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# Comparative Analysis of Traditional and Digital Marketing Tools in the Pharmaceutical Industry: Effectiveness, Reliability, and Cost-Effectiveness

Mrs. Asma Jasmine, Dr. Chokkamreddy Prakash

Assistant Professor, School of Management Studies, Guru Nanak Institutions Technical Campus, Hyderabad, India

Assistant Professor, School of Management Studies, Guru Nanak Institutions Technical Campus, Hyderabad, India

**ABSTRACT:** This study examines the effectiveness and reliability of traditional versus digital marketing tools in the pharmaceutical industry. Using descriptive statistics and ANOVA, we analyzed data on awareness creation, influence on prescribing decisions, reliability of information, and cost-effectiveness of marketing methods. Findings reveal that while traditional and digital marketing methods are comparable in their ability to create awareness, neither is deemed highly effective. Traditional methods have a marginally lower impact on prescribing decisions compared to digital tools. Both methods are considered moderately reliable, but cost-effectiveness is rated low for both, with traditional marketing showing slightly better cost-effectiveness. ANOVA results confirm that digital marketing tools have a significantly greater impact on product awareness than traditional methods, highlighting the need for pharmaceutical companies to leverage digital strategies.

**KEYWORDS:** Traditional Marketing, Digital Marketing, Pharmaceutical Industry, Marketing Effectiveness, Awareness Creation, Cost-Effectiveness

## I. INTRODUCTION

In the pharmaceutical industry, effective marketing strategies are crucial for creating awareness, influencing prescribing decisions, and achieving cost efficiency. Traditional marketing methods, such as print advertising, medical conferences, and direct sales, have long been employed to promote pharmaceutical products. These methods are often valued for their established presence and personal engagement with healthcare professionals (Kumar et al., 2016). The conceptual study examines the transformative effects of online shopping on traditional retail businesses and customer behavior Prakash, C., & Kumar, (2016) The paper discusses how the rise of e-commerce has altered consumer preferences and business practices, including changes in shopping habits, retail strategies, and the competitive landscape. It highlights the benefits and challenges faced by retailers in adapting to the online shopping trend, and the implications for both businesses and customers. However, with the rapid advancement of digital technologies, digital marketing tools have emerged as a significant alternative, offering innovative approaches such as social media advertising, email campaigns, and targeted online content (Chaffey, 2020).

The effectiveness of traditional versus digital marketing tools in creating awareness about pharmaceutical products remains a topic of considerable debate. While traditional marketing methods are perceived as slightly effective, they face challenges related to cost and reach (Smith & Zook, 2016). On the other hand, digital marketing tools are praised for their ability to target specific audiences, measure engagement, and adapt strategies in real-time (Ryan & Jones, 2018). Despite their advantages, digital methods also face criticisms regarding the reliability of information and overall cost-effectiveness (Tuten & Solomon, 2017).

## II. REVIEW OF LITERATURE

### 1. Traditional Marketing Methods

Traditional marketing methods, such as print advertisements, television, and radio, have long been used to create awareness about pharmaceutical products. Research shows that traditional marketing methods, while effective in reaching broad audiences, may not always deliver high levels of engagement or impact compared to modern approaches. For instance, studies by Dahlen and Rosengren (2005) indicate that traditional marketing can create significant brand awareness but often lacks the precision of targeting that digital methods offer. Additionally, traditional marketing channels have been criticized for their relatively high costs and limited ability to provide measurable outcomes (Kotler & Keller, 2016). Anusha, P. et al. This paper explores the potential of Internet of Things

(IoT) technologies in creating hybrid learning environments in education. It discusses how IoT can support innovative and sustainable learning practices by integrating digital tools with traditional teaching methods. The study highlights the benefits of IoT in enhancing student engagement, facilitating personalized learning, and improving educational outcomes for both students and teachers.

## **2. Digital Marketing Tools**

Digital marketing tools, including social media, email marketing, and search engine optimization, have emerged as powerful alternatives to traditional methods. Digital marketing is noted for its ability to provide targeted communication, real-time analytics, and higher engagement levels (Chaffey & Ellis-Chadwick, 2019). This study explores how sentiment expressed in social media content influences user engagement. By conducting a comparative analysis, the authors investigate different types of sentiments—positive, negative, and neutral—and their relative impact on user interactions such as likes, shares, and comments. The findings suggest that positive sentiment tends to enhance user engagement more significantly than negative or neutral sentiments. This paper contributes to understanding the role of emotional tone in digital marketing strategies and social media management Prakash, C., et al. (2023). The effectiveness of digital marketing tools in the pharmaceutical industry has been widely studied, revealing that they can significantly enhance product awareness and influence consumer behavior (Clemons, 2006; Smith, 2017). Digital platforms allow for more personalized and interactive campaigns, which can lead to greater consumer trust and engagement (Kumar et al., 2016).

