

Growth Of Internet Penetration and Its Implications for Digital Marketing in India with Reference to Karnataka

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doi.org/10.64643/IJIRTV13I4-208166-459

Abstract—The digital marketing environment of any economy rests on the size, composition and growth of its internet-connected population. This paper examines the growth of internet penetration in India and in the State of Karnataka and draws out its implications for digital marketing practice, with particular attention to micro, small and medium enterprises. The study is descriptive and analytical in design and is based on secondary data drawn from the Telecom Regulatory Authority of India (TRAI) report “The Indian Telecom Services Performance Indicators, January–March 2026”, released on 22 June 2026. The analysis shows that India's internet subscriber base reached 1,092.79 million at the end of March 2026, a year-on-year growth of 12.76 per cent, with 76.59 internet subscribers per 100 population and 97.54 per cent of subscribers on broadband. Karnataka, with 70.18 million internet subscribers, accounts for 6.42 per cent of the national base and records 101.72 internet subscribers per 100 population, well above the all-India figure. However, the State also displays a sharp rural–urban divide (60.42 against 150.41 per 100 population), a quarter-on-quarter decline in rural subscriptions and an unusually high narrowband share of 8.54 per cent. The paper argues that these patterns call for a mobile-first, vernacular, video-led and low-bandwidth-tolerant digital marketing approach for enterprises in Karnataka, and identifies opportunities arising from 5G, fixed wireless access, public Wi-Fi and falling data prices. Four strands of literature on digital marketing frameworks, research evolution, future research agendas and small-business social media use are reviewed to position the findings.

Index Terms—Broadband, Digital marketing, Internet penetration, Karnataka, Micro enterprises, Rural–urban digital divide, TRAI

I. INTRODUCTION

Digital marketing refers to the use of internet-enabled technologies, platforms and data to reach, engage and retain customers [1]. Unlike traditional media, its

reach is bounded not by circulation or broadcast footprint but by the number of people who are online, the quality of their connections and the devices through which they connect. The digital marketing environment of a region is therefore an outcome of its telecommunications infrastructure. Internet penetration, the share of the population with internet access, is the single most important macro variable determining the addressable audience for digital marketing.

India has, over the last decade, emerged as one of the largest internet markets in the world. Low-cost data, inexpensive smartphones, the roll-out of 4G and now 5G networks and public digital infrastructure have together transformed the reach of digital channels, and social media platforms in particular have become a primary point of contact between firms and consumers [2]. For marketers, and especially for micro and small enterprises which lack the budgets for mass media, this has opened a route to customers that was previously unavailable. Karnataka, home to Bengaluru, India's largest technology cluster, and to a diverse economy spread across the Mysuru, Belagavi, Kalaburagi and Bengaluru revenue divisions, offers a useful setting in which to study how national trends play out at the State level. This paper uses the latest quarterly performance indicators published by the Telecom Regulatory Authority of India for the quarter ending 31 March 2026 [3] to describe the growth and structure of internet penetration in India and Karnataka, and to derive implications for digital marketing strategy.

II. REVIEW OF LITERATURE

The literature on digital marketing is extensive. Four works have been selected for review here because together they cover the conceptual framework of digital marketing, the evolution of the field, its

forward-looking research agenda and its application in the small-business context that is most relevant to Karnataka's enterprise base.

A. Kannan and Li (2017): A Framework for Digital Marketing

Kannan and Li [4], in the International Journal of Research in Marketing, propose a comprehensive framework that treats digital marketing as an adaptive, technology-enabled process by which firms collaborate with customers and partners to create, communicate, deliver and sustain value. The framework organises the field around the interaction between the digital environment (search engines, social media, platforms, devices), the firm's marketing actions (product, price, promotion and place decisions in digital form) and marketing outcomes such as customer value, firm value and the flow of data that feeds back into decisions. An important element of the framework is that the environment itself, including consumer access to and behaviour on digital devices, conditions what marketing can achieve. The present paper draws directly on this insight: it treats the growth of internet penetration as the environmental layer of the Kannan-Li framework and asks how changes in that layer alter the options available to marketers in Karnataka.

B. Lamberton and Stephen (2016): Evolution of Digital, social media and Mobile Marketing Research

Lamberton and Stephen [5], writing in the Journal of Marketing, trace the evolution of research on digital, social media and mobile (DSMM) marketing over the period 2000 to 2015. They identify three eras: an early phase in which the internet was seen mainly as a platform for individual expression and search; a second phase focused on the ability of consumers to shape brand meaning through networks and word of mouth; and a third phase centred on the consumer as a source of behavioural data and on the intersection of DSMM with mobile devices. Their review makes two points of relevance to this study. First, mobile connectivity fundamentally changed the character of digital marketing by making the consumer reachable at all times and in specific locations. Second, the research agenda has moved from asking whether digital channels matter to asking how their effects vary across contexts. The data examined here, in which over 94 per cent of Indian internet subscribers access

the internet through mobile devices, show that the Indian market has moved directly into the mobile-centred third era described by these authors.

