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Vegetable Marketing Practices followed by Farmers in Dibrugarh District of Assam

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ABSTRACT

Agriculture is crucial to India's rural economy, with vegetable cultivation being a key component. This study focuses on 150 rural farmers in Assam's Dibrugarh District, exploring their socioeconomic characteristics, marketing practices, factors influencing these practices and the barriers they experience. The rapid sale of vegetables, driven by their perishable nature, emerged as the most influential factor in farmers' marketing practices. It was found that farmers face various barriers like perishability of vegetables, limited access to ICT tools and low level of knowledge. Findings revealed a significant association between socioeconomic characteristics and marketing practices.

Keywords: *Agriculture; Assam; Farmers; Marketing Practices; Barriers.*

INTRODUCTION

India has the world's second-largest agricultural land area and ranks as the second-largest global producer of vegetables, following China. The vegetable sector's growth depends on both production and efficient marketing. Due to its labor-intensive nature, vegetable farming can significantly boost employment (Maratha and Badodia, 2017). India's varied climate supports diverse vegetable cultivation. 2019-20, India produced 191.77 million metric tonnes of vegetables over 10.35 million hectares (Purushothaman et al., 2021). The perishable nature of vegetables emphasizes the importance of efficient marketing, which is crucial to minimizing waste and enhancing value. Farmers' marketing practices in rural areas are vital to the efficiency of agricultural markets, economic growth and rural development. Marketing practices directly impact how a business engages with its audience, stakeholders and the market as a whole.

The agricultural marketing system in the Eastern and North-Eastern States exhibits notable differences from other states. Furthermore, the ownership structure and operational dynamics of the markets in these regions are characterized by heterogeneity. Consequently, the argument presented by these states is that implementing the reform process initiated by the Government of India (GOI) becomes particularly challenging in the absence of uniformity in market operations (Sharma, 2012).

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Approximately 60% of the people engaged in agricultural activities as farmers or farm laborers in Assam. However, most farmers face significant challenges such as poverty, lack of awareness regarding current technologies and illiteracy due to different factors such as population growth, decline of traditional local industries, unproductive land and increasing debt and the expansion of commercial farming. As a result, the farmers in this region experience lower social status, modest lifestyles and limited incomes. (Deka et al, 2020; Hussain et al. 2023).

Marketing practices pertain to the ability and willingness of individual farmers to understand market trends and utilize them for increased profitability when selling their agricultural produce. Maintaining a constant awareness of their marketing practices is essential for farmers, mainly due to their delicate nature because vegetables are vulnerable to quick deterioration in an environment requiring prompt marketing.

Marketing practices encompass various activities influencing how agricultural produce brings to the market, interactions with buyers and intermediaries and responses to market fluctuations. The influence of marketing practices on vegetables extends well beyond mere promotion, encompassing a broad spectrum of effects on agriculture, nutrition, economics and sustainability. There is a research gap on the factors that influence the practices followed by the farmers and the barriers that farmers encounter in marketing their vegetables, which can significantly affect their profitability and long-term sustainability. Addressing these gaps is essential for improving the effectiveness of vegetable marketing, increasing farmer incomes, and promoting sustainable agricultural practices. The present study investigates the localized and culturally specific marketing practices farmers adopt in regions like Dibrugarh District, Assam with the following objectives.

1. To study the socio-demographic characteristics of the vegetable farmers
2. To delineate the practices followed by the farmers in marketing vegetables
3. To identify the factors influencing Marketing practices of vegetables and
4. To enlist the barriers farmers face in marketing vegetables

METHODOLOGY

Selection of the area and sample size: The current study is primarily empirical and draws on the primary data. The area selected for the study comprises three villages namely Bagibill Village, Tekela Chiring village and Aaithan Dighala Village, situated under Rajabheta Gram panchayat of Barbaruah Development Block of Dibrugarh District, Assam. The district is primarily agricultural. Its climate and the soil are favorable for the cultivation of crops, and it is the most vegetable-grown area of the districts. The investigator randomly selected 50 vegetable farmers from each of three villages, resulting in a total sample size of 150.

Methods and Tools*:* The investigator used methods such as face-to-face communication and observation, and the tools used for the study was a questionnaire and conducted interview. It included a section on socioeconomic status, Marketing practices adopted, factors influencing marketing practices, and barriers experienced by the farmers.

Analysis of data*:* Data analysis includes frequency, percentage, mean, chi-square and Garrett ranking.

Factors Influencing Marketing Practices*:* The factors influencing the marketing practices of farmers were assessed using a Likert scale adopted from Kusmaryono et al. (2022). This scale offered five response options for each

factor: Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree. The factors were then ranked based on their mean scores and presented accordingly.

Barriers Experienced by the Farmers: Garrett's Ranking Technique was used to convert the order of barriers experienced by the farmers into numerical scores. Each rank is associated with a percentage position that reflects the proportion of farmers who rated a particular barriers at that rank or higher. To quantify these rankings, the scale value was obtained by applying the scale conversion table provided by Garrett and Woodworth (1973).

