Service Quality in Virtual Brand Communities (SQ–VBC): Dual-Level Satisfaction, Dissatisfaction, and Loyalty

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Abstract— Virtual Brand Communities (VBCs) have become an integral part of digital marketing, providing organized spaces where customers interact with one another and with the brand. Yet, the quality of service experienced within these communities has received little attention, even though service quality has long been recognized as a determinant of satisfaction and loyalty in traditional service contexts. SQ–VBC, a new framework that adapts SERVPERF to VBC settings, is used here to examine how service quality shapes satisfaction and dissatisfaction directed both at the community and the brand, and how these attitudinal responses in turn drive loyalty at the two levels. The study draws on a survey of 1,430 VBC members, analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Results indicate that tangibles and empathy exert the strongest positive effects on satisfaction, while assurance reduces dissatisfaction. Direct paths from SQ–VBC to brand loyalty are weak; instead, brand outcomes occur primarily through community satisfaction and community loyalty. Overall, our findings show that SQ–VBC offers a useful framework for treating VBCs as service environments and highlight three priorities for managers seeking to sustain loyalty: effective platform design, empathetic interaction, and credible assurance mechanisms.

Keywords— **Service quality; Virtual Brand Community (VBC); satisfaction; dissatisfaction; loyalty; digital marketing**

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I. Introduction

Virtual Brand Communities (VBCs) are widely used by firms as organized settings where customers interact with each other and with the brand (Muniz & O'Guinn, 2001). They create structured spaces that generate both social and commercial value.

Prior research has recognized the importance of service quality, satisfaction, and loyalty in both offline and online settings (Cronin & Taylor, 1992; Parasuraman, Zeithaml, & Berry, 1988; Zeithaml, Berry, & Parasuraman, 1996). However, prior studies have typically focused on satisfaction as a single construct, most often directed at the brand, while neglecting dissatisfaction as a distinct evaluation. Moreover, much of this research treats attitudes at one level only—either the community or the brand—without considering their interplay. Yet members of VBCs evaluate not only their relationship with the brand but also their experiences with the community itself, and these evaluations may be positive (satisfaction) or negative (dissatisfaction). Without modeling these dual attitudinal processes at both levels, our understanding of how VBCs foster loyalty remains incomplete.

To address this issue, the present study applies a dual-level model linking service quality to satisfaction and dissatisfaction directed at both the community and the brand, and from there to loyalty at the two levels. Service quality is measured using SQ–VBC (Service Quality in Virtual Brand Communities; (M. N. Gam & Gam, 2025).

This paper makes three contributions. From a theoretical standpoint, it advances service quality and VBC research by introducing a dual-level model of satisfaction, dissatisfaction, and loyalty. Empirically, it demonstrates the explanatory power of SQ–VBC in this model. Finally, it offers managerial insights by identifying tangible design, empathetic interaction, and assurance mechanisms as levers for effective community management and enhanced loyalty.

II. Literature Review

The **Service quality:** Service quality has been a central theme in marketing research for decades. (Parasuraman et al., 1988) conceptualized it as the gap between customer expectations and perceptions, measured through five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Their SERVQUAL model became widely used but has been criticized for its reliance on expectations, conceptual ambiguity, and measurement instability (Babakus & Boller, 1992; Buttle, 1996; Cronin & Taylor, 1992; Teas, 1993). Cronin & Taylor, (1992) introduced SERVPERF, a performance-only model that avoids expectation measurement and provides stronger reliability and predictive validity. Subsequent studies confirmed SERVPERF's parsimony and superior psychometric performance, establishing it as an alternative to SERVQUAL for service quality research (Babakus & Boller, 1992; Brady, Cronin, & Brand, 2002; Cronin & Taylor, 1992; A. Gam & Jazizi, 2012; Jain & Gupta, 2004).

Service quality in online and digital settings: With the rise of digital services, several adaptations of SERVQUAL have been proposed. Parasuraman et al., (2005) **E-S-QUAL**, designed to measure electronic service quality for online platforms. Cristobal et al., (2007) developed a model for e-service quality in online shopping, emphasizing reliability, fulfillment, and privacy. Blut et al., (2015) provided a meta-analysis of service-quality models in digital contexts, confirming their usefulness but also highlighting conceptual fragmentation. While these scales extend the measurement of service quality to online environments, they primarily address transactional websites and e-commerce settings.

