

Marketing Strategies for Non-Timber Forest Products (NTFPS) through E-Commerce

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Abstract: *The growing global awareness of sustainable development has sparked interest in Non-Timber Forest Products (NTFPs) as an alternative to traditional timber extraction. E-commerce offers a great opportunity to promote these diverse forest goods, which include medicinal plants, mushrooms, resins, and fibres, to a wider audience. This paper examines effective marketing strategies for NTFPs through e-commerce platforms. It emphasizes the importance of storytelling, certification, and ethical branding in establishing consumer trust and generating demand. Furthermore, the paper explores the role of social media, search engine optimization (SEO), and digital marketplaces in enhancing the visibility and accessibility of NTFPs. Case studies of successful e-commerce ventures in the NTFP sector are analyzed to identify best practices. The findings indicate that a comprehensive digital marketing approach can significantly expand the market reach and profitability of NTFPs, thereby contributing to sustainable forest management and community livelihoods.*

Keywords: Non-Timber Forest Products (NTFPs), E-commerce, Sustainable marketing, Digital marketing, Ethical branding, Social media marketing, SEO

1. Introduction

In the vibrant world of sustainable development and environmental conservation, Non-Timber Forest Products (NTFPs) have become crucial in managing forest resources. Different from traditional timber origin, which frequently leads to deforestation and habitat destruction, NTFPs include a wide variety of goods and services derived from forests that do not harm the ecosystem. These products include medicinal plants, fruits, nuts, resins, fibers, and more, providing significant economic, ecological, and cultural benefits. Several authors have elaborated on the importance of NTFPs by promoting biodiversity and supporting local economies. According to Belcher et al. (2005), NTFPs are vital for the livelihoods of rural communities as they provide income, food security, and cultural value. Similarly, Shackleton et al. (2011) highlight the substantial contribution of NTFPs to the household economies of millions of people globally, especially in developing countries. Mahapatra and Tewari (2005) discuss the wide range of NTFPs found in Odisha, India, and their potential to contribute to rural livelihoods and forest conservation. With the beginning of digital technology, the marketing and distribution of non-timber forest products (NTFPs) have undergone a transformative transfer. E-commerce platforms now offer an unprecedented opportunity to connect local producers with global markets, enhancing the visibility and accessibility of this unique forest product. Belcher and Schreckenberg (2007) explained that market access is essential for the sustainable development of NTFPs, and e-commerce can effectively bridge the gap between remote producers and consumers. From the context of Odisha,

Pradhan and Rout (2016) highlight the potential of e-commerce to expand market access for local NTFP producers, ensuring better prices and stable demand. Sahoo and Nayak (2015) focus on the traditional and emerging markets for NTFPs in Odisha, emphasizing the role of technology in market expansion. Panda and Patel (2018) examine the socio-economic impact of NTFPs in tribal areas of Odisha, proposing strategies for integrating e-commerce to boost local economies. Das and Behera (2017) provide an analysis of the challenges and opportunities in the NTFP sector in Odisha, advocating for the use of e-commerce as a tool for sustainable development and poverty improvement. This research aims to explore the potential of digital platforms to transform the market dynamics for NTFPs through e-commerce. It investigates various marketing strategies, including creating compelling online presences, utilizing social media marketing, optimizing search engines, and engaging in direct-to-consumer sales. In addition, the research examines case studies of successful NTFP e-commerce ventures and provides actionable insights for producers seeking to prosper in the digital marketplace. By implementing e-commerce, NTFP producers can not only benefit local livelihoods but also contribute to global sustainability efforts.

Belcher and Schreck Enberg (2007) highlight the significant market access benefits that e-commerce can provide for producers of non-timber forest products (NTFPs). It enables them to reach a global audience and overcome the limitations of local markets. Pradhan and Rout (2016) emphasize that e-commerce platforms can help local NTFP producers secure better prices and stable demand for their products by directly

connecting with consumers and avoiding intermediaries. Sahoo and Nayak (2015) suggest that e-commerce can aid in expanding traditional and emerging markets for NTFPs in Odisha. It facilitates more efficient supply chains and broader market outreach. Panda and Patel (2018) propose that integrating e-commerce into the NTFP sector can improve local economic growth, particularly in tribal areas of Odisha, by providing new income sources and reducing poverty. Behera's (2017) judgment on the strategic use of e-commerce to promote sustainable development and poverty improvement in the NTFP sector. They emphasize the need to address challenges such as digital literacy and infrastructure. By transferring the insights, NTFP producers can effectively connect with the power of e-commerce to transform their business practices, enhance economic flexibility, and contribute to sustainable development goals.

2. Background of the Study

Non-timber forest Products (NTFPs) are various biological materials derived from forests, apart from traditional timber and fuel wood. These products included like fruits, nuts, seeds, mushrooms, medicinal plants, resins, latexes, fibbers, and animal products like honey and wild game. According to Shackleton et al. (2011), NTFPs significantly contribute to the livelihoods of over 1.5 billion people globally, especially in rural areas where they can make up to 40% of family income. In India, NTFPs are estimated to provide employment to about 275 million people annually, its showcasing their important role in rural economies (Tewari & Campbell, 2014), Importance in Sustainable Forest Management, NTFPs play a significant role in sustainable forest management and contribute to ecological, economic, and social sustainability in several ways

2.1 Biodiversity Conservation:

- **Ecological Balance:** harvesting of NTFPs regularly causes smaller quantity disturbances to forest ecosystems compared to classification. For example, sustainable harvesting practices for bamboo in China support over 100 species of flora and fauna, ensuring ecological balance (Lobovikov et al., 2007).
- **Species Preservation:** NTFPs promote the conservation of various plant and animal species that provide them, ensuring their continued existence and ecological roles. Studies in the Amazon rainforest indicate that areas where NTFPs are harvested sustainably have higher biodiversity compared to areas affected by timber extraction (Peters et al., 1989).