C. Dwivedi et al. (2021): Future of Digital and Social Media Marketing Research

Dwivedi et al. [6], in a multi-author perspective article in the International Journal of Information Management, set out research propositions for the future of digital and social media marketing. The contributors address artificial intelligence and automation in marketing, the role of influencers and user-generated content, digital content marketing, mobile and location-based marketing, privacy and ethical concerns, and the position of emerging markets.

Several contributors observe that emerging economies with rapidly expanding but uneven internet access present marketing conditions that differ from those assumed in most Western studies, particularly with regard to language, device capability and trust. This observation supports the case for a State-level study of India, since national averages can mask large intra-national differences in access. The paper also emphasises that digital marketing cannot be studied apart from the infrastructural conditions of connectivity, an argument that this study takes as its starting point.

D. Taneja and Toombs (2014): social media and Small Business Marketing

Taneja and Toombs [7], in the Academy of Marketing Studies Journal, examine how social media affects the visibility, viability and sustainability of small businesses. They argue that social media offers small firms a low-cost means of establishing a public presence, building customer relationships and competing with larger rivals, but that the benefits depend on the owner's willingness to devote time to the channel, on the consistency of engagement and on the presence of an online customer base. Their work is especially relevant to Karnataka, where the enterprise base is dominated by micro and small units with limited marketing budgets.

The finding that the return on social media effort is contingent on an existing online audience links the micro-level decisions of small firms to the macro-level question of internet penetration that this paper addresses.

E. Research Gap

The reviewed literature establishes the conceptual link between connectivity and digital marketing and identifies the small-business context as one where that link is especially consequential. What is less developed, particularly for India, is empirical description at the sub-national level using regulatory data. Most Indian discussion of digital marketing relies on national aggregates or on industry estimates. This paper contributes by using official TRAI service-area and State-level data to characterise Karnataka's digital marketing environment and by drawing marketing implications from that characterisation.

III. OBJECTIVES OF THE STUDY

The study has the following objectives:

1. To describe the growth and composition of internet subscriptions in India for the year ending March 2026.
2. To analyse the level, structure and recent growth of internet penetration in Karnataka relative to the national picture and to comparable service areas.
3. To identify the implications of these patterns for digital marketing strategy, with particular reference to micro and small enterprises in Karnataka.

IV. RESEARCH METHODOLOGY

The study is descriptive and analytical in nature and relies entirely on secondary data. The principal source is "The Indian Telecom Services Performance Indicators, January–March 2026" published by TRAI, New Delhi, on 22 June 2026 [3]. This report compiles data submitted by 1,520 internet service providers and

by telecom service providers, and presents internet subscription data both by Licensed Service Area (LSA) and by State/Union Territory. Population-based penetration figures in the report are derived from the projections of the Technical Group on Population Projections for India and States 2011–2036.

Karnataka is a single LSA that is coterminous with the State, so the service-area and State figures coincide. Data have been extracted from the Snapshot, Trends at a Glance, Chapter 1 (Sections B, C and D), Chapter 2 and Annexures 1.5 and 2.1 of the report. Simple growth rates, shares and ratios have been computed by the author from the reported figures. Where the report itself reports a percentage, the report's figure is used. The analysis is confined to the quantitative indicators available in the TRAI report; the implications for digital marketing are drawn analytically by relating these indicators to the frameworks identified in the literature review.

V. DATA ANALYSIS AND DISCUSSION

A. Growth of Internet Penetration in India

India's total internet subscriber base stood at 1,092.79 million at the end of March 2026, up from 969.10 million a year earlier, a growth of 12.76 per cent (Table I). The quarter-on-quarter growth of 6.24 per cent between December 2025 and March 2026 was the fastest of the year. Of the total, 1,046.26 million subscribers (95.74 per cent) access the internet wirelessly and only 46.54 million (4.26 per cent) through wired connections. Mobile handset and dongle-based access alone accounts for 94.18 per cent of all internet subscriptions.