Negativity bias & asymmetry in service evaluations. Prior research highlights that customers often weigh negative experiences more heavily than positive ones. Smith et al., (1999) demonstrated that dissatisfaction in service encounters has a disproportionate impact on loyalty relative to satisfaction. Similarly, Blut et al., (2015) confirm that asymmetry between positive and negative service evaluations is a persistent pattern across service contexts. This insight underscores the need to treat dissatisfaction as distinct rather than as the mere absence of satisfaction.

Service quality in virtual communities: Research on service quality in virtual communities is far more limited. Kuo, (2003) attempted to adapt SERVQUAL to virtual communities, but reported inconsistent reliability across dimensions, underlining the difficulty of applying expectation-based measures in dynamic, peer-to-peer contexts. Other VBC studies have examined constructs such as engagement, trust, and identification (Casaló, Flavián, & Guinalíu, 2008; Dessart, Veloutsou, & Morgan-Thomas, 2015; Muniz & O'Guinn, 2001; Zaglia, 2013), but the quality of service delivery itself has remained largely unmeasured. This blind spot highlights the need for a framework tailored to VBCs as service environments. We address it by applying SQ–VBC, a SERVPERF-based framework adapted to VBCs and validated in prior research (M. N. Gam & Gam, 2025).

Satisfaction and dissatisfaction: Satisfaction has long been studied as a positive evaluative response to service experiences (Oliver, 1981). In VBCs, satisfaction can be directed not only at the brand but also at the community itself. Dissatisfaction, however, is not simply the absence of satisfaction; it is a distinct negative evaluation with its own antecedents and consequences. Prior research in services has recognized the asymmetry between satisfaction and dissatisfaction, but VBC studies rarely treat them separately. This omission limits understanding of how negative evaluations within communities may undermine loyalty.

Loyalty at community and brand levels: Loyalty is a multidimensional construct with both attitudinal and behavioral aspects (Dick & Basu, 1994). At the brand level, it involves repeat purchase intentions and advocacy, while at the community level, it reflects ongoing participation and support for the VBC itself. Prior service-quality research has shown that satisfaction mediates the relationship between service quality and loyalty (Zeithaml et al., 1996). In the VBC context, however, the mechanisms are less well established: does service quality directly affect brand loyalty, or does its effect flow through community-level attitudes? Addressing this uncertainty requires modeling loyalty simultaneously at the brand and community levels.

Community vs brand loyalty: Research on brand communities has repeatedly shown that loyalty is not monolithic. Muniz & O'Guinn, (2001) argued that identification with the community creates a sense of belonging that can precede brand loyalty. Casaló et al., (2008) demonstrated that trust and commitment in virtual brand communities strengthen both community participation and brand-related behaviors. Dessart et al., (2015) further highlighted the role of engagement, while Zaglia, (2013) showed that social media–based communities foster both types of loyalty in parallel.

Conceptual model
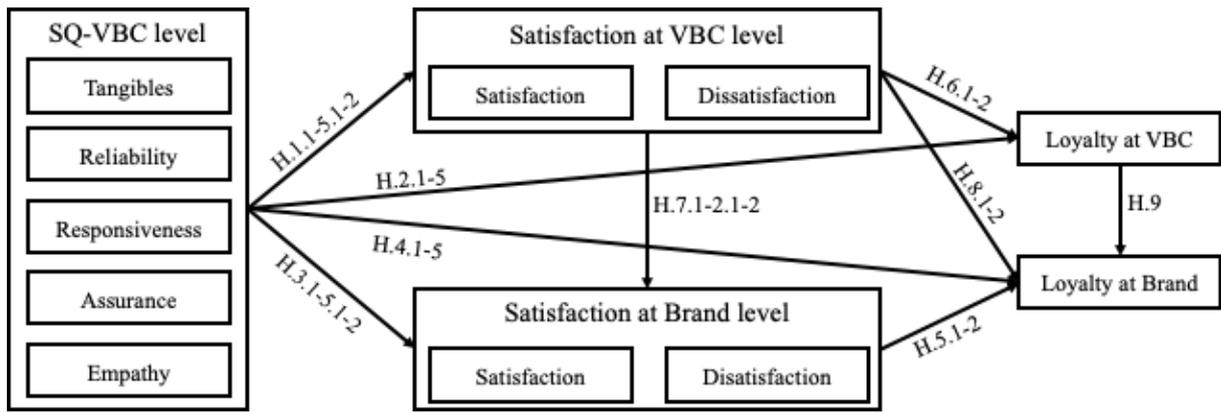
Hypotheses summary: Building on this literature, we are proposing to test a dual-level model where SQ–VBC influences satisfaction and dissatisfaction at both the community and brand levels, which in turn affect loyalty at each level. We expect tangibles and empathy to have the strongest positive effects on satisfaction, assurance to play a central role in reducing dissatisfaction, and effects on brand loyalty to be primarily indirect through community attitudes and loyalty.