## **3. Comparative Effectiveness**

Comparative studies of traditional and digital marketing methods suggest that digital tools generally outperform traditional methods in creating awareness and influencing consumer decisions. Prakash, C., et al (2023) This study investigates consumer attitudes towards eco-friendly products and marketing strategies in South India. It examines perceptions and preferences related to environmentally sustainable products and addresses prevalent myths and misconceptions. The research reveals that while there is growing consumer interest in eco-friendly options, several myths and misinformation impact purchasing decisions. The study emphasizes the need for effective marketing strategies to educate consumers and promote eco-friendly products. For instance, a study by Venkatesh et al. (2018) found that digital marketing tools offer better cost-effectiveness and higher ROI compared to traditional methods. This is supported by findings from Smith (2017), who noted that digital marketing enables better targeting and higher engagement rates. However, traditional marketing still holds value in terms of reach and brand visibility, especially in broader demographic segments (Dahlen & Rosengren, 2005). Prakash, C. (2016). This paper assesses service quality and customer satisfaction in private banks within the SPSR Nellore District. It evaluates various dimensions of service quality, including reliability, responsiveness, assurance, empathy, and tangibles, and their impact on overall customer satisfaction. The study finds that service quality is a critical determinant of customer satisfaction and provides insights into how banks can enhance their service offerings to better meet customer expectations.

## **4. Reliability and Cost-Effectiveness**

The reliability and cost-effectiveness of marketing methods are crucial considerations for pharmaceutical companies. Traditional marketing methods are often perceived as less reliable and more costly compared to digital methods (Kotler & Keller, 2016). Digital marketing tools, on the other hand, are often seen as more cost-effective and capable of providing detailed performance metrics (Chaffey & Ellis-Chadwick, 2019). The comparative analysis of cost-effectiveness supports the notion that digital marketing offers better value, despite some variability in effectiveness and reliability across different tools (Clemons, 2006).

## **Research Gap**

Despite the increasing adoption of both traditional and digital marketing methods in the pharmaceutical industry, there remains a lack of comprehensive comparative analysis concerning their effectiveness, reliability, and cost-effectiveness. Previous studies have often focused on these methods in isolation or within specific contexts, leading to a fragmented understanding of their relative impact on pharmaceutical marketing. The gap lies in understanding how traditional marketing compares with digital marketing in terms of creating awareness, influencing prescription decisions, and cost-effectiveness, specifically in the context of the pharmaceutical sector.

## **Need of the Study**

This study addresses the need for a detailed comparative analysis of traditional and digital marketing tools to provide pharmaceutical companies with actionable insights. By identifying which methods are more effective in creating awareness, influencing decisions, and being cost-effective, the study can help companies allocate resources more

efficiently, adopt optimal marketing strategies, and improve their overall marketing performance. Additionally, understanding the reliability of information from these channels is crucial for making informed business decisions.

### III. OBJECTIVES OF THE STUDY

1. To evaluate and compare the effectiveness of traditional and digital marketing tools in creating awareness about pharmaceutical products and influencing prescribing decisions.
2. To assess the reliability of information obtained through traditional and digital marketing channels, and determine how this impacts pharmaceutical companies' decision-making processes.
3. To compare the cost-effectiveness of traditional versus digital marketing methods in the pharmaceutical industry.

### IV. RESEARCH METHODOLOGY

#### Research Design:

The research design is a comparative study with a quantitative approach, utilizing statistical analysis to evaluate and compare the effectiveness, reliability, and cost-effectiveness of traditional and digital marketing methods.

#### Data Collection:

- **Primary Data:** Collected through surveys distributed to pharmaceutical professionals, including marketing managers, sales representatives, and decision-makers.
- **Secondary Data:** Analyzed from existing literature, industry reports, and previous research studies related to marketing methods in the pharmaceutical industry.
- **Sampling:**
- **Sample Size:** 134 respondents
- **Sampling Method:** Stratified random sampling to ensure representation across different levels of marketing roles and experiences.

#### Data Analysis:

- **Descriptive Statistics:** To summarize the perceptions of respondents regarding traditional and digital marketing tools.
- **ANOVA (Analysis of Variance):** To determine significant differences in the effectiveness of traditional versus digital marketing methods and their impact on creating awareness about pharmaceutical products.

