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Evaluating Digital Visibility of PMFME and ODOP: A Hashtag-Based Analysis of India's Micro Food Processing Initiatives

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Abstract

India's food processing sector plays a pivotal role in linking agriculture with industry and markets, contributing significantly to economic growth, employment generation, and value addition. Despite its vast potential, the sector faces persistent challenges such as post-harvest losses, inefficiencies in supply chains, and limited formalization of micro enterprises. In response, policy initiatives such as the PM Formalisation of Micro Food Processing Enterprises (PMFME) scheme and the One District One Product (ODOP) approach have been introduced to enhance value addition, promote rural entrepreneurship, and strengthen cluster-based development. This study adopts a social media content analysis approach to examine digital discourse surrounding these initiatives using hashtags #pmfme, #odop, #pmfmescheme, #pmfmeschemes, #mofpi, and #pmfmetelangana. Data were collected from publicly available social media posts and analyzed using thematic, frequency, and clustering techniques, along with engagement metrics to assess communication patterns and outreach effectiveness. The findings reveal that PMFME has achieved substantial implementation success, with over 4.8 lakh applications, strong credit disbursement efficiency, and widespread outreach. However, only about 14% of applications are aligned with the ODOP framework, indicating the need for stronger cluster integration. Content analysis shows that #odop dominates digital conversations (~72%), while scheme-specific hashtags exhibit relatively low visibility, highlighting gaps in awareness and communication consistency. The study highlights the importance of integrating policy implementation with strategic digital communication to enhance outreach and stakeholder engagement. Strengthening cluster-based approaches, improving hashtag standardization, and promoting localized digital strategies can enhance the effectiveness of such initiatives. Future efforts should focus on leveraging social media analytics for evidence-based policymaking and improving the visibility and impact of agri-food sector interventions.

Keywords: Social Media Analysis; Micro Food Processing Enterprises, One district One Product, Hashtag Content Analysis

Introduction

India's food processing sector has emerged as one of the most dynamic and strategically significant segments of the national economy, serving as a vital link between agriculture, industry, and markets (Y. Praveen Kumar *et al.*, 2019) ^[17]. The sector is currently the third largest globally, valued at approximately US \$340 billion, and contributes nearly 13-14% to the country's Gross Domestic Product (GDP) (Indian economic survey, 2026). This emphasises its critical role in economic growth, employment generation, and value addition across the agri-food supply chain. India's strong agricultural base further reinforces this importance, particularly with respect to its leadership in millet production, accounting for nearly 40% of global output, alongside rising domestic consumption and export demand (Hindocha & Dudhagara, 2025) ^[9].

The growth trajectory of the food processing sector is increasingly influenced by the rapid expansion of digital infrastructure and evolving consumer behavior. With approximately 270 million online shoppers and around 954 million internet subscribers as of 2024, India is witnessing a significant transformation toward digital consumption ecosystems. Expanding internet penetration, which has recently crossed 50% of the population, is facilitating the growth of e-commerce platforms and enabling wider market access for processed and value-added food products (Gulati *et al.*, 2023) ^[8]. This digital shift is expected to position India among the largest global online consumer bases, thereby opening new avenues for agri-food enterprises, particularly micro and small-scale processors.

Despite these opportunities, the sector continues to face structural inefficiencies that limit its full potential (Gulati *et*

al., 2023)^[8]. A major concern is the high level of food loss and wastage across the supply chain. It is estimated that only about 60% of the total food produced is effectively consumed, with post-harvest losses occurring at multiple stages, including approximately 23% at the harvest level, 7% at retail, and 10% at the food service stage (FAO, 2026)^[7]. These inefficiencies significantly impact food availability, economic returns, and overall supply chain performance. The persistence of such losses reflects broader systemic challenges in the Indian food processing sector, including inadequate infrastructure, lack of standardization, and inefficiencies across supply chain tiers (Singh *et al.*, 2022)^[16].