III. METHODOLOGY

Data were collected through an online survey of Virtual Brand Community members, yielding 1,430 valid responses across diverse profiles (Churchill, 1979; DeVellis & Thorpe, 2022; Malhotra, Nunan, & Birks, 2020). Service quality was measured using the **SQ–VBC scale** (M. N. Gam & Gam, 2025)**,** which adapts SERVPERF (Cronin & Taylor, 1992) to VBC contexts and operationalizes five dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Kuo, 2003; Parasuraman et al., 1988). Satisfaction and dissatisfaction were assessed separately for the community and the brand (Bitner, 1990; Oliver, 1981), while loyalty was measured at both levels to capture intentions to continue participation and to repurchase or recommend the brand (Casaló et al., 2008; Dick & Basu, 1994; Muniz & O'Guinn, 2001; Zeithaml et al., 1996). Reliability was assessed using Cronbach's α and Composite Reliability, convergent validity using Average Variance Extracted, and discriminant validity using the Fornell–Larcker criterion and HTMT (Fornell, 1982; Henseler, Ringle, & Sarstedt, 2015; Nunnally, 1978). In addition, indicator reliability was examined by checking that all outer loadings exceeded the recommended threshold of 0.70, and that cross-loadings were higher on their intended construct than on other constructs (Sarstedt, Ringle, & Hair, 2017).

The final sample size (N = 1,430) is well above established SEM guidelines, exceeding the "10 times rule" in PLS-SEM (Barclay, Thompson, & Higgins, 1995) as well as broader SEM thresholds (Kline, 2013; Sarstedt et al., 2017). The model was estimated using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is appropriate for complex models with multiple latent constructs, is robust to no-normal distributions, and emphasizes prediction in exploratory contexts (Chin, 1998; Gefen, Straub, & Boudreau, 2000; Henseler, Ringle, & Sinkovics, 2009). Recent work has also shown that PLS-SEM is suitable in confirmatory settings when constructs are well validated and models are theoretically grounded (Hair, 2014; Henseler et al., 2009; Sarstedt et al., 2017). Estimation was performed using SmartPLS 3 (Ringle, Wende, & Becker, 2015). Bootstrapping with 5,000 resamples was applied to test the significance of structural paths and indirect effects (Preacher & Hayes, 2008; Sarstedt et al., 2017).

Ethical considerations. Participation in the study was voluntary and anonymous. Respondents were informed of the academic purpose of the research and gave their consent

before completing the questionnaire. No identifying information was collected, and data were processed and stored in accordance with the General Data Protection Regulation (GDPR) and institutional ethical guidelines.

IV. RESULTS

The measurement model showed acceptable reliability and validity. All constructs exceeded recommended thresholds for Cronbach's alpha and Composite Reliability (> .70; Nunnally, 1978). Average Variance Extracted (> .50; Fornell, 1982), and discriminant validity. All indicator outer loadings were above the recommended threshold of 0.70, confirming item reliability, and cross-loadings showed that each indicator loaded higher on its intended construct than on others, supporting discriminant validity (Sarstedt et al., 2017). In addition, HTMT ratios ranged from 0.42 to 0.79 for all construct pairs, below the conservative threshold of 0.85 (Henseler et al., 2015), further confirming discriminant validity.

Structural model results indicate that service quality (SQ–VBC) significantly influences both satisfaction and dissatisfaction at the community level (Oliver, 1980, 1981). Tangibles and empathy exert the strongest positive effects on community satisfaction, while assurance plays a central role in reducing community dissatisfaction (Cronin & Taylor, 1992). Reliability and responsiveness show weaker but still positive contributions. At the brand level, direct effects of SQ–VBC on satisfaction and dissatisfaction are weaker and less consistent, suggesting that community evaluations play a mediating role (see Appendix table A1). Effect size estimates (f^2) showed that tangibles and empathy made moderate contributions to community satisfaction, while other dimensions exhibited small effects.

As expected, community satisfaction strongly predicts community loyalty, while community dissatisfaction negatively affects it (Bitner, 1990; Oliver, 1980). Similarly, brand satisfaction is a positive driver of brand loyalty, while brand dissatisfaction reduces it. However, what stands out most is the indirect pathway: community satisfaction and community loyalty mediate the effects of service quality on brand loyalty. In other words, the way members evaluate and remain loyal to the community largely determines whether service quality translates into loyalty to the brand. Bootstrapped confidence intervals did not include zero, confirming the robustness of the indirect effects.

