

Adoption of Digital Marketing Tools by Rural Students in Karnataka: Challenges and Opportunities

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Abstract—Background: The digital transformation of India's economy has made digital marketing skills a key asset for employability and entrepreneurship. However, the digital divide is most pronounced in rural areas, where access often does not equate to strategic adoption. **Objective:** This study quantitatively assesses the level of adoption, identifies key challenges, and explores the relationships between these challenges and the adoption intention of digital marketing tools among students in rural Karnataka. **Methods:** A cross-sectional survey was conducted with 305 students from Government First Grade Colleges in Holenarsipura Taluk, selected via stratified random sampling. Data was collected using a structured questionnaire measuring tool familiarity, challenges (Infrastructural, Skills Deficit, Conceptual Gap, Lack of Support), and adoption intention. Data was analyzed using descriptive statistics, t-tests, ANOVA, and Pearson's correlation in SPSS. **Results:** Findings revealed near-universal smartphone access (98%) but low strategic adoption of professional tools. Challenges were high, with Infrastructural Challenges ($M=4.32$, $SD=0.65$) and Skills Deficit ($M=4.18$, $SD=0.72$) being the most severe. A significant negative correlation was found between Skills Deficit and Adoption Intention ($r = -0.452$, $p < .001$). Commerce students reported significantly lower Skills Deficit than Arts and Science students ($p = .006$). **Conclusion:** A significant gap exists between the possession of digital devices and the strategic use of digital marketing tools among rural students. Empowering this demographic requires targeted educational interventions that address the high cost of data, integrate practical digital skills training into the curriculum, and shift the perception of digital platforms from entertainment to entrepreneurial tools.

Index Terms—Digital Marketing, Rural Students, Digital Divide, Skills Deficit, Quantitative Study, Karnataka, TAM.

I. INTRODUCTION

The Indian economy is rapidly digitizing, with digital marketing becoming an indispensable component of business strategy, career development, and civic engagement. The proliferation of affordable smartphones and mobile data has brought the internet to the doorstep of rural India, promising new avenues for learning and economic participation (Kumar & Dogra, 2021). However, mere access to technology does not guarantee its productive use. A significant "second-level digital divide" persists, referring to the gap in the skills and knowledge needed to use digital technologies effectively (Van Deursen & Van Dijk, 2014).

Rural youth, particularly those in higher education, represent a critical demographic. As students in Government First Grade Colleges, they are often first-generation learners with the potential to drive local economic development. Their ability to leverage digital tools for marketing, communication, and entrepreneurship can be a powerful catalyst for breaking cycles of regional economic disadvantage (Singh & Agarwal, 2020). While studies have explored general digital literacy, there is a paucity of rigorous quantitative research focusing specifically on the adoption of *digital marketing tools* in the unique socio-cultural and infrastructural context of rural Karnataka (Patil & Deshmukh, 2023).

This study is grounded in the Technology Acceptance Model (TAM) (Davis, 1989), which posits that the adoption of a technology is determined by its perceived usefulness and perceived ease of use. In the context of rural students, these perceptions are shaped by formidable external barriers. This research aims to move beyond anecdotal evidence to provide a data-driven analysis of the landscape.

The primary research objectives are:

1. To quantify the level of access to and familiarity with a range of digital marketing tools among rural college students.
2. To measure the perceived levels of infrastructural, skill-based, conceptual, and institutional challenges.
3. To determine if significant differences in challenges exist based on gender and faculty of study.
4. To analyze the relationship between perceived challenges and students' intention to adopt digital marketing tools.

II. LITERATURE REVIEW

The discourse on digital adoption in rural India is multi-layered, encompassing access, capability, and application.

From Access to Usage: While reports from the Telecom Regulatory Authority of India (TRAI, 2023) indicate growing rural internet penetration, usage is often confined to a "walled garden" of communication and entertainment apps like WhatsApp, Facebook, and YouTube (Gupta & Sharma, 2022). This indicates a transition from an access divide to a usage and skills divide.

The Digital Marketing Skills Gap: The demand for digital marketing skills in the job market contrasts sharply with the training available in traditional rural education systems. Research by the World Bank (2020) emphasizes that rural youth often lack the competencies to use digital technology for productive purposes like e-commerce, online freelancing, or digital branding. Patil and Deshmukh (2023) found that even commerce students in semi-urban areas were largely unfamiliar with analytics and search engine optimization (SEO).

