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Digital Inclusion Through Submarine Fiber Optic Connectivity: The Impact on Consumer Behaviour in Lakshadweep

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Abstract

This study explores the relationship between digital inclusion and the effectiveness of digital marketing strategies in shaping consumer buying behaviour in Lakshadweep, an island region in India. With the introduction of high-speed internet connectivity, Lakshadweep residents gained improved access to digital platforms, including social media, websites, and YouTube. The study utilizes the Chi-square test to analyse the impact of different digital marketing strategies such as social media marketing, email marketing, online advertising, influencer endorsements, and content marketing on

consumer behaviour. The results show that digital inclusion has significantly enhanced the reach of digital marketing strategies, with social media marketing, online advertising, and influencer endorsements proving to have the most substantial influence on consumer buying behaviour. Conversely, email marketing and content marketing showed minimal impact. The study concludes that digital marketing, supported by increased digital access, provides businesses with new opportunities to engage consumers in remote areas, highlighting the need for tailored marketing strategies to capitalize on the growing digital engagement in Lakshadweep.

Keywords: Content Marketing, Consumer Buying Behaviour, Digital Inclusion, Digital Marketing Strategies, Influencer Endorsements

I. INTRODUCTION

The Indian Union Territory of Lakshadweep, an archipelago comprising different islands, is isolated from the mainland by more than 210 nautical miles of open sea. The project of providing connectivity between Kochi and Lakshadweep Islands through Submarine Optical Fibre Cable (OFC) was approved in 2020 and completed it ahead of schedule in June 2023. The submarine cable system offers an initial capacity of 2x100 Gbps, expandable up to 1,600 Gbps per fibre pair. It connects Kochi with 11 Lakshadweep islands, providing ample bandwidth for voice and data connectivity.

Digital inclusion ensures that all individuals, regardless of socioeconomic status, geographic location, or other factors, have access to and can use digital technologies effectively. It includes making digital tools, devices, and the internet accessible, affordable, and usable for everyone, particularly underserved or marginalized communities. Digital marketing, on the other hand, refers to the strategies and tactics businesses or organizations use to promote their products, services, or brand online. It encompasses a variety of channels and tools to reach potential customers, such as social media, search engines, email, websites, content marketing, and more. The goal of digital marketing is to increase brand awareness, drive sales, generate leads, and improve customer engagement by digital platforms.

The Digital Inclusion through Submarine Fiber Optic Connectivity has significantly enhanced internet connectivity in remote regions. By enabling faster and more reliable internet access, submarine optical fibre technology has opened new opportunities for digital marketing, e-commerce, and other online services, thereby influencing the way consumers in Lakshadweep engage with digital platforms. This study examines the extent of digital inclusion in Lakshadweep and analysing the shifts in local consumer behaviour resulting from improved connectivity.

Review of Literature

The growing use of digital platforms like social media, email, and online advertising has become essential in shaping consumer decisions. With a high-speed and stable internet connection, digital marketing can operate more efficiently, significantly transforming consumer buying behaviour by providing greater access to a wide range of products and options for consumers to explore and purchase. The impact of digital marketing on consumer behaviour is evident in various regions and demographics, as businesses leverage these platforms to tailor their marketing strategies to specific audiences. Previous studies delve into the specific impacts of digital marketing on consumer buying behaviour.

Digital inclusion allows businesses to reach a broader audience by ensuring that digital marketing efforts are accessible to all, including marginalized groups (Roy, 2024). By incorporating diversity, equity, and inclusion (DEI) principles, digital marketing campaigns can resonate more effectively with diverse consumer bases, enhancing engagement and brand loyalty (Denga, 2023).

Research by Punita, Ganesh, Nayak, Pasupuleti, and Rekha (2024) explains how digital marketing channels such as digital ads, social media, blogs, and online reviews play a pivotal role in shaping consumer decisions and found the significant influence of digital marketing on consumer purchasing behaviour. These platforms not only facilitate direct engagement with consumers but also enhance brand awareness, build trust, and drive purchase intentions. The study illustrates that businesses leveraging these digital tools can effectively influence consumer behaviour, leading to an increase in sales and market reach. Xuejun Wu (2024) explores how the rise of digital tools has transformed consumer purchasing behaviours, making them more complex and diversified. The research highlights the growing need for businesses to understand these evolving consumer behaviours to adapt their marketing strategies effectively. With consumers engaging through various digital touchpoints, the path to purchase has become more intricate, requiring companies to stay attuned to these changes in order to remain competitive.

Digital marketing has a profound impact on consumer buying behaviour by leveraging various online tools to engage directly with consumers. Social media platforms play a significant role in this process, enabling businesses to interact with consumers and stimulate interest, ultimately driving purchases (Yadav et al., 2024; Abirami, 2024). Additionally, the study states the email marketing and online advertisements are effective in delivering personalized content, which enhances consumer engagement and

influences purchasing decisions. Furthermore, video content and influencer endorsements have emerged as powerful tools in digital marketing, as they can significantly sway consumer preferences and encourage purchases (Arhaan, A, Patel.2024). Digital marketing has positively influenced consumer buying behaviour by providing more options and convenience, it also presents challenges such as information overload and reduced brand loyalty.