2.2 Economic Benefits

- **Income Generation:** NTFPs provide significant income opportunities for rural and indigenous communities, especially in developing countries where other employment opportunities may be limited. For example, in the Philippines, the rattan industry generates an estimated \$75 million annually, benefiting thousands of rural households (Belcher et al., 2005).
- **Diversified Livelihoods:** NTFPs offer an alternative to timber-based economies, reducing dependence on logging and promoting diversified and resilient local economies.

In sub-Saharan Africa, The She a butter industry supports over 4 million women, enhancing their economic stability (Masters et al., 2004).

- **Market Potential:** With growing consumer interest in natural and organic products, NTFPs have substantial market potential, both locally and internationally. The global market for essential oils, a key NTFP category, is projected to reach \$11.19 billion by 2022 (Grand View Research, 2016).

2.3 Social and Cultural Importance

- **Cultural Heritage:** NTFPs play a crucial role in the cultural practices, traditions, and identities of indigenous and local communities. For instance, JAmazonian tribes have deep cultural ties to the harvesting of Berries (Schulz et al., 2016).
- **Food Security and Health:** NTFPs play a vital role in ensuring food security and nutrition by providing essential dietary supplements. It's also offer medicinal resources that support health and well-being. According to the World Health OrgaJnization, up to 80% of people in developing countries rely on traditional medicines derived from NTFPs for primary healthcare (WHO, 2008)

2.4. Environmental Sustainability

- **Sustainable Harvesting:** With proper management practices, NTFPs can be harvested sustainably, ensuring the long-term availability of these Jresources. For example, sustainable harvesting guidelines for wild mushrooms in Canada have helped maintain forest health and support local economies (Wickramasinghe et al., 2018).
- **Forest Conservation Incentives:** The economic value of NTFPs provides incentives for local communities to conserve forests rather than converting them to agricultural or other uses. In Mexico, the sustainable management of pine resin has played a significant role in forest conservation efforts, leading to a reduction of deforestation rates by 40% (Martínez-Ballesté et al., 2006).

3. Problem Statement: Challenges in the traditional marketing of NTFP

Challenges in Traditional Marketing of Non-Timber Forest Products (NTFPs) in India and Odisha. The traditional marketing of Non-Timber Forest Products (NTFPs) in India, particularly in the state of Odisha, faces persistent obstacles that hinder their full potential and affect the livelihoods of those dependent on forest products. These challenges can be categorized as market access, value addition, regulatory issues, socio-economic factors, and environmental and seasonal variability.

The following Specific case studies provide concrete contents of various challenges according to the author suggestions

- 1) In India and Odisha, several communities rarely on non-timber forest products (NTFPs) for their livelihoods. However, these communities often face challenges due to their remote locations and inadequate infrastructure, which leads to difficulties in accessing markets and

increased transportation costs. For instance, tribal communities in the Kandhamal district encounter obstacles in transporting turmeric and wild honey due to the lack of proper roads (Reddy et al., 2011). Furthermore, these producers frequently lack timely and relevant market information, resulting in poor decision-making and exploitation by intermediaries. The disconnection between producers and buyers further restricts their access to wider markets, and this issue is exacerbated by the absence of organized rural marketplaces.

- 2) Many non-timber forest products (NTFPs) require processing to meet market standards. However, producers often face challenges due to a lack of skills and infrastructure, resulting in lower prices for their products. For instance, in Odisha, Mahua flowers are sold raw because there is a dearth of processing facilities, which significantly reduces their value (Sahoo & Naik, 2017). Similarly, in India, variations in the quality of honey and medicinal plants lead to decreased buyer confidence. In Chhattisgarh, inconsistent kendu leaf quality negatively impacts both the market value and the income of collectors (Pandey et al., 2016).
- 3) Regulatory issues in the non-timber forest products (NTFP) sector in India differ from region to region, creating difficulties in the collection, transportation, and sale of these products. In Odisha, the process of obtaining permits is both time-consuming and expensive, which leads to delays in the marketing of products such as Sal seeds (Singh et al., 2012) and reduces profitability. Moreover, small-scale producers find it challenging to understand and comply with this regulation, which discourages their participation in formal markets.
- 4) Limited finances present a challenge for NTFP producers in India, specifically in the state of Odisha. This financial constraint hinders their ability to invest in essential tools and marketing strategies. Tribal communities in Odisha often rely on traditional methods to cope with these financial limitations. However, this small-scale approach leads to weakened bargaining power and lower incomes for these producers. Moreover, the lack of access to education and training further restricts their ability to innovate and compete in the market. This issue is particularly noticeable in the Sundarbans, where the absence of modern beekeeping training negatively affects the quality of honey produced (Saha & Sundaram, 2018).
- 5) The availability of Non-Timber Forest Products (NTFPs) in India and Odisha is subject to fluctuations caused by environmental and seasonal factors. This poses challenges to maintaining stable market relations. For instance, the production of lakha and resin in Odisha is seasonal, (Mitra et al., 2015). The Climate changes further exacerbate this situation by affecting the growth and availability of NTFPs, thereby compromising long-term sustainability

4. Review of Literature

The literature review has been conducted by randomly selecting research objectives from Indian and global authors, according to the requirements of the research paper review.