#### Hypotheses of the Study

- H1: Traditional marketing activities have a significant impact on creating awareness about pharmaceutical products.  
 H2: Digital marketing tools have a significant impact on creating awareness about pharmaceutical products.

Table 1: Descriptive Statistics of Marketing Methods for Pharmaceutical Products

|  |                    | Frequency | Percent | Mean | Std. Deviation | Decision |
|--|--------------------|-----------|---------|------|----------------|----------|
| Traditional Marketing methods create awareness about pharmaceutical products | Strongly Disagree  | 17        | 12.7    | 3.04 | 1.337          | Accept   |
|  | Disagree           | 44        | 32.8    |      |                |          |
|  | Neutral            | 10        | 7.5     |      |                |          |
|  | Agree              | 42        | 31.3    |      |                |          |
|  | Strongly Agree     | 21        | 15.7    |      |                |          |
| Digital Marketing tools create awareness about pharmaceutical products       | Strongly Disagree  | 16        | 11.9    | 3.07 | 1.336          | Accept   |
|  | Disagree           | 41        | 30.6    |      |                |          |
|  | Neutral            | 19        | 14.2    |      |                |          |
|  | Agree              | 33        | 24.6    |      |                |          |
|  | Strongly Agree     | 25        | 18.7    |      |                |          |
| Effectiveness of traditional marketing methods in creating                   | Not Effective      | 34        | 25.4    | 2.65 | 1.339          | Reject   |
|  | Slightly Effective | 40        | 29.9    |      |                |          |

|   |                         |    |      |      |       |        |
|---|-------------------------|----|------|------|-------|--------|
| awareness   | Neutral                 | 8  | 6    | 2.66 | 1.164 | Reject |
|   | Effective               | 43 | 32.1 |      |       |        |
|   | Very Effective          | 9  | 6.7  |      |       |        |
| Effectiveness of digital marketing tools in creating awareness  | Not Effective           | 22 | 16.4 | 2.66 | 1.164 | Reject |
|   | Slightly Effective      | 47 | 35.1 |      |       |        |
|   | Neutral                 | 28 | 20.9 |      |       |        |
|   | Effective               | 29 | 21.6 |      |       |        |
|   | Very Effective          | 8  | 6    |      |       |        |
| Traditional Marketing methods influence your decision to prescribe pharmaceutical products            | Not at all Influence    | 42 | 31.3 | 2.46 | 1.301 | Reject |
|   | No Influence            | 32 | 23.9 |      |       |        |
|   | Neutral                 | 28 | 20.9 |      |       |        |
|   | Influence               | 21 | 15.7 |      |       |        |
|   | Strong Influence        | 11 | 8.2  |      |       |        |
| Digital Marketing methods influence your decision to prescribe pharmaceutical products                | Not at all Influence    | 17 | 12.7 | 2.83 | 1.121 | Reject |
|   | No Influence            | 41 | 30.6 |      |       |        |
|   | Neutral                 | 29 | 21.6 |      |       |        |
|   | Influence               | 42 | 31.3 |      |       |        |
|   | Strong Influence        | 5  | 3.7  |      |       |        |
| The information obtained through traditional marketing channels is reliable.                          | Not at all Reliable     | 23 | 17.2 | 2.73 | 1.233 | Reject |
|   | Not Reliable            | 41 | 30.6 |      |       |        |
|   | Neutral                 | 33 | 24.6 |      |       |        |
|   | Reliable                | 23 | 17.2 |      |       |        |
|   | Highly Reliable         | 14 | 10.4 |      |       |        |
| The information obtained through digital marketing channels is reliable.                              | Not at all Reliable     | 24 | 17.9 | 2.88 | 1.292 | Reject |
|   | Not Reliable            | 35 | 26.1 |      |       |        |
|   | Neutral                 | 21 | 15.7 |      |       |        |
|   | Reliable                | 41 | 30.6 |      |       |        |
|   | Highly Reliable         | 13 | 9.7  |      |       |        |
| The cost-effectiveness of traditional marketing methods for pharmaceutical companies is rated highly. | Not Cost-Effective      | 16 | 11.9 | 2.92 | 1.164 | Reject |
|   | Slightly Cost-Effective | 40 | 29.9 |      |       |        |
|   | Neutral                 | 25 | 18.7 |      |       |        |
|   | Cost-Effective          | 45 | 33.6 |      |       |        |
|   | Very Cost-Effective     | 8  | 6    |      |       |        |
| The cost-effectiveness of digital marketing methods for pharmaceutical companies is rated highly.     | Not Cost-Effective      | 34 | 25.4 | 2.6  | 1.28  | Reject |
|   | Slightly Cost-Effective | 33 | 24.6 |      |       |        |
|   | Neutral                 | 30 | 22.4 |      |       |        |
|   | Cost-Effective          | 26 | 19.4 |      |       |        |
|   | Very Cost-Effective     | 11 | 8.2  |      |       |        |