An often overlooked yet critical dimension of food wastage is the associated loss of embedded energy. Approximately 38% of agricultural input energy—comprising energy used in cultivation, irrigation, harvesting, transportation, and storage—is lost due to inefficiencies and wastage along the food value chain. This not only represents a significant economic loss but also contributes to environmental degradation and unsustainable resource utilization. In the context of increasing pressure on natural resources and the need for sustainable agri-food systems, reducing food loss and improving value addition have become essential policy priorities. Strengthening the food processing sector can play a transformative role in addressing these challenges by enhancing shelf life, reducing wastage, and improving the efficiency of supply chains, thereby contributing to food security, income enhancement, and sustainable development (Pathak, 2023)^[12]. In parallel with these structural transformations, social media has emerged as a powerful platform influencing food systems, consumer behavior, and policy communication. With a majority of the global population actively engaged on digital platforms, social media generates extensive user-driven data that reflect public perceptions, attitudes, and experiences. Studies have shown that social media plays a crucial role in shaping dietary choices and disseminating food and nutrition information, often influencing both individual behavior and broader societal trends (Cossu *et al.*, 2025; Denniss *et al.*, 2023)^[3, 5].

The increasing prominence of social media in the food domain highlights its potential as a tool for communication, awareness generation, and stakeholder engagement. Recent research emphasizes the importance of hashtag-based social media analysis in understanding communication patterns and thematic trends. Large-scale analyses of food-related hashtags, such as #healthyfood, have identified key themes including lifestyle, affordability, and dietary preferences, demonstrating how online discourse shapes perceptions of food and nutrition (Kvasnička *et al.*, 2024)^[10]. Similarly, studies analyzing policy-related hashtags, such as those associated with environmental initiatives, have shown that social media platforms can effectively capture public sentiment and thematic discussions at scale, offering valuable insights for policymakers and researchers (Balcarova *et al.*, 2024)^[2].

Within the Indian context, policy initiatives such as the PM Formalisation of Micro Food Processing Enterprises (#PMFME) and the One District One Product (#ODOP) approach have been introduced to strengthen the food processing sector by promoting value addition, rural

entrepreneurship, and cluster-based development. These initiatives are designed to address existing inefficiencies, enhance competitiveness, and integrate micro enterprises into organized value chains. The implementation data of PMFME reflects both its extensive outreach and the structural realities of India's micro food processing ecosystem. A total of 4,80,342 applications have been submitted, of which nearly 99% are from individual enterprises, highlighting the dominance of family-based and standalone units. Among these, 1,85,276 loans were sanctioned and 1,50,931 disbursed, indicating strong post-sanction credit absorption and effective institutional support. However, only about 14% of total applications are aligned with the ODOP framework, suggesting the need for deeper cluster integration and strengthened institutional mobilization (MOFPI, 2020). In this context, and with the increasing relevance of digital communication, understanding how such initiatives are represented and discussed on social media platforms becomes essential for evaluating their outreach, stakeholder engagement, and overall effectiveness.

Therefore, this study focuses on analyzing social media content associated with the hashtags #pmfme and #odop to explore communication patterns, thematic structures, and engagement dynamics. By applying a content analysis approach grounded in social media analytics, the study seeks to provide insights into public awareness, stakeholder interactions, and the broader role of digital platforms in shaping discourse around agri-food policy interventions.

Methodology

This study adopts a social media content analysis approach grounded in hashtag-based research frameworks that have been widely applied in recent literature to examine communication patterns in food, nutrition, and policy domains. Hashtags function as key metadata elements that enable the aggregation, categorization, and retrieval of large volumes of user-generated content, thereby facilitating the identification of thematic structures and user interactions across social media platforms (Pilař *et al.*, 2021a)^[14]. Previous studies have demonstrated that hashtag-driven analysis is effective in capturing public discourse, identifying dominant topics, and understanding sentiment and engagement dynamics in both food-related and policy-oriented discussions (Balcarova *et al.*, 2024)^[2]. The present study focuses on analyzing social media content related to government-led agri-food policy initiatives in India, specifically the PM Formalisation of Micro Food Processing Enterprises (#PMFME) scheme and the One District One Product (#ODOP) approach. Data were collected from publicly accessible posts on social media platforms using selected hashtags, namely #pmfme, #pmfmescheme, #pmfmeschemes, #odop, #mofpi, and #pmfmetelangana. These hashtags were chosen based on their relevance to the scheme, institutional communication, and regional implementation. The dataset included post captions, associated hashtags, and engagement metrics such as likes, comments, and shares, allowing for both qualitative and quantitative analysis. The methodological framework follows a structured content analysis procedure similar to approaches used in prior social media studies (Kvasnička *et al.*, 2024)^[10]. Initially, data preprocessing was conducted to