TABLE I. TREND OF INTERNET SUBSCRIBERS IN INDIA, MARCH 2025 TO MARCH 2026 (IN MILLION)

Segment	Mar-25	Jun-25	Sep-25	Dec-25	Mar-26	Y-o-Y growth
Fixed (wired) access internet	41.41	44.71	44.42	45.32	46.54	12.39%
Wireless access internet	927.70	958.14	973.39	983.29	1046.26	12.78%
— Mobile access (handset/dongle)	922.80	949.93	961.07	968.52	1029.15	11.52%
— Fixed wireless access (5G FWA, Wi-Fi, etc.)	4.90	8.21	12.31	14.77	17.11	249.40%
Total internet subscribers	969.10	1002.85	1017.81	1028.61	1092.79	12.76%

Source: TRAI [3], *Trends at a Glance*, Section B.

Two structural features stand out. First, the fastest-growing access mode is fixed wireless access (FWA), which includes 5G fixed wireless broadband; it grew from 4.90 million to 17.11 million subscribers in a

year, a rise of 249.40 per cent. Second, broadband now dominates: 1,065.88 million subscribers (97.54 per cent) are on connections capable of at least 2 Mbps, while narrowband accounts for 26.91 million (2.46 per

cent). Internet penetration reached 76.59 subscribers per 100 population, with a marked gap between urban (126.80) and rural (48.31) areas. Rural subscribers' number 440.87 million, or 40.34 per cent of the total, so the rural internet population is now larger in absolute terms than the entire internet population of most countries. The market is highly concentrated. Reliance Jio holds 47.90 per cent of internet subscribers, Bharti Airtel 35.44 per cent and Vodafone Idea 12.35 per cent; the top five providers together account for 98.63 per cent of the base. Usage intensity is high and rising: total wireless data consumption in the quarter was 77,953 petabytes, average wireless data use was 26.70 GB per data subscriber per month, and 5G already carried 42.75 per cent of wireless data traffic against 57.09 per cent for 4G. At the same time, the average revenue realized per GB of wireless data fell from Rs. 9.11 in March 2025 to Rs. 7.51 in March 2026, a decline of 17.56 per cent (Table II).

TABLE II. INDICATORS OF INTERNET USAGE AND MARKET STRUCTURE IN INDIA, QUARTER ENDING MARCH 2026

Indicator	Value
Broadband subscribers (≥ 2 Mbps)	1,065.88 mn (97.54%)
Narrowband subscribers	26.91 mn (2.46%)
Internet subs per 100 population: Total / Urban / Rural	76.59 / 126.80 / 48.31
Wireless data subscribers	1,026.75 mn
Total wireless data usage in the quarter	77,953 PB (Q-o-Q +6.31%)
Share of 4G / 5G in wireless data usage	57.09% / 42.75%
Avg. wireless data usage per subscriber per month	26.70 GB
Avg. revenue per GB (Mar-25 $\rightarrow$ Mar-26)	Rs. 9.11 $\rightarrow$ Rs. 7.51
Market share: Jio / Airtel / Vi	47.90% / 35.44% / 12.35%
Public Wi-Fi hotspots (all India)	56,222

Source: TRAI [3], Snapshot, Chapter 1 Section D, Chapter 2 Table 2.7.

B. Internet Penetration in Karnataka

Karnataka had 70.18 million internet subscribers at the end of March 2026, representing 6.42 per cent of the

national base and placing the State sixth among the 22 licensed service areas by subscriber count, after Maharashtra, Uttar Pradesh (East), Bihar, Andhra Pradesh and Madhya Pradesh.

Table III presents the composition and recent growth of the State's base.

TABLE III. INTERNET SUBSCRIBER BASE IN KARNATAKA, DECEMBER 2025 AND MARCH 2026 (IN MILLION)

Category	Dec-25	Mar-26	Change	Growth
Rural internet subscribers	22.69	22.55	-0.14	-0.62%
Urban internet subscribers	42.47	47.62	+5.15	+12.13%
Total internet subscribers	65.16	70.18	+5.02	+7.69%
— of which broadband	—	64.20	—	—
— of which narrowband	—	5.99	—	—

Source: TRAI [3], Tables 1.37 and 1.38; changes and growth computed by the author.

Karnataka's internet base grew by 7.69 per cent in a single quarter, faster than the national rate of 6.24 per cent. However, the growth was entirely urban. Urban subscriptions rose by 5.15 million (12.13 per cent) while rural subscriptions actually declined by 0.14 million. Urban subscribers now constitute 67.85 per cent of the State's internet population, compared with 59.66 per cent nationally.

The State also shows a notably high narrowband share: 5.99 million subscribers, or 8.54 per cent of the total, are on narrowband connections, against a national share of 2.46 per cent. Most of these narrowband subscriptions (4.92 million) are urban.

