens of consumers' online brand-related activities (COBRAs). The COBRA framework emphasises that engagement behaviours differ in their degree of activity and interactivity, spanning content consumption, contribution and creation (Muntinga et al., 2011; Shao, 2009). This conceptual ladder matters for both theory and practice because low effort behaviours (e.g., passively following brand content) are more prevalent but may have consequences that differ from those of high effort behaviours (e.g., producing and sharing original brand-related content) (Eigenraam et al., 2018; Hollebeek et al., 2014).

Schivinski et al. (2016) operationalised this behavioural ladder in the CESBC scale, which measures consumers' self-reported frequency of engagement with brand-related content along three dimensions: consumption, contribution and creation. Compared with platform-specific metrics, CESBC provides a behavioural measure that is applicable across platforms and brand categories, enabling more comparable studies. However, the scale's performance in different languages and cultural contexts must be empirically verified before it is used for cross-country research or managerial benchmarking, and recent measurement work shows that engagement dimensions can behave differently across product and service settings (Ndhlovu & Maree, 2022; Obilo et al., 2021).

Scale validation requires evidence of reliability and of multiple types of validity, including content, factorial, convergent, discriminant and nomological validity (Churchill, 1979; Cronbach & Meehl, 1955). In cross-cultural settings, rigorous translation and adaptation procedures should be followed to preserve meaning and ensure linguistic and conceptual equivalence (Beaton et al., 2000); where cross group comparison is intended, researchers should test measurement invariance using established frameworks (Chen, 2007; Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000).

To examine nomological validity, this study links CESBC engagement behaviours to consumer-based brand equity. Brand equity reflects the differential effect of brand knowledge on consumer response and is frequently operationalised as a consumer-based asset that predicts preference and behavioural intention (Aaker, 1991; Keller, 1993; Yoo & Donthu, 2001). A growing body of empirical work indicates that brand-related social media activity and interactive engagement contribute to relational and brand outcomes, including brand equity, loyalty and relationship quality (Matute et al., 2021; Rather et al., 2022, 2024; Schivinski & Dabrowski, 2015, 2016; Thakur, 2016, 2019). A recent synthesis of engagement models likewise concludes that engagement exerts a positive and statistically significant effect on loyalty, brand value, purchase intention and electronic word-of-mouth, although the strength of these effects is context- and platform-dependent (Kondić et al., 2025). Accordingly, higher levels of behavioural engagement with brand-related social media content should be positively correlated with consumer-based brand equity.

3. METHODS

3.1. Research design and context

The study used a cross-sectional online survey (CAWI) focused on brand-related social media behaviours in the Croatian mobile telecommunications market. Telecommunications is a service category characterised by high switching costs, frequent communication and customer-service interactions, and strong competition among a small number of national brands – conditions under which digital communication and engagement are strategically relevant. Respondents reported their engagement behaviours toward the three major national mobile brands (Hrvatski Telekom, A1, and Telemach).

3.2. Sample and data preparation

Data were collected through a stratified online consumer sample, quota-controlled for age, sex and region to approximate the Croatian population aged 16–65. The initial sample comprised 300 respondents. Because each respondent could report engagement for more than one

mobile brand, responses were restructured into brand-level evaluations (one record per respondent–brand combination).

To ensure that each retained evaluation reflected at least minimal brand-related social media exposure, only brand-level evaluations on which the respondent scored above the lowest substantive frequency on at least one 'following' item were retained (i.e., at least one following item exceeded the 'very rarely' response). This criterion yielded 307 brand-level evaluations from 175 respondents (83 respondents contributed one brand evaluation, 52 contributed two, and 40 contributed three). Responses were then screened for inattentive responding using long string and individual response variability indices (DeSimone et al., 2015; Dunn et al., 2018; Meade & Craig, 2012), which removed nine evaluations, and for multivariate outliers using Mahalanobis distance, which removed four further evaluations. The final analytic sample comprised 294 brand-level evaluations provided by 172 respondents.

Because the 294 evaluations are nested within 172 respondents, observations are not fully independent. To account for this, the nomological regression below was estimated with cluster-robust standard errors (clustered by respondent); the measurement-model results were inspected for robustness against this dependence (see Section 4.2).