4.1 Kanhu Charan Purty 2022 "In his study of Online Shopping Behaviour," explored how e-commerce enhances

market access for Non-Timber Forest Product (NTFP) producers in Odisha. The paper reveals that e-commerce helps producers overcome geological barriers, e-commerce draws the customer base, and national and international markets. It also improves market information by providing real-time data on prices and demand, thus empowering producers to make informed decisions and remain competitive. Furthermore, e-commerce reduces transaction costs by eliminating intermediaries, which can potentially increase profits and lower prices for both producers and buyers. Additionally, it facilitates direct connections between producers and buyers, enabling better negotiations on prices and terms and fostering long-term partnerships. Moreover, e-commerce platforms often require detailed product information, ensuring the quality and authenticity of products, which in turn builds consumer trust. In conclusion, the study establishes that e-commerce significantly enhances market access for NTFP producers in Odisha, offering a cost-effective and efficient way to reach larger markets, improve market knowledge, and establish direct relationships with buyers.

4.2 Pramod Kumar Singh and S. Vijayakumar (2023) The Case Study of India" provide information on how e-commerce can impact rural development. According to the authors, e-commerce can have several positive effects on rural development. it allows rural producers to reach larger markets beyond their immediate locality, leading to increased sales and income. In addition, e-commerce can lower transaction costs by eliminate need of middlemen. The authors also emphasize that e-commerce platforms can provide valuable market information to rural producers. This information helps them make informed decisions about what to produce and where to sell their products. Furthermore, e-commerce empowers rural producers by providing them with direct access to buyers. This bypasses traditional barriers and enables them to negotiate better prices. the growth of e-commerce can contribute to the development of necessary infrastructure in rural areas. This includes improved internet connectivity and logistics, which benefit the entire community

4.3 Kumari and Singh (2019) examine how e-commerce contributes to improving market access and sustainable development for NTFP producers in Odisha. E-commerce not only expands market reach, but also enhances price realization by reducing the number of intermediaries and provides convenient logistics solutions. Moreover, it promotes sustainable practices and fosters financial inclusion. The study findings indicate that initiatives such as TRIFED collaborations have led to increased sales and income, demonstrating significant positive impacts on both livelihoods and conservation efforts.

4.4 Patnaik and Jena (2021) highlight the transformative role of e-commerce in improving market access for Odisha's tribal communities, emphasizing socio-economic benefits. E-commerce expands reach, reduces intermediaries, and provides stable revenue streams. It offers real-time market data, educational resources, and integrated logistics solutions. Digital payments foster financial inclusion, while digital records aid credit access. Initiatives like TRIFED and platforms like 'Tribes India' significantly boost sales and

income, promoting economic independence, sustainable practices, and improved livelihoods.

4.5 Chaudhary and Bhatia (2018) conducted a review on the influence of e-commerce on marketing Non-Timber Forest Products (NTFPs). E-commerce offers NTFP producers the opportunity to expand their reach and engage in direct marketing, which has the potential to boost profits. However, there are certain obstacles that prevent widespread adoption, such as technological barriers and sustainability concerns.

Therefore, it is crucial for NTFP producers to participate in capacity building and awareness programs in order to effectively utilize e-commerce.

4.6 E-commerce has become a powerful tool for generating income in tribal communities in Odisha, especially for Non-Timber Forest Product (NTFP) producers. Several studies have shown that adopting e-commerce has a positive impact on the income levels of these communities, which is in line with our second research goal.

4.7 In a study conducted by Singh and Das (2020), it was found that tribal communities involved in e-commerce experienced a significant increase in their income compared to those who did not use e-commerce. This increase was particularly noticeable among NTFP producers, who benefited from direct sales, better prices, and access to larger markets. The study also highlighted that e-commerce allowed these communities to reach markets beyond their local areas, resulting in more sales opportunities and higher income.

4.8 Mahapatra and Sahoo (2019) explored the role of e-commerce in enhancing market access and income for tribal farmers in Odisha, likely including NTFP producers. Their findings supported the notion that e-commerce expands market reach and improves income levels by providing direct marketing opportunities and better price realization.

4.9 Sahu and Mohanty (2018) focused on the financial inclusion of tribal communities through e-commerce in Odisha. While their study did not specifically examine income generation, it highlighted how e-commerce can promote financial inclusion among tribal communities, which is likely to have a positive impact on their income levels.

The literature has been carried on the basis 3rd research objectives and literature sources regarding the role of technology, especially e-commerce, in expanding NTFP markets:

- 1) Chaudhary and Bhatia (2018): E-commerce allows NTFP producers to expand their market to reach and engage in direct marketing, national and international potentially increasing profit margins. However, challenges such as technological barriers and logistical issues hinder adoption.
- 2) Kumari and Singh (2019) E-commerce contributes to the sustainable development of NTFPs by expanding markets and improving market access for producers in Odisha. Specific examples set up the outcomes and parameters of this impact are likely discussed in this study. NTFP's producers can access more marketing strategies for monitoring the online and line business to analyze the

target marketing management through using the business CRM (Customer Relationship Management)

- 3) Patnaik and Jena (2021) explored the Finding that E-commerce randomly enhances online market access for tribal communities in Odisha, which includes NTFP producers. The study likely discusses how e-commerce platforms facilitate market access and increase sales opportunities for tribal communities to use the new technology for creating a more profitable business of nontimber forest products and introducing the cloud-based marketing in the global index and setup the new venture of the tribals Nontimber forest product with the specific name of the product
- 4) Singh and Das's (2020) Findings indicate the adoption of E-commerce can lead to a significant increase in income for tribal communities in Odisha, including NTFP producers. This increase is attributed to direct sales, better price realization, and access to broader markets facilitated by e-commerce platforms and other similar market opportunities to enhancing the 3rd party engages while purchasing the raw materials from direct raw material collectors from all over the Odisha .