ensure quality and consistency. This involved removing duplicate entries, filtering out irrelevant or non-contextual posts, and excluding non-English content where necessary to maintain analytical clarity. The cleaned dataset was then subjected to descriptive analysis to determine the frequency distribution of hashtags and identify dominant communication patterns. Subsequently, thematic content analysis was employed to examine textual data derived from captions and hashtags. This process involved coding and categorizing content into meaningful themes based on recurring keywords and contextual relevance. Thematic classification enabled the identification of major communication areas, such as policy dissemination, product promotion, institutional messaging, and regional outreach. Similar to previous research, co-occurrence analysis of hashtags was performed to understand relationships between keywords and to reveal underlying topic clusters within the dataset (Avelino *et al.*, 2024; Kvasnička *et al.*, 2024; Pilař *et al.*, 2022) ^[10, 14]. To further explore the structure of communication, clustering techniques were applied to group related hashtags and identify thematic communities. This approach aligns with established social media analytics methods, where clusters represent interconnected topics or user interests within a network (Pilař *et al.*, 2022) ^[14]. Such clustering provides insights into how different aspects of the PMFME and ODOP initiatives are discussed and interconnected in the digital space. In addition to content analysis, engagement metrics were examined to evaluate the reach and effectiveness of communication. Metrics such as likes, comments, and shares were analyzed to assess user interaction and the relative popularity of different hashtags and themes. This approach is consistent with prior studies that use engagement indicators as proxies for audience response and content effectiveness in social media-based research (Avelino *et al.*, 2024). Overall, the methodological

framework integrates hashtag frequency analysis, thematic content analysis, clustering, and engagement assessment to provide a comprehensive understanding of digital discourse surrounding PMFME and ODOP. By combining qualitative and quantitative techniques, the study offers insights into how policy initiatives are represented, communicated, and perceived on social media platforms, thereby contributing to the broader understanding of digital communication in the agri-food sector.

Results and Discussion

The performance dashboard of the PM Formalisation of Micro Food Processing Enterprises Scheme (PMFME) demonstrates a substantial scale-up in outreach and institutional convergence since its inception in 2020-21 as shown in the Table 1. A cumulative total of 4,80,343 applications were submitted between 2020-21 and 2025-26, reflecting a steady expansion from 1,841 applications in the launch year to 1,33,664 in 2025-26. The sharp increase after 2021-22 indicates the transition from an initial pilot phase to full operationalization, supported by improved awareness, digital processing systems, and strengthened district-level mobilization mechanisms. The peak observed in 2023-24 and sustained high levels thereafter suggest consolidation and maturity in scheme implementation (MOFPI, 2020). Out of the total applications received, 1,85,273 loans were sanctioned, representing an overall sanction rate of approximately 38-39%. The highest number of sanctions was recorded in 2023-24 (55,513), followed by 2024-25 (50,608) and 2025-26 (46,684), indicating robust appraisal and approval mechanisms during the expansion phase (Figure 1). Loan disbursement reached 1,50,931 cases, accounting for nearly 81% of sanctioned loans, which reflects strong post-sanction conversion efficiency and effective coordination between District Level Committees (DLCs), State Nodal Agencies, and banking institutions.