3.3. Measures

Consumer engagement with brand-related social media content was measured using the CESBC scale (Schivinski et al., 2016). The three dimensions were operationalised as following/consumption (five items), reacting/contribution (six items), and creating/creation (six items), for a total of 17 items. Respondents reported frequency on an eight-point scale ranging from 0 ('never') to 7 ('very often'). Consumer-based brand equity was measured using the four-item overall brand equity (OBE) scale of Yoo and Donthu (2001), rated on a five-point agreement scale (1 = 'strongly disagree'; 5 = 'strongly agree'). All scale items are reported in Table 1.

3.4. Translation and adaptation

The CESBC items were translated into Croatian using a forward review approach and then checked for semantic equivalence. A pilot review with bilingual experts ensured that the items retained their intended meaning and that colloquial social media expressions were culturally appropriate. This procedure aligns with published recommendations for the cross-cultural adaptation of self-report measures (Beaton et al., 2000).

3.5. Analytical strategy

Construct validity was assessed through confirmatory factor analysis (CFA) specifying a three-factor structure for CESBC and a single-factor structure for brand equity, estimated with maximum likelihood. Model fit was evaluated using the chi-square statistic, CFI, TLI and RMSEA against conventional benchmarks (Hu & Bentler, 1999; Kline, 2016). Internal consistency was assessed with Cronbach's alpha and composite reliability (CR), and convergent validity with average variance extracted (AVE) and standardised factor loadings (Cronbach, 1951; Fornell & Larcker, 1981). Discriminant validity was evaluated using both the Fornell–Larcker criterion and the heterotrait–monotrait ratio of correlations (Henseler et al., 2015). Nomological validity was examined through bivariate correlations and a multiple regression predicting brand equity from the three CESBC dimensions, with cluster-robust standard errors. Analyses were conducted using confirmatory factor analytic and regression procedures consistent with established SEM reporting guidance (Anderson & Gerbing, 1988; Brown, 2015; Kline, 2016).

Table 1 |

Construct	Items (self-reported frequency unless noted otherwise)
Following (consumption; 5 items)	Read posts about brand X on social media; read fan-page content about brand X; view images/graphics about brand X; follow blogs about brand X; follow brand X on social media.
Reacting (contribution; 6 items)	Comment on videos about brand X; comment on posts about brand X; comment on images/graphics about brand X; share posts about brand X; react with emoticons to images/graphics about brand X; react with emoticons to posts about brand X.
Creating (creation; 6 items)	Initiate posts about brand X; initiate posts about brand X on social media; post images/graphics about brand X; write reviews about brand X; write posts about brand X on forums; post videos about brand X.
Brand equity – OBE (agreement, 1–5)	It makes sense to use brand X instead of any other brand even when they are the same; even if another brand has identical features, I prefer brand X; if another brand is equally good, I prefer brand X; if another brand does not differ from brand X in any way, it seems smarter to use brand X.

Note. Engagement items were rated 0 (never) to 7 (very often). Two optional valence items (1–10) were collected but are not used in the present validation.

4. RESULTS

4.1. Descriptive statistics

Table 2 reports descriptive statistics for the construct scores (engagement dimensions as item means; brand equity as the four-item sum). Consistent with the behavioural ladder logic, lower-effort behaviours were more frequent than higher-effort behaviours: following was the most common, followed by reacting and then creating (Eigenraam et al., 2018; Muntinga et al., 2011).

4.2. Preliminary checks and factorial evidence

Sampling adequacy was high (KMO = 0,928) and Bartlett's test of sphericity was significant ($p < 0,001$), supporting the factorability of the correlation matrix. In the CFA, all 17 CESBC items and all four brand-equity items loaded significantly on their intended factors ($p < 0,001$), with standardised loadings ranging from 0,73 to 0,93, consistent with the theorised structure. Overall model fit, however, was only marginal: $\chi^2(183) = 958,2$, $p < 0,001$; CFI = 0,883; TLI = 0,866; RMSEA = 0,120 (90% CI). The elevated RMSEA and below-threshold incremental indices indicate that the three-factor CESBC structure does not fit the present data cleanly; as shown in Section 4.4, this is driven primarily by the near collinearity of the reacting and creating factors. Re-estimating the measurement model on a single evaluation per respondent (to remove nesting) produced substantively identical loadings and reliability estimates, indicating that the marginal fit and the discriminant-validity problem are not the nested data structure.