Overall, the model explains a substantial proportion of variance in the endogenous constructs: The model explained 63% of the variance in community satisfaction, 61% in community loyalty, and 49% in brand loyalty, indicating substantial explanatory power (Chin, 1998). Predictive relevance (Q^2) values obtained through blindfolding were positive, ranging from 0.31 to 0.52 across the endogenous constructs, confirming the model's predictive relevance (Geisser, 1974; Hair, Hult, Ringle, & Sarstedt, 2017; Sarstedt et al., 2017; Stone, 1974). These Q^2 values were obtained through the blindfolding procedure, which confirmed that the model has predictive relevance beyond mere explanatory power (Hair et al., 2017). The model's SRMR value fell below recommended thresholds, indicating acceptable global model fit. (see Appendix table A2)

V. DISCUSSION

This study set out to examine how service quality in Virtual Brand Communities influences satisfaction, dissatisfaction, and loyalty at both the community and brand levels. The results highlight three key insights.

First, the analysis shows that service quality matters most at the community level. Tangibles and empathy strongly enhance community satisfaction, while assurance reduces dissatisfaction. These findings suggest that members' evaluations of the community environment—platform design, interaction quality, and assurance mechanisms—are the most

immediate outcomes of perceived service quality. Direct effects on brand-level attitudes are comparatively weak, indicating that members rarely transfer perceptions of service quality directly to the brand without first evaluating the community experience (Casaló et al., 2008; Zaglia, 2013).

Second, the results confirm the importance of satisfaction and dissatisfaction as distinct constructs. Community satisfaction positively drives community loyalty, while community dissatisfaction undermines it. Similarly, brand satisfaction promotes brand loyalty, while brand dissatisfaction diminishes it. Treating dissatisfaction as a separate evaluation is thus essential: it captures negative dynamics that cannot be explained by satisfaction alone (Blut et al., 2015; Oliver, 1980; Smith et al., 1999). This reflects the well-documented asymmetry in service evaluations, where negative experiences tend to outweigh positive ones in shaping loyalty-related behaviors.

Third, the findings emphasize the mediating role of the community in building brand loyalty. Service quality enhances brand loyalty primarily through its effects on community satisfaction and community loyalty. In other words, a well-managed VBC creates a loyalty bridge: only when members feel satisfied with and loyal to the community do they transfer these attitudes to the brand (Dessart et al., 2015; Muniz & O'Guinn, 2001).

VI. CONCLUSION

This study contributes to service quality and VBC research by testing a dual-level model of satisfaction, dissatisfaction, and loyalty. The results show that service quality affects brand loyalty primarily through its impact on community attitudes and behaviors. By modeling both positive and negative evaluations at the community and brand levels, the study captures the dual nature of loyalty formation (Casaló et al., 2008; Muniz & O'Guinn, 2001).

From a theoretical perspective, the findings extend service quality research into community contexts, demonstrating the usefulness of SQ–VBC as a measurement tool when applied to dual-level processes (Blut et al., 2015; Cronin & Taylor, 1992; Oliver, 1980). From a managerial perspective, they emphasize that community management is service management: tangible platform design, empathetic interactions, and credible assurance mechanisms are the levers that sustain both community and brand loyalty (Dessart et al., 2015; Zaglia, 2013). At the same time, managers should pay close attention to dissatisfaction signals, since negative experiences can erode loyalty more strongly than positive ones build it (Smith et al., 1999).

Of course, our study has limitations that suggest new directions for future research. The cross-sectional design restricts causal inference, and the focus on a single cultural context limits generalizability. Future work could employ longitudinal data, test cross-cultural variations, and explore how community characteristics (size, moderation style, integration with brand strategy) shape the dual pathways identified here (Usunier, 2011).