Consumers may become overwhelmed by the sheer volume of digital content, leading to decision fatigue. Additionally, the ease of switching between brands online can diminish traditional brand loyalty, posing a challenge for businesses to maintain a loyal customer base(Rahmani & Sarma, 2023).

Objectives of the Study

1. To examine the extent to which digital inclusion has enhanced digital marketing through the introduction of submarine optical fiber connectivity.
2. To analyze the impact of digital marketing on consumer behaviour in Lakshadweep enabled by submarine optical fiber technology.

Research Methodology

To conduct the study, a carefully designed questionnaire was used to collect essential data from 380 participants. A multi-stage sampling technique was employed to select a diverse group of respondents. The collected data was meticulously analysed using advanced tools like Jamovi 2.3.16 and Microsoft Excel. The reliability was evaluated for the data set through Cronbach's alpha and was found to be accepted at .72 ($\alpha > .7$). Hence it was concluded that non-response had no major bias in the items for construct measurement. The Chi-square test was conducted to explore the relationship between digital inclusion and digital marketing, as well as the impact of digital marketing on consumer buying behaviour. This approach allowed for a deeper understanding of the connections between these variables.

Hypotheses:

Based on the literature review and the stated objectives of the study, the following hypotheses were formulated:

- **H1:** There is a significant association between digital inclusion and the effectiveness of digital marketing strategies.
- **H2:** There is a significant association between social media marketing and consumer buying behaviour.

- **H3:** There is a significant association between email marketing and consumer buying behaviour.
- **H4:** There is a significant association between online advertising and consumer buying behaviour.
- **H5:** There is a significant association between influencer endorsements and consumer buying behaviour.
- **H6:** There is a significant association between content marketing (blogs/reviews) and consumer buying behaviour.

Data Analysis and Discussion

Demographic Profile: The majority (56.7%) of the total respondents are male and remaining 43.3% are female, 39.2% of the Respondents belong to the 36 – 45 age categories, most of the respondents are married and majority of them are post graduated. With respect to the monthly personal income of the respondents, 48.3% of the respondents are between the income levels of 35001 and 60000, and Most (32.5%) of the respondents belongs to science department.

Table 1:Chi-Test Result

Hypothesis	P-Value Sig.
Digital Inclusion →Digital marketing	0.001**
Social media marketing→Consumer buying behaviour	0.000**
Email marketing →Consumer buying behaviour	0.235
Online advertising→Consumer buying behaviour	0.039*
Influencer endorsements →Consumer buying behaviour	0.034*
Content marketing→consumer buying behaviour	0.178

(*Significant @5% Level, **Significant at 1%)

Source: Primary Data.

Digital inclusion and the effectiveness of digital marketing strategies: Digital inclusion has enhanced new market opportunities, shifting focus from traditional marketing methods to innovative digital strategies. Unlike traditional marketing, which relies on physical presence and local reach, digital marketing allows businesses to tap into broader audiences in real-time. This has enabled businesses to overcome geographical barriers and engage with consumers in remote areas like Lakshadweep, fostering growth in previously untapped markets. The study explores the association

between digital inclusion and the effectiveness of digital marketing strategies. As internet access and connectivity become more stable and improved access to internet, digital inclusion plays a crucial role in determining the reach and impact of various digital marketing strategies.

Hypothesis 1

H0: There is a significant association between digital inclusion and the effectiveness of digital marketing strategies.

H1: There is a significant association between digital inclusion and the effectiveness of digital marketing strategies.

The Chi-square test result shows a p-value of 0.001, which is less than the conventional significance level of 0.05. This indicates the rejection Null hypothesis and a significant association between digital inclusion and the effectiveness of digital marketing strategies.

The result highlighting that improved digital inclusion in Lakshadweep, enabled by high-speed internet connectivity, has greatly influenced the effectiveness of digital marketing. With the internet being the primary means for people in Lakshadweep to connect with the outside world, the availability of high-speed connections has significantly increased the use of digital platforms such as social media, websites, and YouTube. These platforms have become crucial for accessing market updates, exploring products, and staying informed about global trends.

These findings underscore the transformative potential of digital inclusion in expanding market access, promoting digital literacy, and enabling residents to participate actively in the global digital economy while creating new avenues for businesses to thrive.

Social media marketing and consumer buying behaviour: In Lakshadweep, where internet connectivity serves as the primary link to the global marketplace, the impact of social media marketing is particularly pronounced. High-speed internet has amplified the usage of platforms like Facebook, Instagram, and WhatsApp, enabling businesses to reach consumers more effectively. These platforms have become essential tools for promoting products, building consumer trust, and fostering interactive experiences that drive purchase intent.

Hypothesis 2

H0: There is no significant association between social media marketing and consumer buying behaviour.

H1: There is a significant association between social media marketing and consumer buying behaviour.