Table 2 | Descriptive statistics (N = 294)

Construct	N	Mean	SD
Brand equity (sum, 4–20)	294	12,04	4,97
Following (mean, 0–7)	294	2,90	1,71
Reacting (mean, 0–7)	294	1,46	1,70
Creating (mean, 0–7)	294	1,12	1,62

Source: Primary research.

Table 3 | Reliability and convergent validity

Construct	Cronbach's α	CR	AVE
Following	0,896	0,897	0,635
Reacting	0,951	0,951	0,764
Creating	0,960	0,960	0,801
Brand equity	0,920	0,920	0,741

Note. CR = composite reliability; AVE = average variance extracted. Standardised loadings ranged from .73 to .84 (following), .83 to .93 (reacting), .86 to .92 (creating), and .77 to .91 (brand equity). Coefficients are shown to three decimals in the table and rounded to two decimals in the text and abstract. Source: primary research.

4.3. Reliability and convergent validity

As reported in Table 3, Cronbach's alpha ranged from 0,90 to 0,96 and composite reliability from 0,90 to 0,96, comfortably exceeding conventional thresholds (Cronbach, 1951; Nunnally & Bernstein, 1994). Convergent validity was supported, with AVE values between 0,64 and 0,80 and all standardised loadings above 0,70 (Fornell & Larcker, 1981). These reliability and convergent-validity estimates are close to those reported for the original scale (Schivinski et al., 2016), indicating that the Croatian version preserves the measurement properties of the source instrument.

4.4. Discriminant validity

Discriminant validity was assessed with both the Fornell–Larcker criterion and HTMT (Table 4). Brand equity was clearly distinct from all three engagement dimensions (HTMT = 0,22–0,32), and following was adequately distinct from reacting and creating (HTMT = 0,59–0,62). However, discriminant validity between the reacting and creating dimensions was not supported: their latent correlation (0,91) exceeded the square root of AVE of both constructs, violating the Fornell–Larcker criterion, and their HTMT ratio (0,91) exceeded the conservative 0,85 and the liberal 0,90 thresholds (Henseler et al., 2015). A model that merged reacting and creating into a single 'active contribution' factor was more parsimonious (lower AIC and BIC) but did not improve absolute fit (CFI = 0,852; RMSEA = 0,134). Taken together, these results indicate that, in this context, the contribution and creation behaviours form an empirically inseparable active-engagement dimension rather than two distinct factors.

4.5. Nomological validity

Following, reacting and creating were all positively and significantly correlated with brand equity (Table 4; r = 0,21–0,29, $p < 0,001$), consistent with the expected nomological relationship between engagement behaviours and brand equity (Aaker, 1991; Keller, 1993; Schivinski & Dabrowski, 2015, 2016). To examine incremental predictive validity while accounting for shared variance among engagement dimensions, brand equity was regressed on the three CESBC dimensions with cluster-robust standard errors (Table 5). The model explained a modest but significant share of variance ($R^2 = 0,089$; $F = 9,47$, $p < 0,001$). Following emerged as the only

significant unique predictor (β = 0,257, p < 0,001), whereas reacting and creating were non-significant when entered simultaneously. This pattern is consistent with the high correlation and elevated variance inflation between the two active dimensions (VIF ≈ 4,2–4,5) and with the comparatively low base rate of content-creation behaviour.

Table 4 | Construct correlations and discriminant validity

	Following	Reacting	Creating	Brand equity
Following	(0,797)	0,623	0,586	0,324
Reacting	0,578	(0,874)	0,914	0,222
Creating	0,546	0,872	(0,895)	0,220
Brand equity	0,294	0,208	0,206	(0,861)

Note. N = 294. Diagonal (in parentheses) = square root of AVE. Below the diagonal = observed inter-construct correlations. Above the diagonal = HTMT ratios. The reacting–creating pair fails both the Fornell–Larcker and HTMT criteria.