5. Research gap

The research gap of marketing strategies for Non-Timber Forest Products (NTFPs) through e-commerce involves investigating the existing literature and understanding where there is a lack of information, outdated information, or a need for further examination. There are several investigation results below here with the discussion

Consumer Behaviour and Preferences:

- Lack of understanding of consumer preference and e-commerce activities towards NTFPs.
- Lack of detail about the market segmentation for NTFPs in e-commerce platforms.
- Insufficient studies on consumer awareness and education about the benefits and uses of NTFPs.

Digital Marketing and Branding:

- Need innovative digital marketing strategies handle to NTFPs and export of data analytics
- Lack of research on the effectiveness of social media marketing for NTFPs.
- Insufficient exploration of brand-building and storytelling techniques for NTFPs in the digital space.

Supply Chain and Logistics:

- Challenges in integrating traditional supply chains with e-commerce logistics for NTFPs.
- Limited research on sustainable and ethical sourcing practices within e-commerce platforms.
- Gaps in understanding the impact of e-commerce on the traditional supply chains of NTFPs.

Regulatory and Certification Issues:

- Need for more studies on the regulatory frameworks affecting the e-commerce of NTFPs.
- Insufficient research on the role and impact of certifications (e.g., organic, fair trade) in the online marketing of NTFPs.
- Technological Adoption and Innovation:

- Limited research on the adoption of emerging technologies (e.g. chain, AI) for tracking and marketing NTFPs.
- Gaps in understanding the role of mobile commerce and apps in the marketing of NTFPs.
- Economic and Social Impact:
- Insufficient studies on the economic benefits of e-commerce for local communities involved in NTFP production.
- Need for research on the social impact of e-commerce on indigenous and local communities.

Cross-Cultural and Global Market Dynamics:

- Lack of comparative studies on NTFP marketing strategies across different regions and cultures.
- Limited research on the globalization of NTFP markets through e-commerce and its implications.
- Consumer Trust and Quality Assurance:
- Gaps in understanding how to build consumer trust in the quality and authenticity of NTFPs sold online
- Insufficient research on mechanisms for ensuring and communicating product quality in e-commerce platforms.

Research Questions

- How does e-commerce enhance market access for NTFP producers in Odisha?
- What are the financial benefits of e-commerce adoption for NTFP producers in Odisha?
- What role does technology, especially e-commerce, play in expanding NTFP markets?
- How sustainable are NTFP e-commerce initiatives in Odisha from socio-economic and environmental perspectives?

Research Objectives

- Examine how e-commerce enhances market access for NTFP producers in Odisha.
- Measure the financial benefits of e-commerce adoption for NTFP producers in Odisha.
- Investigate the role of technology, especially e-commerce, in expanding NTFP markets.
- Assess the socio-economic and environmental sustainability of NTFP e-commerce initiatives in Odisha

6. Research Methodology

Research Design

- This study will take up a mixed-method research design; incorporating both quantitative and qualitative approaches to comprehensively explore the marketing strategies for NTFPs through e-commerce. The research will involve the collection and analysis of primary and secondary data.
- Sample Size and Sampling Technique
- Sample Size
- Total: 280 participants
- From 20 different villages in Odisha
- Sampling Technique: Stratified random sampling will be used to ensure representation from each village. Each

village will contribute 14 participants (280 participants / 20 villages).

Data Collection: Primary Data

Tools: Structured questionnaires, Semi-structured interviews, Focus group discussions

- Process: Questionnaires: Distributed to 280 NTFP small cottage producers across 20 villages. The questionnaire will cover demographic (District of Mayurbhanj, Kendujhar, Balaswar, Bhadrak) information, current marketing practices, awareness, and usage of e-commerce, and perceived benefits and challenges of using e-commerce for NTFP sales.
- Interviews: Conducted with key informants, including local e-commerce platform representatives, village leaders, and NGO representatives.
- Focus Groups: Organized in selected 20 different e-commerce-friendly villages to gather in-depth insights and validate questionnaire findings.

Secondary Data: Sources:

Newspapers, Google Scholar journals, Educational journals, Business index reports, Books, Magazines Other relevant sources (total of 15 additional sources)

Process: Collection of existing data and literature on NTFPs, their marketing strategies, the role of e-commerce, and related socio-economic impacts.

Reviewing articles, reports, and studies published in newspapers, journals, NGO publications, and other credible sources. Analyzing trends, case studies, and best practices documented in secondary sources.

Considerations

- Informed consent will be obtained from all participants.
- Confidentiality of participant information will be maintained.
- Ethical approval will be sought from the relevant institutional review board.

Expected Outcomes

- Identification of effective marketing strategies for NTFPs through e-commerce.
- Understanding the challenges and opportunities faced by NTFP producers in adopting e-commerce.
- Recommendations for policy and practice to enhance the market access and financial benefits for NTFP producers.