Table 1: Year-wise Status of Applications, Loan Sanctions, and Loan Disbursements under PMFME Scheme

Year	Applications Submitted	Loan Sanctioned	Loan Disbursed
2025-26	135810	47579	35645
2024-25	115074	50611	42954
2023-24	128029	55513	49333
2022-23	84541	29132	21420
2021-22	17179	3304	2436
2020-21	1841	33	14
Total	482474	186172	151802

However, the gap between total applications and sanctioned cases highlights persistent challenges in credit appraisal, documentation compliance, and project viability assessment at the pre-sanction stage. The dashboard further indicates that 6,57,425 applications were forwarded to banks over the study period, suggesting proactive screening and referral at the district level. Nevertheless, the difference between forwarded and sanctioned applications underscores the need for enhanced financial preparedness, improved DPR quality, and targeted capacity building to improve credit absorption. The data also reveal that only 67,732 applications

(approximately 14%) were aligned with the One District One Product (ODOP) framework, while 4,12,584 were categorized as non-ODOP. Although ODOP is a central pillar of the scheme’s cluster-based development strategy, its relatively modest share suggests limited alignment between identified district products and applicant enterprise profiles, or insufficient awareness at the grassroots level. Strengthening district-level value chain integration and targeted promotion of ODOP commodities may enhance cluster-driven growth.

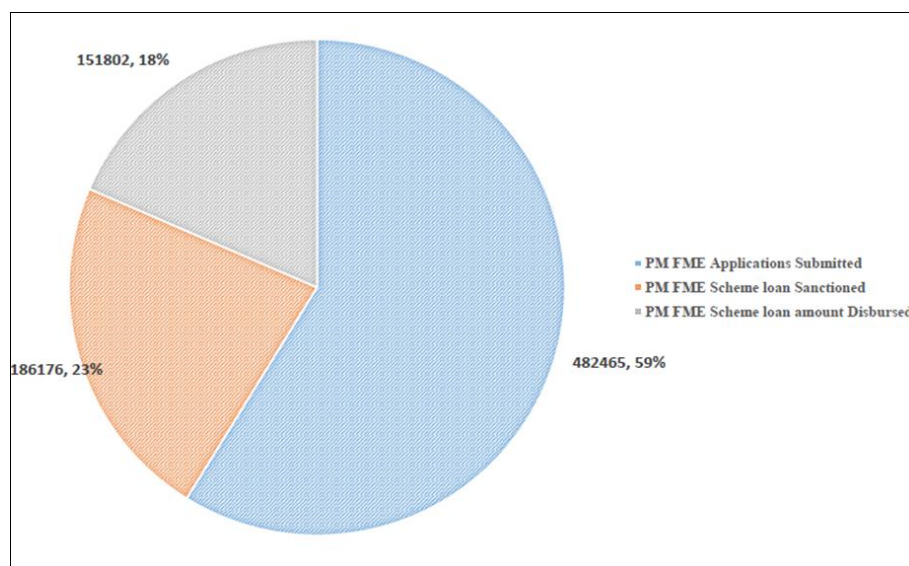


Fig 1: MOFPI-PM-FME scheme implementation status in India

Spatial performance patterns indicate considerable inter-state and inter-district variation. Bihar (30,494) and Maharashtra (29,089) emerged as the top-performing states, followed by Uttar Pradesh, Tamil Nadu, and Madhya Pradesh. At the district level, Patna, Chhatrapati Sambhajnagar, Sangli, Shimla, and Ahilyanagar recorded the highest performance indicators, while districts such as Shimla and Patna also ranked prominently in District Resource Person (DRP) engagement metrics. These patterns highlight the critical role of decentralized governance capacity, proactive DLC functioning, and effective field-level facilitation in influencing scheme outcomes. The positive correlation between high-performing districts and strong DRP engagement suggests that localized institutional support significantly enhances beneficiary mobilization and processing efficiency (-Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme, 2020). Overall, the results demonstrate that PMFME has successfully transitioned into a mature, large-scale formalization initiative with significant outreach and credit linkage achievements. While post-sanction performance remains strong, the data emphasize the need for strengthening pre-

sanction appraisal support, deepening ODOP integration, and enhancing cluster-based institutional mechanisms to maximize value chain development and sustainable enterprise growth within the micro food processing sector.