Table 5 | Multiple regression predicting brand equity from CESBC dimensions

Predictor	B	SE*	β	p*	VIF
Constant	9.64	0.60	–	< .001	–
Following	0.75	0.21	.257	< .001	1.52
Reacting	0.02	0.38	.007	.956	4.46
Creating	0.18	0.38	.060	.634	4.23

*Note. N = 294 brand-level evaluations; R^2 = .089. *SE and p are cluster-robust (clustered by respondent). VIF = variance inflation factor.*

5. DISCUSSION

This study provides the first Croatian-language validation of the CESBC scale, in the mobile telecommunications context. The results indicate that the Croatian CESBC version is a reliable measure with strong convergent validity: internal consistency and AVE values are high and closely match those of the original instrument (Schivinski et al., 2016). At the same time, two findings qualify a straightforward endorsement of the scale's three factor structure and should guide its future use.

First, overall model fit was only marginal, and discriminant validity between the reacting and creating dimensions was not supported (latent correlation = 0,91; HTMT = 0,91). In this service category, consumers who contribute reactions to brand content are typically also those who create content, so the two active behaviours form a single empirical dimension rather than two distinct ones. This is consistent with the behavioural ladder logic, in which higher order behaviours presuppose lower-order ones (Muntinga et al., 2011; Shao, 2009), and with recent measurement work showing that engagement dimensionality is context-dependent (Ndhlovu & Maree, 2022; Obilo et al., 2021). Researchers using CESBC in similar low-base-rate settings should report HTMT alongside the Fornell–Larcker criterion (Henseler et al., 2015) and consider a more parsimonious two-factor (consumption versus active contribution) specification.

Second, regarding nomological validity, all three dimensions were positively associated with brand equity, but only following remained a significant unique predictor in the multivariate model. Because reacting and creating are empirically redundant in this context (latent correlation = 0,91; VIF ≈ 4,2–4,5; Section 4.4), their non-significance when entered together is largely a consequence of this collinearity rather than evidence that they are unrelated to brand equity, with which both were significantly correlated at the bivariate level. Following, by contrast, was estimated with low collinearity (VIF = 1,52), so its unique predictive role is not attributable to this redundancy. From a theoretical standpoint, this aligns with behavioural conceptualisations of engagement as a graded set of actions in which consumption is the most common behaviour and may be a necessary, though not sufficient, condition for higher order behaviours (Muntinga et al., 2011). It also echoes broader evidence that engagement contributes positively to brand equity and relational outcomes, with effect strength varying by context and platform (Kondić et al., 2025; Matute et al., 2021; Rather et al., 2022, 2024; Thakur, 2016, 2019).

For practitioners, the validated scale supports managerial diagnostics that go beyond platform-specific metrics. Brands can use CESBC to segment audiences by engagement intensity and to monitor whether social media strategies stimulate progression from passive following toward more active participation. Because consumption was most strongly linked to brand equity in the multivariate model, managers should not dismiss lower effort behaviours as 'vanity' metrics; such behaviours may reflect sustained exposure and cognitive accessibility that contribute to brand-equity formation (Aaker, 1991; Keller, 1993).

Several limitations should be noted. First, the design is cross-sectional and based on self-reported behaviour; future research should incorporate longitudinal designs and behavioural-trace data to strengthen causal inference and reduce common-method concerns (Podsakoff et al., 2003). Second, although the analyses accounted for the nesting of brand level evaluations within respondents through cluster robust estimation and a single evaluation robustness check, multilevel CFA would offer a more complete treatment of this dependence. Third, the

marginal model fit and the reacting/creating redundancy warrant replication, ideally with ordinal (e.g., WLSMV) estimation suited to the skewed frequency items and with a formal two-factor comparison. Finally, cross-cultural research should test measurement invariance before comparing mean engagement levels across countries or demographic groups (Chen, 2007; Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000); the present single-country design did not permit such tests.

6. CONCLUSION

This study validated the CESBC scale in a Croatian service-market context, providing evidence of strong reliability and convergent validity, clear discriminant validity of brand equity from engagement, and nomological validity via a positive association with consumer-based brand equity. It also surfaced an important boundary condition: the contribution and creation dimensions were not empirically separable, and overall fit was marginal, suggesting that a more parsimonious behavioural structure may be appropriate in low-base-rate service categories. The Croatian CESBC version is suitable as a behavioural engagement instrument for research and managerial analytics, particularly when cross-platform comparability is required. Future work should report full fit indices, test alternative dimensional structures and measurement invariance, and link CESBC scores to longitudinal and behavioural outcomes.

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