NTFPs Overview

Non-timber forest Products (NTFPs) are resources derived from forests other than timber. It's included a wide range of plant and animal products, such as fruits, nuts, spices, medicinal plants, honey, fibres, resins, and wildlife products like game, skins, and feathers. NTFPs are integral to the livelihoods and cultural practices of many communities around the world, particularly in rural and indigenous populations

Table 1: NTFPs list in different uses

Edible NTFPs	Types of NTFPs	Fruits, nuts, mushrooms, and other edible plants.
Medicinal NTFPs		Plants and herbs used for medicinal purposes

Aromatic NTFPs	Plants used for their fragrance, such as essential oils
Craft NTFPs	Fibbers, dyes, and materials used in traditional crafts
Resin and Gum NTFPs	Substances extracted from trees for various purposes
Wildlife NTFPs	Animal products like honey, game, and skins.

Sources: Primary data collection

Table 2: Uses of NTFPs

Food: Many NTFPs are used as food, providing essential nutrients and dietary diversity.
Medicine: NTFPs have medicinal properties and are used in traditional medicine practices.
Crafts: Fibbers, dyes, and other materials derived from NTFPs are used in traditional crafts.
Income Generation: NTFPs are often sold for income, providing livelihoods for many communities.
Cultural and Ritual Uses: NTFPs are integral to many cultural practices and rituals

Sources: Primary data collection

Table 3: Economic Value of NTFPs Provides the basis of areas of availabilities

Income Generation:	NTFPs provide income for millions of people worldwide, particularly in rural areas.
Local Economy:	NTFPs contribute to local economies supporting small-scale businesses and industries.
Export:	Many NTFPs are exported generating revenue for countries and communities.
Subsistence:	NTFPs provide essential resources for subsistence living particularly in remote areas.
Value-Added Products:	NTFPs can be processed into value-added products increasing their economic value.

Sources of: primary data collection

Current Marketing Practices: Review traditional marketing channels and methods for NTFPs.

Traditional marketing channels have always played a crucial role in supporting forest-dependent communities by providing a means to sell Non-Timber Forest Products (NTFPs) and sustain their livelihoods. These channels typically involve direct sales in local markets, barter systems, and the involvement of intermediaries such as middlemen and traders. While effective, these practices come with challenges such as limited market access and price volatility. In recent years, there has been a growing interest in improving NTFP marketing through the use of technology and value chain development. Cooperatives and collectives have emerged as helpful mechanisms for NTFP producers to access markets and secure fair prices. Additionally, e-commerce platforms have expanded customer reach and improved marketing strategies.

E-Commerce in Agriculture and Forestry: Summarize existing literature on e-commerce applications in similar sectors. Existing literature on e-commerce applications in agriculture and forestry highlights several key themes and trends. Here is a summary of some key points:

Market Accessed-commerce platforms have expanded market access for farmers and forest producers, allowing them to reach a broader customer base beyond their local markets.

This has led to increased sales and improved incomes for producers. Efficiency and Transparency-commerce has improved efficiency in agricultural and forestry supply chains by streamlining processes such as ordering, payment, and delivery. It has also increased transparency by providing information on product origin, quality, and pricing. Direct Marketing-commerce enables farmers and forest producers to bypass intermediaries and sell directly to consumers. This direct marketing approach has helped increase farmers' profits by eliminating middlemen and reducing marketing costs. Value Addition-commerce platforms allow for value addition through product differentiation and branding. This has enabled farmers and forest producers to command higher prices for their products.

Sustainable Practices: Some studies highlight the role of e-commerce in promoting sustainable agricultural and forestry practices. For example, by providing a platform for selling organic products, e-commerce has incentivized farmers to adopt sustainable farming practices.

Challenges: Despite the benefits, there are challenges associated with e-commerce in agriculture and forestry. These include technological barriers, such as limited internet access in rural areas, as well as logistical challenges related to packaging and transportation

Table 4: Partnerships and initiatives supporting tribal e-commerce in

Partnership/Initiative	Description	Key Activities
TRIFED (Tribal Cooperative Marketing Development Federation of India)	Launched TRIBES India e-commerce platform to boost the tribal economy	Facilitates sales through major online marketplaces like Amazon, Flipkart, and Paytm
Van Dhan Vikas Kendras (VDVKs)	Supports tribal entrepreneurship and e-commerce under the Van Dhan Yojana	Provides training and resources for sustainable NTFP harvesting and marketing
Odisha State Tribal Development Cooperative Corporation (TDCCOL)	Operates an e-commerce portal to market tribal products	Ensures fair prices and better market access for tribal producers

Sources of: Sources

The marketing strategies engaged by

Table 5: Tribal e-commerce initiatives in Odisha

Strategy	Description
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Social Media Marketing	Uses platforms like Facebook, Instagram, and Twitter to promote NTFP products and engage with consumers.
Influencer Partnerships	Collaborates with influencers to reach a wider audience and build trust in tribal products.
Dedicated E-commerce Sections	Partners with major online marketplaces to create specific sections for tribal products, enhancing visibility.
Community Workshops and Training	Conducts training sessions for tribal producers on digital literacy and e-commerce management
Traceability Features	Offers product traceability on websites and apps to assure consumers of the authenticity and source.
Sustainable and Ethical Branding	Emphasizes sustainable harvesting and fair-trade practices in marketing materials to appeal to eco-conscious consumers.
Awareness Campaigns	Launches campaigns to educate consumers about the benefits and value of NTFPs, increasing market demand.