Theoretical Framework: The Technology Acceptance Model (TAM) provides a robust framework for understanding technology adoption. However, its core constructs—Perceived Usefulness and Perceived Ease of Use—are heavily influenced by external variables in rural contexts. These include:

- **Infrastructural Barriers:** Unreliable and expensive internet connectivity remains a primary obstacle (Kumar, 2022).

- **Skills Deficit:** A lack of formal training in content creation, data analysis, and strategic planning (Mehta & Srinivasan, 2021).
- **Conceptual Gap:** A perception of digital platforms as purely social spaces rather than professional tools.
- **Lack of Institutional Support:** Curricula in many traditional colleges have been slow to integrate practical digital skills training (Singh & Agarwal, 2020).

This study quantitatively measures these external variables as moderating factors within the TAM framework, providing empirical evidence of their impact on the adoption intention of rural students.

III. METHODOLOGY

3.1. Research Design

A quantitative, descriptive, and cross-sectional research design was employed to systematically collect and analyze numerical data from a sample of the population at a single point in time.

3.2. Population and Sampling

- **Population:** The study population comprised all students ($N \approx 1200$) enrolled in Government First Grade Colleges within Holenarsipura Taluk, Karnataka.
- **Sampling Technique:** A stratified random sampling method was used to ensure proportional representation from the Arts, Science, and Commerce faculties.
- **Sample Size:** Using the Krejcie and Morgan (1970) table, a representative sample size of 291 was determined. To accommodate for potential non-response, 320 questionnaires were distributed.
- **Data Collection:** Paper-based questionnaires were administered in person within college premises over a four-week period to circumvent internet reliability issues.

3.3. Research Instrument

A structured questionnaire was developed with four sections:

1. **Section A: Demographic and Access Profile** (6 items). Collected data on age, gender, faculty, family occupation, smartphone ownership, and primary internet access point.

2. Section B: Digital Tool Familiarity and Usage (12 items). Assessed familiarity with 12 tools (e.g., WhatsApp, YouTube, Instagram, Canva, Google My Business) on a 4-point scale (1=Not Familiar to 4=Very Familiar) and identified their primary use.
3. Section C: Challenges Scale (15 items). Measured perceptions on a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree) across four sub-constructs: Infrastructural Challenges (IC, 4 items), Skills Deficit (SD, 4 items), Conceptual Gap (CG, 4 items), and Perceived Lack of Support (PLS, 3 items).
4. Section D: Adoption Intention (5 items). Measured students' willingness to learn and use digital marketing tools professionally on a 5-point Likert scale.

3.4. Pilot Study and Reliability

A pilot study (n=30) established the instrument's reliability. Cronbach's Alpha for the scales were: Overall Challenges ($\alpha=0.89$), IC ($\alpha=0.82$), SD ($\alpha=0.85$), CG ($\alpha=0.78$), PLS ($\alpha=0.81$), and Adoption Intention ($\alpha=0.87$), indicating high internal consistency.

3.5. Data Analysis

Data from 305 complete responses were analyzed using IBM SPSS Statistics 28. Analysis included:

- Descriptive Statistics: Frequencies, percentages, means (M), and standard deviations (SD).
- Inferential Statistics: Independent samples t-test (for gender), One-way ANOVA (for faculty), and Pearson's Correlation (between challenges and adoption intention).

IV. RESULTS

4.1. Demographic and Access Profile

The sample (n=305) was comprised of 46.6% male and 53.4% female students, primarily from Arts (39.7%), Science (32.1%), and Commerce (28.2%) faculties. A majority hailed from agricultural families (54.1%). Crucially, 98% owned a smartphone, but 96.1% relied exclusively on mobile data for internet access.

4.2. Digital Tool Familiarity and Usage

A stark contrast was observed between familiarity with social apps and professional tools. While familiarity was high for WhatsApp (M=3.98), YouTube (M=3.85), and Facebook (M=3.72), it was

low for professional tools like Canva (M=1.88), Google My Business (M=1.45), and LinkedIn (M=1.32). Usage was predominantly for entertainment and social communication (>90% for social apps), with academic/professional use being a secondary function.

4.3. Analysis of Challenges

The perceived challenges were high across all constructs. Infrastructural Challenges (IC) were the most severe (M=4.32, SD=0.65), followed closely by Skills Deficit (SD) (M=4.18, SD=0.72). The top individual challenge was "Internet data is too expensive for me" (M=4.51).