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II. APPENDIX

Appendix Table A1. Hypothesis Testing Summary

Hyp.	Path	initial (O)	Mean (M)	p-value	Supported
H1.1.1	**Tangibles -> Satisfaction VBC**	0,310	0,309	**0,000**	Yes
H1.2.1	**Reliabilty -> Satisfaction VBC**	0,086	0,086	**0,036**	Yes
H1.3.1	**Responsiveness -> Satisfaction VBC**	0,109	0,109	**0,000**	Yes
H1.4.1	**Assurance -> Satisfaction VBC**	0,099	0,099	**0,000**	Yes
H1.5.1	**Empathy -> Satisfaction VBC**	0,271	0,272	**0,000**	Yes
H1.1.2	**Tangibles -> Dissatisfaction VBC**	-0,115	-0,112	**0,003**	Yes
H1.2.2	**Reliabilty -> Dissatisfaction VBC**	-0,049	-0,052	**0,260**	**No**
H1.3.2	**Responsiveness -> Dissatisfaction VBC**	-0,047	-0,049	**0,146**	**No**
H1.4.2	**Assurance -> Dissatisfaction VBC**	-0,408	-0,407	**0,000**	Yes
H1.5.2	**Empathy -> Dissatisfaction VBC**	-0,158	-0,158	**0,000**	Yes
H2.1	**Tangibles -> Loyalty VBC**	0,091	0,091	**0,005**	**Yes**
H2.2	**Reliabilty -> Loyalty VBC**	0,009	0,011	**0,765**	**No**
H2.3	**Responsiveness -> Loyalty VBC**	0,044	0,043	**0,075**	**Yes**
H2.4	**Assurance -> Loyalty VBC**	-0,010	-0,009	**0,656**	**No**
H2.5	**Empathy -> Loyalty VBC**	0,056	0,055	**0,058**	**Yes**
H3.1.1	**Tangibles -> Satisfaction**	0,119	0,119	**0,000**	**Yes**
H3.2.1	**Reliabilty -> Satisfaction**	0,026	0,029	**0,440**	**No**
H3.3.1	**Responsiveness -> Satisfaction**	0,045	0,043	**0,066**	**Yes**
H3.4.1	**Assurance -> Satisfaction**	0,004	0,004	**0,840**	**No**
H3.5.1	**Empathy -> Satisfaction**	0,018	0,019	**0,455**	**No**

Hyp.	Path	initial (O)	Mean (M)	p-value	Supported
H3.1.2	**Tangibles -> Dissatisfaction**	-0,001	-0,003	**0,966**	**No**
H3.2.2	**Reliabilty -> Dissatisfaction**	-0,022	-0,023	**0,544**	**No**
H3.3.2	**Responsiveness -> Dissatisfaction**	0,048	0,049	**0,072**	**Yes**
H3.4.2	**Assurance -> Dissatisfaction**	-0,167	-0,167	**0,000**	**Yes**
H3.5.2	**Empathy -> Dissatisfaction**	-0,055	-0,054	**0,046**	**Yes**
H4.1	**Tangibles -> Loyalty**	-0,001	0,000	**0,984**	**No**
H4.2	**Reliabilty -> Loyalty**	0,017	0,018	**0,486**	**No**
H4.3	**Responsiveness -> Loyalty**	0,005	0,005	**0,785**	**No**
H4.4	**Assurance -> Loyalty**	-0,019	-0,019	**0,292**	**No**
H4.5	**Empathy -> Loyalty**	0,011	0,013	**0,579**	**No**
H5.1	**Satisfaction -> Loyalty**	0,374	0,372	**0,000**	**Yes**
H5.2	**Dissatisfaction -> Loyalty**	-0,073	-0,072	**0,022**	**Yes**
H6.1	**Satisfaction VBC -> Loyalty VBC**	0,606	0,608	**0,000**	**Yes**
H6.2	**Dissatisfaction VBC -> Loyalty VBC**	-0,113	-0,111	**0,000**	**Yes**

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Hyp.	Path	initial (O)	Mean (M)	p-value	Supported
H7.1.1	**Satisfaction VBC -> Satisfaction**	0,612	0,611	**0,000**	**Yes**
H7.1.2	**Satisfaction VBC -> Dissatisfaction**	-0,163	-0,164	**0,000**	**Yes**
H7.2.1	**Dissatisfaction VBC -> Satisfaction**	-0,107	-0,107	**0,000**	**Yes**
H7.2.2	**Dissatisfaction VBC -> Dissatisfaction**	0,570	0,569	**0,000**	**Yes**
H8.1	**Satisfaction VBC -> Loyalty**	0,055	0,052	**0,196**	**No**
H8.2	**Dissatisfaction VBC -> Loyalty**	0,017	0,016	**0,476**	**No**
H9	**Loyalty VBC -> Loyalty**	0,475	0,478	**0,000**	**Yes**
H5.1	**Satisfaction -> Loyalty**	0,374	0,372	**0,000**	**Yes**

Source: Authors

Appendix Table A2. R^2 and Q^2 Values

Construct	R^2	Q^2
Community Satisfaction	.63	.31
Community Loyalty	.61	.29
Brand Loyalty	.49	.24