TABLE IV. INTERNET PENETRATION IN KARNATAKA AND INDIA, QUARTER ENDING MARCH 2026 (SUBSCRIBERS PER 100 POPULATION)

Area	Rural	Urban	Total
Karnataka	60.42	150.41	101.72
India	48.31	126.80	76.59
Karnataka advantage (percentage points)	+12.11	+23.61	+25.13

Source: TRAI [3], Tables 1.40 and 1.41; differences computed by the author.

In terms of penetration, Karnataka is well ahead of the country as a whole (Table IV). With 101.72 internet subscribers per 100 population, the State has, in aggregate, more internet subscriptions than people, reflecting multiple SIM and device ownership in urban areas. Urban penetration of 150.41 per 100 population is among the highest in the country for a large State, while rural penetration of 60.42 exceeds the national rural figure by 12 percentage points. Nonetheless, the ratio of urban to rural penetration in Karnataka is 2.5 to 1, a wider internal divide than in the country as a whole.

TABLE V. KARNATAKA COMPARED WITH
SELECTED SERVICE AREAS, QUARTER
ENDING MARCH 2026

Service area	Subs (mn)	Rural /100	Urban /100	Total /100
Maharashtra (incl. Mumbai)	129.50	55.77	142.44	98.87
Uttar Pradesh (E + W)	146.42	39.56	110.77	57.42
Bihar	89.56	37.03	129.09	51.65
Andhra Pradesh (incl. Telangana)	77.14	60.97	113.05	83.52
Madhya Pradesh (incl. Chhattisgarh)	76.49	38.34	124.10	63.22
Karnataka	70.18	60.42	150.41	101.72
Tamil Nadu (incl. Chennai)	69.01	57.57	110.70	87.01
Gujarat	63.70	58.49	108.86	84.15
Kerala	35.62	240.62	66.00	98.18
All India	1092.79	48.31	126.80	76.59

Source: TRAI [3], Table 1.40. Kerala's rural-urban split is affected by its distinctive census classification of settlements.

Table V shows that Karnataka combines a large base with high penetration. Only Maharashtra and Kerala among the large service areas approach Karnataka's overall penetration, and none of the comparison States exceeds its urban penetration. Andhra Pradesh, Tamil Nadu and Gujarat, the other southern and western

industrial States, have similar rural penetration to Karnataka but considerably lower urban penetration, which suggests that the Bengaluru metropolitan region contributes disproportionately to the State's figures.

TABLE VI. OTHER INDICATORS OF THE
DIGITAL ACCESS ENVIRONMENT IN
KARNATAKA, QUARTER ENDING MARCH
2026

Indicator	Karnataka	All India
Wireless (mobile + FWA) subscribers	89.90 mn	1,282.33 mn
Wireless tele-density: Total / Urban / Rural	130.30 / 195.58 / 74.94	89.88 / 143.10 / 59.89
Wireline subscribers	6.14 mn (12.73% of India)	48.25 mn
Wireline tele-density	8.90	3.38
Public Wi-Fi hotspots / access points	3,395 / 13,279	56,222 / —
Unique public Wi-Fi users in the quarter	1,03,542	—
Data consumed on public Wi-Fi in the quarter	292 TB	8,576 TB
Monthly ARPU, wireless (Rs.)	206	196.04
Share of prepaid in wireless subscribers	84.22%	—
Minutes of use per subscriber per month	960	1,017

Source: TRAI [3], Tables 1.17–1.20, 1.27–1.31, Annexure 1.5 and Annexure 2.1.

The wider access environment reinforces the picture (Table VI). Karnataka's wireless tele-density of 130.30 is far above the national 89.88, and the State holds 12.73 per cent of India's wireline connections, a share almost doubles its share of internet subscribers, reflecting the depth of fibre-to-the-home in Bengaluru. Monthly ARPU of Rs. 206 exceeds the national average, and the prepaid share of 84.22 per cent is lower than in most service areas, indicating a comparatively affluent, postpaid-heavy subscriber base.

The State has 3,395 public Wi-Fi hotspots with 13,279 access points that served over one lakh unique users in the quarter.

VI. IMPLICATIONS FOR DIGITAL MARKETING

Read through the framework of Kannan and Li [4], the figures above describe the environmental layer within which marketers in India and Karnataka operate. The following implications follow.

A. Mobile-First is No Longer a Choice but the Default

With 94.18 per cent of Indian internet subscribers accessing the internet through mobile handsets, every element of the digital marketing mix, from website design and payment flows to advertising creative, must be designed for a small touch screen first. This corresponds to the third, mobile-centred era of digital marketing identified by Lamberton and Stephen [5]. For micro enterprises in Karnataka, the practical consequence is that a mobile-optimised presence on messaging platforms, maps listings and social media will reach more customers than a desktop-oriented website.