Sources of: Scholar data collection

7. Findings and Discussion

Tribal communities in Odisha face significant challenges in adapting to the e-commerce for their Non-Timber Forest Products (NTFPs). These challenges arise from a lack of effective marketing strategies, insufficient knowledge about e-commerce practices, and a limited understanding of customer relationship management (CRM) and marketing behaviour. As a result, these communities often rely on local markets and a middleman, which restrict their market reach and puts them at risk of management. Because they do not have structured marketing strategies, they miss out on opportunities to brand and differentiate their products, target wider markets, and influence online platforms. Furthermore, many tribal producers are not familiar with basic digital tools

and platforms, which make it difficult for them to navigate and utilize e-commerce websites or apps. In addition to this, they also lack an understanding of CRM principles and practices, which are essential for building and maintaining strong relationships with customers. Therefore, it is essential to bridge these knowledge gaps through customized training, access to technology, and community engagement. By doing so, tribal communities can effectively utilize e-commerce, enhance their livelihoods, and sustainably manage forest resources.

Consumer Behaviour:

Analysis consumer preference and buying behaviour for NTFPs online and offline out of 280 population over the 20 different Villages and 14 each Villagers

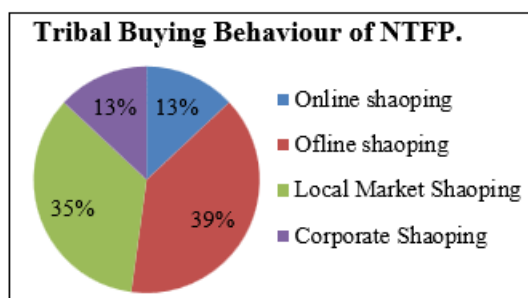
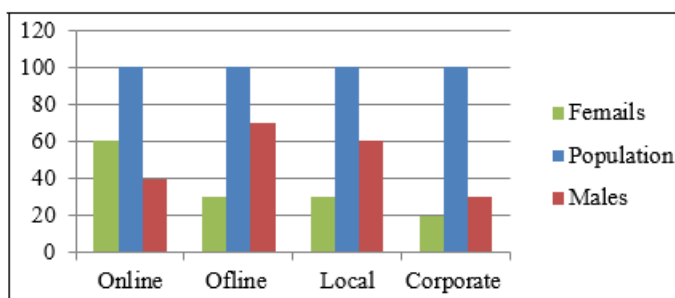


Diagram Scholar Sources No-01



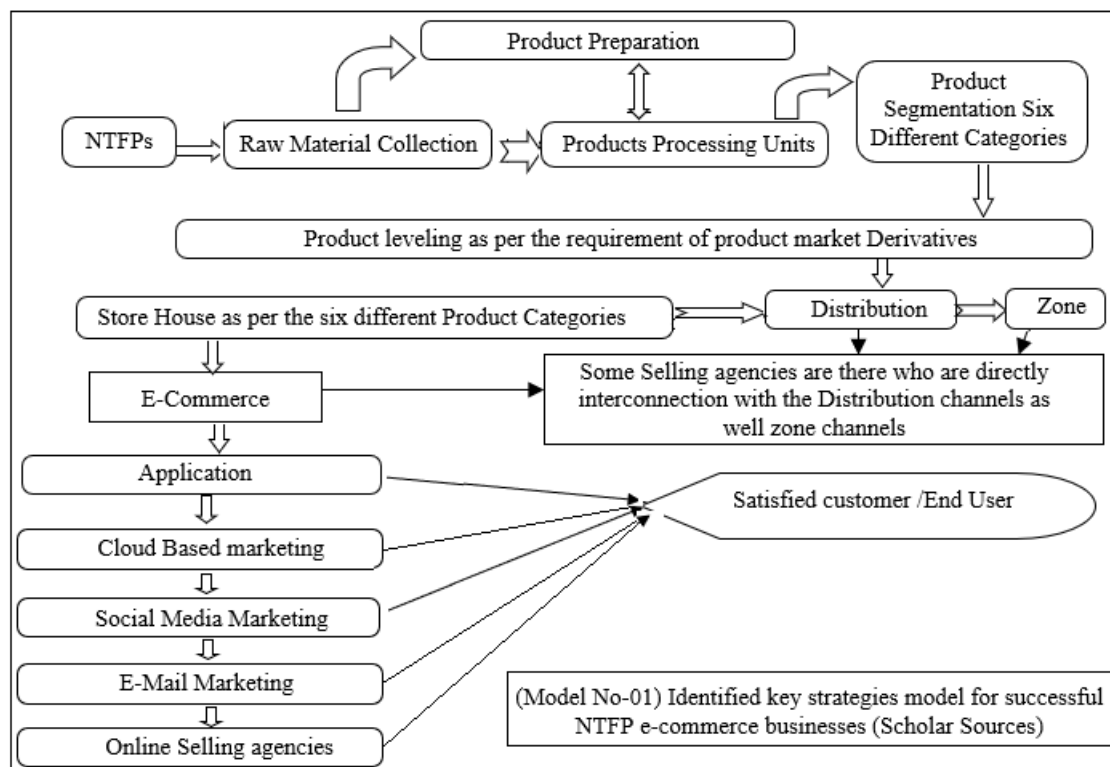
Scholar Sources chart No-01

	Edible Products	Medicinal and Aromatic Products	Fibbers and Resins	Ornamental and Handicraft Materials	Spices and Condiments	Fodder and Forage	Cultural and Religious Products	Fuel wood and Charcoal
Mayurbhanj	1500KG	800KG	3000 Units	200 Units	1200 KG	4.500 KG	500 Units	600 KG
Kendujhar	1200 KG	900 KG	2500 KG	1800 Units	1000 KG	3500 KG	600 Units	5000 KG
Balaswar	1000 kg	700 kg	2000 Units	2500 units	900 kg	3000 kg	400 units	4500 kg
Bhadrak	1300 kg	600 kg	2500 units	1700 units	900 kg	4000 kg	500 units	4500 kg