The table presents the perceptions of respondents on the effectiveness and reliability of traditional and digital marketing methods in the pharmaceutical industry. Traditional marketing methods slightly underperform compared to digital ones in creating awareness (mean 3.04 vs. 3.07), but neither are deemed highly effective (means of 2.65 and 2.66, respectively). Traditional methods have less influence on prescribing decisions (mean 2.46) compared to digital (mean 2.83). Both marketing channels are seen as moderately reliable, with traditional methods scoring slightly lower. Cost-effectiveness for both methods is rated low, with traditional marketing slightly higher (mean 2.92 vs. 2.6).

H1: Traditional marketing activities have a significant impact on creating awareness about pharmaceutical products.

Table 2:

|                | Sum of Squares | df  | Mean Square | F     | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 27.969         | 4   | 6.992       | 4.300 | .003 |
| Within Groups  | 209.762        | 129 | 1.626       |       |      |
| Total          | 237.731        | 133 |             |       |      |

The results indicate that traditional marketing activities have a significant impact on creating awareness about pharmaceutical products. The ANOVA test shows a statistically significant difference between groups ( $F(4, 129) = 4.300, p = .003$ ), suggesting that the impact varies depending on the level of marketing activities.

H2: Digital marketing tools have a significant impact on creating awareness about pharmaceutical products.

|                | Sum of Squares | df  | Mean Square | F     | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 41.175         | 4   | 10.294      | 6.772 | .000 |
| Within Groups  | 196.079        | 129 | 1.520       |       |      |
| Total          | 237.254        | 133 |             |       |      |

The ANOVA results indicate a significant difference in awareness levels about pharmaceutical products among different digital marketing tools ( $p < 0.001$ ). The between-group variance (41.175) is significantly greater than the within-group variance (196.079), suggesting that digital marketing tools have a meaningful impact on product awareness.

### V. FINDINGS

- Traditional marketing methods have a slightly lower mean score (3.04) compared to digital marketing tools (3.07) in terms of creating awareness about pharmaceutical products. However, neither method is deemed highly effective, with overall effectiveness scores of 2.65 for traditional methods and 2.66 for digital methods.
- Traditional marketing methods show a lower mean score (2.46) regarding their influence on prescribing decisions compared to digital marketing methods (2.83). This indicates that digital marketing has a more significant impact on influencing prescribing behavior.
- The reliability of information obtained through traditional marketing channels is perceived slightly lower (mean = 2.73) than that from digital marketing channels (mean = 2.88). However, both methods are considered only moderately reliable.
- Traditional marketing methods are rated slightly higher in cost-effectiveness (mean = 2.92) compared to digital marketing methods (mean = 2.6). Both methods are generally seen as not very cost-effective.
- The ANOVA test results show a significant impact of traditional marketing activities on creating awareness about pharmaceutical products ( $F(4, 129) = 4.300, p = .003$ ). This suggests that traditional marketing has a varying impact based on the level of activity.
- The ANOVA results indicate a significant impact of digital marketing tools on creating awareness ( $F(4, 129) = 6.772, p < .001$ ). The significant difference in awareness levels among different digital marketing tools supports the effectiveness of these tools in raising product awareness.

### VI. CONCLUSION

The study highlights that while both traditional and digital marketing methods play a role in creating awareness about pharmaceutical products, digital marketing tools are slightly more effective and influential in influencing prescribing decisions. Traditional marketing methods, although somewhat effective, do not have as strong an impact on decision-making as digital tools. Both marketing channels are perceived as moderately reliable, but traditional methods are slightly more cost-effective.

The statistical analysis supports these observations, with ANOVA results confirming significant impacts of both traditional and digital marketing on product awareness. Digital marketing tools, in particular, demonstrate a stronger and more significant effect on raising awareness and influencing prescribing behavior. Therefore, pharmaceutical companies may benefit from focusing more on digital marketing strategies to enhance their product awareness and influence in the market.

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