Content Analysis of Hashtags Related to PM Formalisation of Micro Food Processing Enterprises Scheme

The hashtag dataset reveals distinct communication patterns and thematic emphasis surrounding PMFME and related initiatives on social media platforms. A total of 40,500 posts were analyzed across six hashtags, with a clear dominance of #odop (29,300 posts; ~72.3%), followed by #pmfme (5,000; ~12.3%) and #mofpi (5,000; ~12.3%). In contrast, hashtags directly linked to the scheme such as #pmfmescheme (1,000; ~2.5%), #pmfmeschemes (100; ~0.25%), and region-specific #pmfmetelangana (100; ~0.25%) show significantly lower engagement (Figure 2). This distribution indicates that ODOP dominates the digital discourse, suggesting that cluster-based product identity and market-oriented narratives resonate more strongly with users compared to scheme-specific terminology.

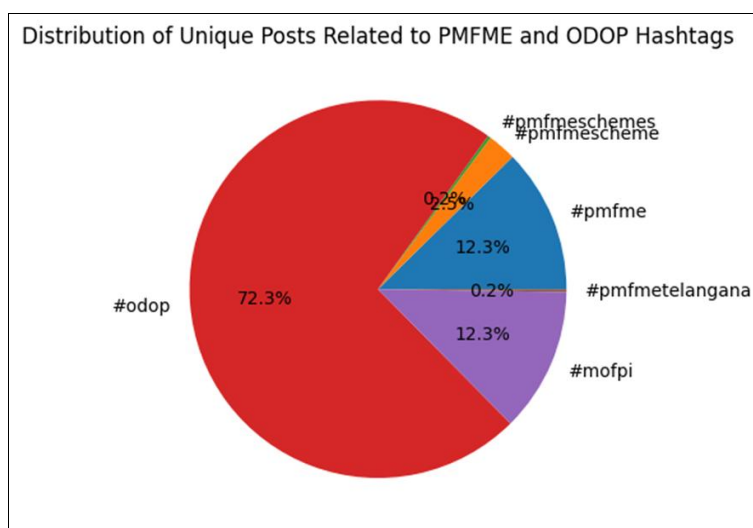


Fig 2: Distribution of unique posts related to MOFPI-PMFME and ODP scheme on Instagram

The relatively equal presence of #pmfme and #mofpi reflects moderate institutional visibility, where users engage with both the scheme and the implementing ministry. The very low usage of variations such as #pmfmeschemes highlights limited awareness or inconsistent hashtag standardization, which may dilute the overall digital footprint of the scheme. Similarly, minimal representation of state-specific hashtags indicates weak localization of digital communication, despite the scheme's decentralized implementation approach (Denniss *et al.*, 2024; Pilař *et al.*, 2021b) ^[7, 14]. From a thematic perspective, the content can be broadly categorized into three clusters:

1. Policy and institutional communication (#pmfme, #mofpi),
2. Market and product-oriented promotion (#odop), and
3. Program-specific or localized outreach (#pmfmescheme, #pmfmetelangana).

Overall, the analysis suggests that while PMFME has achieved substantial outreach in implementation terms, its digital communication is heavily skewed toward ODOP-driven narratives, with scope for strengthening scheme-specific visibility, improving hashtag consistency, and enhancing region-specific engagement strategies for better outreach and stakeholder awareness.

Conclusion

The study highlights the dual dimensions of India's food processing sector, characterized by strong policy-driven expansion and evolving digital communication dynamics. The PMFME scheme has demonstrated significant progress in outreach, credit linkage, and enterprise formalization, with a substantial number of applications and high post-sanction disbursement efficiency. However, the predominance of individual enterprises and the relatively low integration of ODOP indicate the need for strengthening cluster-based approaches and institutional support mechanisms. The social media content analysis further reveals an imbalance in digital discourse, with #odop dominating conversations over scheme-specific hashtags. This suggests that product-oriented narratives resonate more strongly with users, while awareness and visibility of PMFME as a policy initiative remain limited. The findings underscore the importance of enhancing digital communication strategies, improving hashtag standardization, and promoting localized engagement.

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Disclaimer (Artificial Intelligence)

The author (s) hereby declare that no generative AI technologies, such as large language models (e.g., ChatGPT, Copilot) or text-to-image generators, were used in the writing or editing of this manuscript.

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Competing Interests

The authors declare that they have no competing interests.

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