The table presented the hypothetical distribution of NTFPs among four districts. It emphasizes the significance of region-specific data in achieving an accurate representation. To accurately and precisely create a distribution table, conducting field surveys and seeking local expertise would be essential.

The table (No-06 Scholar Source) provides a hypothetical distribution of NTFPs across the four districts

Successful E-Commerce Strategies:



In order to hypothetically determine the quantity and Units of each type of Non-Timber Forest Product (NTFP) available within a 50 km radius in north tribal domain District, Mayurbhanj, Kendujhar, Balaswar, Bhadrak, of Odisha, it

would be necessary to conduct comprehensive field surveys, collect, and analyze data.

The following steps would be involved

Category	NTFPs	Uses	Estimated Quantity within 50 km Radius
Edible Products	Wild berries, nuts, wild greens, wild fungi, honey	Food, beverages	5,000 kg
Medicinal and Aromatic Products	Medicinal herbs, roots, bark, leaves, essential oils	Traditional medicine, aromatherapy	3,000 kg
Fibbers and Resins	Bamboo, rattan, gum Arabic, pine resin	Weaving, construction, adhesives, varnishes	10,000 units
Ornamental and Handicraft Materials	Ferns, mosses, bamboo, cane	Decoration, handicrafts	8,000 units
Spices and Condiments	Turmeric, ginger, cinnamon, wild pepper	Cooking, flavoring	4,000 kg
Fodder and Forage	Leaves, grasses	Livestock feed	15,000 kg
Cultural and Religious Products	Incense, sacred plants, ritual items	Religious ceremonies, cultural practices	2,000 units
Fuel wood and Charcoal	Small branches, twigs, specific wood types for charcoal	Fuel for cooking and heating	20,000 kg

8. Challenges and Barriers

Marketing Non-Timber Forest Products (NTFPs) online presents several challenges. One major obstacle is logistics. Many tribal communities may lack reliable transportation and shipping services, making it difficult to fulfil orders promptly. Trust issues can also arise, as customers may be hesitant to purchase NTFPs online due to concerns about product quality, authenticity, and seller reliability. Regulatory hurdles, especially in terms of e-commerce compliance and forest conservation laws, can further complicate the process. Technical expertise is another challenge. Tribal communities may lack the knowledge and skills needed to effectively market their products online. Additionally, online market monopolies can create barriers. These platforms often have strict requirements and high fees, making it challenging for small producers to compete. However, there are opportunities to overcome these challenges. The development of software and

tools that integrate online marketing strategies into business dashboards can help tribal communities manage their online presence more effectively. This approach, currently being implemented for the first time in India and other forest conservation areas, demonstrates a growing interest in bringing NTFPs to the online market and enhancing tribal economic sustainability. By leveraging technology and adopting effective marketing strategies, tribal communities can improve their livelihoods and establish themselves in the online marketplace.

Propose actionable strategies for NTFP businesses to succeed online, including digital marketing, partnerships, and branding. Digital Marketing: To succeed online, NTFP businesses should focus on several key digital marketing strategies. First, optimizing website content with relevant keywords through Search Engine Optimization (SEO) can significantly improve search engine rankings and increase

organic traffic. Additionally, creating valuable and engaging content such as blogs, articles, and videos related to NTFPs can attract and educate potential customers. Utilizing social media platforms like Facebook, Instagram, and Pinterest is also crucial for showcasing products, engaging with customers, and driving traffic to the website. Finally, building an email list and sending regular newsletters with product updates, promotions, and educational content helps maintain customer engagement and retention. Partnerships: Forming strategic partnerships can greatly enhance the reach and credibility of NTFP businesses. Collaborating with influencers or bloggers in the sustainability or natural products niche can help promote NTFPs to a broader audience. Establishing local partnerships with businesses, eco-tourism operators, or NGOs working in conservation can also expand market reach and promote products more effectively. Additionally, selling products on established online marketplaces that cater to eco-friendly or sustainable products can provide access to a wider customer base.

Branding: Strong branding is essential for differentiating NTFP products in the market. Defining a clear Unique Selling Proposition (USP) that sets products apart from competitors and resonates with the target audience is crucial. Sharing the story behind the products, including sustainable sourcing practices and the impact on local communities and the environment, can create a powerful brand narrative. Investing in eco-friendly packaging that reflects the brand values and appeals to environmentally conscious consumers further strengthens the brand's image.

Customer Engagement: Engaging with customers is vital for building loyalty and trust. Encouraging customers to leave feedback and reviews can enhance credibility and attract new buyers. Implementing customer loyalty programs or offering discounts for repeat purchases can foster loyalty and encourage repeat business. Providing educational resources about the benefits and uses of NTFPs can deepen customers' connection with the products and enhance their overall experience.