B. Rising Data Consumption Favours Video and Rich Media

Average monthly usage of 26.70 GB per subscriber, the 42.75 per cent share of 5G in data traffic and the fall in the cost per GB to Rs. 7.51 together mean that consumers can watch video content without concern about data cost. Short-form video, live commerce and product demonstrations are therefore viable formats even for small firms. Dwivedi et al. [6] identify content marketing and influencer-led communication as central to the future of the field; the Indian usage data indicate that the infrastructure for such content is already in place.

C. Karnataka Offers a Large, High-Penetration, High-Value Audience

With 70.18 million subscribers, penetration of 101.72 per 100 population, above-average ARPU and a comparatively high postpaid share, Karnataka is one of the most attractive State-level digital markets in India. The urban base of 47.62 million, concentrated in the Bengaluru region but also including the cities of Mysuru, Mangaluru, Hubballi-Dharwad and Belagavi, supports precise geographic and demographic targeting. Local enterprises can use location-based advertising and search to reach customers within their trading area, a capability that Taneja and Toombs [7] show is decisive for small-business visibility.

D. The Rural Market Requires a Different Approach

The decline in Karnataka's rural internet subscriptions during the quarter, and the 2.5-to-1 gap between urban and rural penetration, caution against assuming that digital reach in the State is uniform. Rural penetration of 60.42 per 100 population still implies a large rural audience of 22.55 million, but marketing to it must account for lower device capability, greater price sensitivity, a preference for Kannada-language content and heavier reliance on voice, audio and messaging rather than web browsing. A blended strategy that combines digital channels with local intermediaries, dealers and word of mouth is likely to be more effective in the districts of the Mysuru and Kalaburagi divisions than a purely digital one.

E. Narrowband Users Should Not Be Ignored

Karnataka's narrowband share of 8.54 per cent, more than three times the national average, means that roughly six million subscribers in the State are on connections below 2 Mbps. Marketing content that assumes high-speed connectivity, such as auto-playing video and image-heavy pages, will fail to load for this segment. Lightweight formats, text and image messaging and progressive web design remain relevant.

F. New Access Modes Create New Touchpoints

The rapid growth of fixed wireless access, the expansion of fibre-to-the-home and the network of public Wi-Fi hotspots create household and public-space touchpoints that complement personal mobile screens. Connected televisions and home broadband support longer-form content and family-level purchase decisions, while public Wi-Fi in transport hubs, markets and campuses offers opportunities for location-specific promotion. Marketers who plan only for the individual smartphone will miss these channels.

G. Platform Concentration and Dependence

The concentration of 98.63 per cent of internet subscribers with five providers, and the dominance of a small number of global platforms for search, social media and messaging, mean that small firms depend on channels whose rules, algorithms and prices they do not control. Digital marketing strategy for micro enterprises should therefore diversify across owned channels (customer databases, messaging lists) as well

as rented platform reach, a point consistent with the sustainability concern raised by Taneja and Toombs [7].

VII. LIMITATIONS OF THE STUDY

The study relies on a single quarterly report and describes subscriptions rather than users; because of multiple SIM and device ownership, subscriber counts overstate the number of distinct individuals online, especially in urban areas. Rural and urban classifications follow the service providers' reporting, and the population denominators are projections rather than census counts. The analysis is descriptive and does not test causal relationships between connectivity and marketing outcomes. Finally, the report does not provide district-level data, so intra-State variation within Karnataka could not be examined directly.

VIII. CONCLUSION

India's internet subscriber base crossed 1,092 million in March 2026 and continues to grow at over 12 per cent a year, overwhelmingly through mobile broadband. Karnataka, with 70.18 million subscribers and 101.72 subscriptions per 100 population, is a leading State market in both size and depth of penetration, and its subscribers spend more and use postpaid services more than the national average. These conditions make digital marketing not merely feasible but essential for enterprises in the State. At the same time, the analysis reveals a widening urban-rural divide, a decline in rural subscriptions in the latest quarter and a sizeable narrowband segment, which together warn against a single, uniform digital approach.

For micro and small enterprises in Karnataka, the evidence supports a strategy that is mobile-first, video-capable, Kannada-inclusive and tolerant of low bandwidth, that exploits location-based targeting in urban centres and blends digital with traditional intermediaries in rural districts, and that builds owned customer channels alongside platform advertising. Future research should extend this analysis to district-level data as they become available, and should test empirically, through surveys of enterprises, how the connectivity environment described here shapes the adoption and effectiveness of digital marketing practices.

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