

# Digital vitality assessment: a comparative study of Brajhasha and Kumaoni

Anurag Mittal

Jawaharlal Nehru University, India

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## Abstract

Traditional language vitality metrics are insufficient in the digital era, necessitating new ways to measure digital vitality. This study examines Brajhasha and Kumaoni, two less-resourced Indo-Aryan languages from North India, through the Digital Language Vitality Scale (DLVS) methodology. This study attempts to adapt the DLVS by prioritizing local government/welfare digital services over global platforms. A hybrid methodology – combining community surveys, fieldwork, and objective verification – was utilized to counteract subjective bias and capture functional support. The study validates the utility of the adapted DLVS in understanding how community resilience and collective identity influence digital action, despite technical limitations, and offers actionable insights for future assessments in similar communities worldwide.

Keywords: digital vitality, Indo-Aryan languages, DLVS (Digital Language Vitality Scale), Brajhasha, Kumaoni.

## Introduction

Traditional language vitality methods, emphasizing intergenerational transmission and speaker population, are increasingly insufficient. In the era of rapid digital transformation, a language's ability to sustain a Digital Presence is a critical indicator of its survival and relevance (Kornai, 2013). For languages facing resource constraints and the dominance of superstratum languages, a verifiable measure of digital vitality is essential (Soria, 2017). The framework applied here is the Digital Language Vitality Scale (DLVS) (Ceberio, 2018).

This study examines the digital trajectories of Brajhasha and Kumaoni, two less-resourced Indo-Aryan languages from North India with deep literary traditions. Both face intense pressure from superstratum languages like Hindi and English in high-status domains. Kumaoni benefits from a robust collective linguistic identity, translating to greater awareness and loyalty. Conversely, Brajhasha exhibits a less cohesive identity, resulting from fragmented institutional support and higher stigma (Mittal, 2024). This difference in identity is hypothesized to drive divergent patterns of digital resilience.

The research's primary objective is to provide a structured, comparative assessment using the DLVS. This study refines the methodology for use in multilingual settings, taking into account reliance on government and welfare digital services, as well as local web platforms. By adapting the DLVS, the study

aims to refine a verifiable methodology for future digital assessments in similar low-resource, multilingual contexts.

## Methodology

The DLVS framework (Ceberio, 2018) is used to assess vitality across three core dimensions: digital capacity, which measures technological prerequisites; digital presence and use, which captures actual language use in communication; and digital performance, which assesses the functional availability of digital tools and services.

The DLVS was adapted for this study to accurately reflect low-resourced languages in multilingual settings. Since the original scale prioritizes advanced, often irrelevant, global tools, the refinement focused on modifying the digital performance indicators. This involved substituting reliance on global platforms with metrics for local factors, such as operational dependence on local government, welfare digital services, and regional web platforms.

A hybrid data strategy ensured methodological soundness. Subjective data, measuring actual usage and perceived readiness, was collected via a remote Google Form questionnaire. Furthermore, the study included the interviewer's observations during separate fieldwork for both languages to assess the setting and factors. Primary data was then followed by objective verification during the analysis. This step confirmed scores and avoided inherent subjective bias and overestimation. Raw scores for capacity and performance were checked against objective sources, including internet penetration and the availability of the languages on local and state government welfare service portals. This dual approach ensures DLVS scores are grounded in verifiable evidence.

## Results and analysis

The comparative DLVS assessment reveals distinct digital trajectories for Brajhasha and Kumaoni, despite sharing fundamental technical limitations. The synthesis of scores from the hybrid data strategy is presented in Table 1.

Table 1. Synthesized DLVS Scores and Overall Levels for Brajhasha and Kumaoni (Levels 1–6)

Dimension	Indicator Focus	Brajhasha Score (Level 1-6)	Kumaoni Score (Level 1-6)
Digital Capacity (avg.)	Infrastructure, input, LR support	1.4	1.6
Digital Presence & Use (avg.)	Usage frequency, media content	3.5	3.0

Digital Performance (avg.)	Local services & platforms, official support	2.5	3.5
Overall DLVS Level (Weighted Average)		2.5	2.7

### The shared technical limitation

Analysis of the Digital Capacity dimension confirms a critical constraint faced by both languages. This dimension includes an objective correction on infrastructure: contrary to subjective community reports, government sources indicate Kumaoni (Uttarakhand) benefits from objectively higher internet penetration than Brajbhasha (Uttar Pradesh) (Press Information Bureau, 2024). This objective fact grants Kumaoni a slightly higher capacity score (approx. 1.6) compared to Brajbhasha (approx. 1.4). However, the scores for both are severely limited by the lack of formal Input and Language Resource (LR) Support (Level 1). To illustrate this constraint, one question asked: "*When you type [language] words... do you have to use English (Roman) letters instead?*" The response confirmed that high percentages of speakers (over 67%) rely on romanization or unverified hacks, indicating that despite using the common Devanagari script, the languages lack dedicated digital support. Both are widely viewed primarily as carriers of culture rather than official administrative languages; thus, institutional work is largely unavailable in either.

### Divergence in presence and use

The digital presence and use scores reveal the first major divergence in community action. Brajbhasha exhibits a higher individual usage frequency (score: 3.5), reflecting widespread, high-volume activity in private messaging and public social media. This activity, however, is often fragmented. Conversely, Kumaoni shows a slightly lower usage frequency (score: 3.0). This divergence supports the hypothesis that Brajbhasha's digital activity, though high in volume, is individual-driven and fragmented, whereas Kumaoni's pattern suggests a user base characterized by collective awareness and a focus on content quality, indicating a greater potential for long-term digital resilience.

### The identity-action nexus in performance

The digital performance dimension validates the role of identity and proves the success of the methodology's adaptation. Brajbhasha scores 2.5, confirming the institutional void. Kumaoni, however, achieves a marginally superior score (3.5). This is not due to formal official recognition, as neither language enjoys official status at the state or central government level, and online government services are largely absent for both. Rather, it is attributed to Kumaoni's stronger collective linguistic identity. This robust identity translates into resilient action,

where the community is more effective at converting its awareness into functional support and advocacy. This proactive stance leads to a higher verified presence in local digital initiatives, affirming that digital vitality is determined by how effectively a community converts its collective identity into actionable resilience against shared external limitations.

## Conclusion

The research concludes that assessing digital vitality is critical for understanding linguistic survival and revitalization. The comparative assessment using the adapted DLVS reveals that both Brajbhasha and Kumaoni sit at a Low Emergent/High Dormant Level (approx. score: 2.5-2.7), fundamentally constrained by the absence of formal technological support.

Both languages share a pervasive technical limitation due to the lack of formal Input and Language Resource (LR) Support (Level 1). While Brajbhasha exhibits higher individual usage frequency (Level 4 for Presence), Kumaoni demonstrates greater collective linguistic identity. This identity translates into a more effective digital trajectory (Level 3.5 for Performance), showing successful local innovation and actionable resilience against persistent limitations.

This study demonstrates that the current DLVS design is insufficient for assessing vitality in resource-constrained multilingual communities that rely heavily on government services and local digital platforms. There is a demonstrable need to develop a more robust assessment framework than the current DLVS to capture digital resilience completely. Future efforts should target the integration of foundational functional services, such as speech-to-text and text-to-speech services, and focus advocacy on making e-government and welfare service portals accessible in these languages. This study provides justification for developing a more robust framework tailored to unique resource needs and superstratum dominance.

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