



Behavioral Classification of Mobile Device Users in Digital Communication Contexts: A Classification Analysis of Contemporary Media Consumption

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ABSTRACT

This study investigates patterns of mobile device usage and their association with digital communication behavior through a behavioral segmentation approach. Grounded in the Uses and Gratifications (U&G) theory and the Technology Acceptance Model (TAM), the research classifies users based on multidimensional interaction metrics such as screen time, app usage frequency, and engagement regularity. A descriptive-analytical methodology was employed using a large-scale behavioral dataset, allowing for both empirical clustering and theoretical interpretation. The analysis identified five distinct user categories that reflect varying degrees of digital engagement, ranging from utilitarian users to habitual and emotionally invested users. The findings indicate that motivations such as information-seeking, entertainment, social connectivity, and habitual usage play significant roles in shaping mobile usage patterns.

KEYWORDS

Mobile Engagement, User Segmentation, Uses and Gratifications Theory, Technology Acceptance Model, Digital Behavior, Smartphone Use, Behavioral Typology

INTRODUCTION

The widespread integration of mobile devices into everyday life has significantly reshaped patterns of communication, media consumption, and social interaction in digital environments (Hintze et al., 2017; Silva et al., 2018). As mobile technologies become increasingly ubiquitous, understanding the behavioral heterogeneity of user engagement has emerged as a critical challenge for scholars and practitioners alike. Traditional demographic or platform-based analyses often fail to capture the complexity and variability of mobile media behavior, underscoring the need for behaviorally grounded segmentation approaches that reflect actual usage patterns rather than assumed categories (Chau, 1996; Kalaian et al., 2019; Marangunić & Granić, 2015).

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Existing research on mobile device usage has primarily followed two theoretical trajectories. The uses and gratifications (U&G) framework conceptualizes media users as active agents who selectively engage with content to satisfy cognitive, affective, integrative, and habitual needs (Katz et al., 1973; Rubin, 2009). This motivational perspective has proven particularly effective in explaining diverse patterns of mobile engagement, such as entertainment seeking, social connectivity, and identity reinforcement (Chen et al., 2023; Leung & Wei, 2000). Complementing this approach, researchers who employed the technology acceptance model (TAM) offered a structural explanation for media adoption and sustained use, positing that perceived ease of use and perceived usefulness serve as primary determinants of technology-related behavior (Kelly & Palaniappan, 2023).

Despite the theoretical richness of these frameworks, three critical gaps persist in the literature. First, although extant research has explored either motivational dimensions or technological acceptance factors independently, limited empirical work has integrated these perspectives within a unified analytical framework that explains how user motivations and perceived utility jointly shape behavioral intensity. Second, large-scale studies that develop user typologies often rely on predetermined demographic categories or self-reported measures rather than observed behavioral data, potentially missing emergent patterns that reflect actual usage rather than stated preferences (Hintze et al., 2017; Walelgne et al., 2020). Third, existing classification models frequently employ single-dimension metrics, such as screen time or app frequency, neglecting the multidimensional nature of mobile engagement that encompasses temporal patterns, data consumption, battery usage, and application diversity simultaneously.

In this study, we addressed these gaps by developing a statistically validated behavioral classification of mobile device users based on comprehensive, objectively measured usage data. Drawing on a dataset of 700 smartphone users monitored over a 4-week period, we applied cluster analysis techniques to identify naturally occurring user segments, then interpreted these segments through an integrated theoretical lens that combines motivational and acceptance perspectives. In the study, we sought to find out whether behavioral classifications derived from actual usage patterns align with theoretical predictions about user motivations and technology acceptance, as well as whether such classifications reveal meaningful differences that transcend traditional demographic boundaries.

The significance of this research extends beyond academic classification. Understanding behaviorally distinct user segments enables more precise targeting of digital services, informs user experience design decisions, and provides insights into how different user groups derive value from mobile technologies. By grounding classification in observed behavior rather than assumed categories, and by validating these classifications through rigorous statistical methods, we contribute both methodological innovation and theoretical refinement to mobile communication research.

RESEARCH QUESTIONS

Our study was guided by three research questions (RQs) that emerge from the identified literature gaps and the need for theory-driven behavioral classification:

- RQ1: What distinct behavioral segments emerge when mobile device users are classified based on comprehensive, multidimensional usage metrics, including app engagement time, screen activity duration, data consumption, and device utilization patterns?
- RQ2: To what extent do demographic factors and technological characteristics differentiate behaviorally distinct mobile device user segments, and do behavioral classifications transcend traditional demographic boundaries?
- RQ3: How do the identified user segments align with theoretical predictions derived from U&G theory and the TAM regarding motivational intensity and perceived utility?

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