4.4. Inferential Statistics

A. T-test: Gender and Challenges

No statistically significant differences were found between male and female students on any of the challenge constructs ($p > 0.05$), indicating a uniform experience of barriers across genders.

B. ANOVA: Faculty and Challenges

A one-way ANOVA revealed a statistically significant difference in Skills Deficit (SD) scores based on faculty, $F(2, 302) = 5.128$, $p = .006$. Post-hoc Tukey tests confirmed that Commerce students (M=4.05, SD=0.75) reported significantly lower Skills Deficit than both Arts (M=4.28, SD=0.69) and Science (M=4.31, SD=0.70) students.

C. Correlation: Challenges vs. Adoption Intention

Pearson correlation analysis revealed statistically significant negative correlations between all challenge constructs and Adoption Intention. The strongest negative relationship was between Skills Deficit and Adoption Intention ($r = -0.452$, $p < .001$), indicating that as perceived skills deficit increases, the intention to adopt digital marketing tools decreases markedly.

Challenge Factor	Correlation with Adoption Intention (r)	p-value
Skills Deficit (SD)	-0.452	.000
Conceptual Gap (CG)	-0.381	.000
Infrastructural	-0.287	.001

Challenge Factor	Correlation with Adoption Intention (r)	p-value
Challenges (IC)		
Perceived Lack of Support (PLS)	-0.234	.004

V. DISCUSSION

This study provides quantitative evidence of the critical barriers hindering the strategic adoption of digital marketing tools by rural students in Karnataka. The near-universal access to smartphones (98%) signals a successful first step in bridging the digital divide. However, the findings reveal a more profound "usage divide." The high familiarity with social media platforms does not translate into professional competency, as evidenced by the low mean scores for tools like Canva and LinkedIn. This aligns with Gupta and Sharma's (2022) observation of the "super-app" phenomenon in rural India.

The data identifies Infrastructural Challenges, particularly the high cost of data, as the most severe barrier. This economic constraint directly limits experimentation and skill acquisition. More critically, the Skills Deficit emerged as the strongest psychological barrier, showing the most potent negative correlation with adoption intention. This suggests that even if infrastructure were improved, students would lack the confidence and knowledge to proceed, creating a "capability trap."

The significant difference in Skills Deficit between commerce students and their peers in Arts and Science is noteworthy. It implies that even a tangential exposure to business concepts in the curriculum can marginally improve perceived digital competence, highlighting the potential impact of formal education.

The negative correlations between all challenge factors and adoption intention robustly support the extended TAM model. The external variables of infrastructure, skills, and conceptual understanding significantly dampen the perceived ease of use and

usefulness of digital marketing tools, thereby inhibiting behavioral intention.

VI. CONCLUSION AND IMPLICATIONS

This study concludes that for rural students in Karnataka, the path from digital access to strategic adoption is blocked by a synergistic combination of high data costs, a critical skills deficit, and a conceptual view of digital platforms as non-professional spaces.

6.1. Theoretical Implications

The research strengthens the Technology Acceptance Model by quantitatively validating key external variables specific to the rural Indian context. It demonstrates that Perceived Ease of Use is heavily contingent on affordable infrastructure and foundational skills, while Perceived Usefulness is linked to overcoming a conceptual gap regarding the tool's professional application.

6.2. Practical Implications

- For Educational Institutions: There is an urgent need to revise curricula to include practical, hands-on modules in digital marketing. Colleges should establish digital labs with reliable Wi-Fi and offer certificate courses in social media management, content creation, and e-commerce.
- For Policymakers: Initiatives should focus on providing subsidized data packs for students and investing in robust public Wi-Fi infrastructure in and around educational campuses. State-level skill development missions must prioritize digital marketing skills for rural youth.
- For Community and NGOs: Partnerships with colleges can facilitate workshops, mentorship programs, and local digital entrepreneurship challenges to provide practical experience and shift mindsets.

6.3. Limitations and Future Research

This study is confined to one taluk, limiting generalizability. Future research could employ a longitudinal design to track the impact of interventions. Qualitative follow-up studies are recommended to explore the nuanced "why" behind the quantitative trends. Expanding the research to compare multiple rural taluks across different states would provide a more comprehensive national picture.

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