The Chi-square test result shows a p-value of 0.000, which is well below the conventional significance level of 0.05. The result demonstrates a highly significant relationship between social media marketing and consumer buying behaviour by rejecting Null hypothesis.

This indicates that social media platforms play a pivotal role in influencing purchasing decisions by increasing consumer engagement, promoting brand visibility, and encouraging product exploration. The findings highlight that social media marketing, supported by enhanced digital inclusion, significantly shapes consumer behaviour in remote areas like Lakshadweep. Businesses leveraging these platforms can capitalize on the opportunity to connect with a digitally engaged audience, optimize their marketing strategies, and drive sales growth in this unique market.

Email marketing and consumer buying behaviour: Email marketing, while traditionally a reliable tool for delivering personalized content, may face challenges in regions like Lakshadweep due to limited engagement with email platforms and a stronger preference for more dynamic and visual digital mediums such as social media.

Hypothesis 3

H0: There is no significant association between email marketing and consumer buying behaviour.

H1: There is a significant association between email marketing and consumer buying behaviour.

The result indicates no statistically significant relationship between email marketing and consumer buying behaviour. This suggests that email marketing may not have a strong or direct influence on consumer purchasing decisions in the context of Lakshadweep. One possible explanation is that the adoption and effectiveness of email marketing in remote regions like Lakshadweep could be limited due to factors such as lower engagement with email platforms, a preference for more interactive and visual marketing mediums like social media or limited digital literacy in navigating email-based promotions.

The findings suggest that while email marketing remains a valuable tool in broader digital marketing strategies, it may not be the most effective method for influencing consumer behaviour in regions where social media and other digital platforms dominate consumer engagement. Businesses targeting consumers in Lakshadweep may need to prioritize strategies that align more closely with the local population's digital habits and preferences.

Online advertising and consumer buying behaviour: In Lakshadweep, where digital platforms are a primary means of market interaction due to high-speed internet connectivity, online advertising has likely gained prominence. Targeted ads on websites, apps, and search engines can capture the attention of the local population, offering them access to a wider range of products and services.

Hypothesis 4

H0: There is no significant association between online advertising and consumer buying behaviour.

H1: There is a significant association between online advertising and consumer buying behaviour.

The Chi-square test result shows a p-value of 0.039, which is below the conventional significance level of 0.05 and it indicates a statistically significant relationship between online advertising and consumer buying behaviour. This suggests that online advertisements play an important role in influencing consumers' purchase decisions by enhancing brand visibility, promoting product exploration, and providing targeted promotional content.

Influencer endorsements and consumer buying behaviour: The social media usage has surged due to improved internet connectivity, influencer marketing has become an effective tool for engaging local consumers. Influencers, through their relatable content and strong personal connections with followers, can drive product awareness and encourage purchase intent among their audience.

Hypothesis 5

H0: There is no significant association between influencer endorsements and consumer buying behaviour.

H1: There is a significant association between influencer endorsements and consumer buying behaviour.

The hypothesis tests whether there is a significant association between influencer endorsements and consumer buying behaviour. The Chi-square test result shows a p-value of 0.034, which is below the conventional significance level of 0.05. The findings highlight the growing importance of influencer marketing as a digital strategy in regions like Lakshadweep. Businesses can leverage influencer endorsements to build trust and appeal to the local population, making it an integral part of their digital marketing efforts.

Content marketing (blogs/reviews) and consumer buying behaviour: Content marketing is a key element in broader digital strategies, businesses targeting Lakshadweep consumers may need to adapt their approach, integrating content marketing with other impactful strategies like video marketing or influencer campaigns to enhance its effectiveness in influencing buying behaviour.

Hypothesis 6

H0: There is no significant association between content marketing and consumer buying behaviour.

H1: There is a significant association between content marketing and consumer buying behaviour.

The hypothesis tests whether there is a significant association between content marketing and consumer buying behaviour. The results show a p-value of 0.178, which is greater than the conventional significance level of 0.05. So, the null hypothesis is accepted. The result indicates that there is no statistically significant association between content marketing and consumer buying behaviour. This suggests that content marketing, such as blogs, reviews, and other informational materials, may not have a direct or strong influence on purchasing decisions in the context of Lakshadweep.

II. CONCLUSION

This study examined the impact of digital inclusion and digital marketing strategies on consumer buying behaviour in Lakshadweep, with a particular focus on the influence of various digital marketing tactics, such as social media marketing, email marketing, online advertising, influencer endorsements, and content marketing. The findings revealed that digital inclusion, facilitated by high-speed internet access, has significantly enhanced the reach and effectiveness of digital marketing strategies in the region. Specifically, social media marketing, online advertising, and influencer endorsements were found to have a strong influence on consumer buying behaviour, whereas email marketing and content marketing showed limited effectiveness. These results emphasize the growing importance of digital platforms in shaping consumer decisions and highlight the need for businesses to tailor their marketing strategies to the digital habits of consumers in remote areas like Lakshadweep. The findings also underscore the critical role of digital inclusion in enabling consumers to access and interact with digital content, thereby creating new opportunities for businesses to connect with previously underserved markets.

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