Measurement and Analysis: Regularly measuring and analyzing marketing efforts is key to ongoing success. Utilizing analytics tools like Google Analytics can help track website traffic, user behaviour, and conversion rates, providing valuable insights into the effectiveness of marketing strategies. Gathering customer feedback and analyzing data can identify areas for improvement and inform necessary adaptations to marketing approaches, ensuring that strategies remain effective and relevant.

Policy Suggesting for Supporting Improved Regulation for NTFP E-commerce.

Simplify Licensing and Permits: Streamline the process for obtaining licenses and permits for harvesting, processing, and selling NTFPs to reduce bureaucratic hurdles for tribal producers.

Quality Standards and Certification: Establish clear quality standards and certification processes for NTFPs to ensure product authenticity and build consumer trust.

8.1 Regulations for NTFP E-commerce:

Develop detailed policy addressing the single needs of NTFP e-commerce, including guidelines for online sales, packaging, and transportation.

8.2. Financial Incentives

Subsidies and Grants: Provide subsidies or grants to tribal communities and small businesses to cover the costs of setting up and maintaining e-commerce platforms. **Tax Incentives:** Offer tax incentives or reductions for businesses engaged in sustainable harvesting and sale of NTFPs to encourage market participation. **Low-Interest Loans:** Facilitate access to low-interest loans for tribal entrepreneurs and cooperatives to invest in e-commerce infrastructure, such as websites, apps, and logistics. **Infrastructure Development Improve Digital Infrastructure:** Invest in enhancing digital infrastructure in remote tribal areas, including better internet connectivity and access to digital tools and technologies. **Understanding NTFP E-commerce**

8.3 Impact Assessment of E-commerce on Tribal Livelihoods:

- 1) Investigate the socio-economic impacts of e-commerce adoption on tribal communities, including income levels, employment opportunities, and overall quality of life.
- 2) Assess how e-commerce affects traditional livelihoods and cultural practices related to NTFP harvesting and use.
- 3) **Consumer Behaviour and Market Demand:**
- 4) Study consumer behaviour and preferences related to NTFPs to understand what drives purchases and how to effectively market these products.
- 5) Analyze market demand trends for NTFPs in both domestic and international markets to identify growth opportunities
- 6) **Sustainability and Environmental Impact:**
- 7) Examine the environmental impacts of increased NTFP harvesting driven by e-commerce, focusing on sustainability and conservation.
- 8) Research best practices for sustainable harvesting and how they can be integrated into e-commerce models.

8.4 Technological Integration and Adoption:

- 1) Explore the barriers to technological adoption among tribal communities and identify effective strategies for digital literacy training and technology integration.
- 2) Study the impact of different e-commerce platforms and tools on the efficiency and profitability of NTFP businesses.

8.5 Policy and Regulatory Frameworks:

Analyze existing policies and regulations related to NTFP harvesting and e-commerce to identify gaps and areas for improvement. Research the effectiveness of financial incentives, subsidies, and other support mechanisms in promoting NTFP e-commerce.

- 1) **Supply Chain and Logistics:** Investigate the logistical challenges associated with sourcing, processing, and

delivering NTFPs from remote areas to end consumers. Explore innovative solutions for improving supply chain efficiency and reducing costs in NTFP e-commerce.

- 2) Community Engagement and Capacity Building: Study the role of community engagement and capacity-building initiatives in the success of NTFP e-commerce ventures. Evaluate the effectiveness of training programs and technical assistance in enhancing the digital and business skills of tribal producers.
- 3) Case Studies and Best Practices: Conduct detailed case studies of successful and unsuccessful NTFP e-commerce ventures to identify best practices and lessons learned. Compare different business models and approaches to determine the most effective strategies for NTFP e-commerce success.
- 4) Economic Analysis: Perform economic analyses to quantify the financial benefits of e-commerce adoption for NTFP producers and the broader economic impact on tribal regions. Study the cost structures and pricing strategies in NTFP e-commerce to identify ways to improve profitability.
- 5) Cultural Impacts: Research how e-commerce and increased market access influence the cultural practices and identities of tribal communities. Investigate ways to preserve cultural heritage while integrating modern e-commerce practices.

9. Conclusion

This study highlights the factors that are crucial for the success of e-commerce in the marketing of Non-Timber Forest Products (NTFPs). It reveals that ventures like EcoHarvest achieve success by employing targeted marketing strategies, engaging with the community, practicing sustainable sourcing, and using customized digital platforms. On the other hand, ventures like Forest Treasures struggle due to limited market reach, a lack of marketing expertise, and logistical challenges. Effective marketing strategies for NTFP businesses include search engine optimization, content marketing, social media engagement, influencer partnerships, and building a strong brand narrative.

Policy suggestions focus on the need for streamlined regulations, financial incentives, improved digital infrastructure, capacity-building initiatives, and better market access. Implementing these strategies has a broader impact beyond immediate financial benefits. Promoting sustainable forest management practices helps preserve biodiversity and maintain ecological balance. Strengthening the digital and business skills of tribal communities fosters economic resilience, and successful NTFP e-commerce contributes to rural economic development by creating employment opportunities, increasing income levels, and improving the quality of life for tribal populations. Overall, integrating e-commerce into NTFP marketing holds significant potential for enhancing sustainable forest management, supporting rural economies, and promoting socio-economic development in tribal regions.

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