FINDINGS AND DISCUSSION

Socio Demographic Characteristics

The distribution of farmers across different age groups shows distinct generational segments involved in farming. Notably, a significant portion (30%) falls within the 31-40 years of age, indicating a substantial workforce in their most productive years. The presence of a considerable number of younger farmers (23.3%) under 30 years of age emphasizes the necessity for customized support to help them reach their potential and deal with the challenges they face. The gender distribution among farmers highlights that 65.3% are male, while a smaller proportion (34.6%) are female, indicating men are more involved in farming. This could be due to cultural norms and traditional roles that see farming as a male job, with women often focusing on household duties and less physically demanding tasks.

In terms of educational qualifications, 30% of the farmers attained high school, indicating they have a basic level of education that helps them understand new farming methods and technologies. With further training and educational programs focused on modern farming techniques, these farmers could enhance their skills, leading to improved crop yields and increased profits. The study also reveals that 43.3% of farmers earn less than Rs. 50,000 per year, indicating significant financial challenges that limit their ability to invest in better equipment, seeds and resources. These low-income levels highlight the need for interventions to boost earnings, enabling farmers to reinvest in their operations, improve productivity and achieve greater economic stability.

Marketing Practices Followed by the Farmers

The marketing practices followed by the farmers in vegetable marketing encompass the various actions that farmers undertake after harvesting their vegetable crops. These practices specifically focus on how farmers market and sell their vegetable crops, as illustrated in Table 1.

Table 1. Responses of the Farmers Concerning their Marketing Practices

Sl. No.	Marketing Practices	Aspects	N= 150	
			F	%
1	Harvesting Time	In the early morning (between 4 am to 9 am),	81	54
		During the early evening (between 5 pm and 7 pm)	24	16
		In the late evening (between 7 pm to 9 pm), and	2	1.3
		Throughout the night (starting from 10 pm and lasting until 3am).	43	28.7

Sl. No.	Marketing Practices	Aspects	N= 150	
			F	%
2	Source of Market Information	Friends/ Relatives	45	30
		Local Persons	13	8.7
		Middleman	23	15.3
		Retailers	12	8
		Wholesalers	25	16.7
		Government Agents	5	3.3
		Agricultural Extension services	19	12.7
		Online media and social forums (Whatsapp, Facebook, Instagram)	8	5.3
3	Market Distance	Within a 10 kilometers radius	15	10
		Between 11 and 20 kilometers	21	14
		More than 20 kilometers	114	76
4	Location of Vegetable sales	In the village itself	16	10.7
		Nearby Market	23	15.3
		Nearby Weekly Market	71	47.3
		Far away Market	40	26.7
5	Details of sales to consumers	Directly to the consumers	34	22.7
		Village level middleman	55	36.7
		Commission agents	32	21.3
		Local shops	29	19.3
6	Middlemen involvement	No involvement	54	36
		Partially	65	43.3
		Fully	31	20.7
7	Storage for preserving of vegetables	Home	110	73.3
		Warehouses	7	4.7
		Co-operatives store	21	14
		Common storage facilities available near market	12	8
8	Package of Vegetables	Jute bags (Gunny bags) only	10	6.7
		Bamboo Baskets only	11	7.3
		Jute bags (Gunny bags)+ Bamboo Baskets	112	74.7
		Polythene bags+ Thermocol	12	8
		Corrugated Craft paper cartons + Plastic tray	5	3.3

Sl. No.	Marketing Practices	Aspects	N= 150	
			F	%
9	Transport used to carry the vegetables	Bicycle	56	37.3
		Moped	48	32
		Mini truck	12	8
		Tempo	34	22.7
10	Pattern of Payment received	Advance payment done by middleman	17	11.3
		Getting payment at the time of selling	120	80
		Delayed payment (maintaining account book by the customer to pay later)	13	8.7

Findings on the harvesting time of the vegetables show that 54 % of the farmers prefer to harvest their vegetables during the early morning hours, specifically between 4 am and 8 am. This timing choice likely aligns with freshness and cool weather, optimizing the quality of their produce. Similarly, a study (Kader, 2002) stated that harvesting during cooler periods, such as early morning, can significantly reduce the respiration rate of vegetables, which helps preserve the freshness, texture and nutritional content of the produce, leading to longer shelf life and better market appeal.

Regarding the source of market information, it is found that 30% of the farmers rely on information shared by friends or relatives, which indicates that informal networks play a more significant role in information exchange than official government channels. Similar findings were also observed by Pongener & Jha (2024), who found that friends and relatives were more open and available to discuss their experiences and share useful information than other sources.

The majority (76%) of the farmers travel a distance of more than 20 kilometers to sell their vegetables; they are likely to encounter higher transportation costs, more time spent traveling, and an increased risk of produce spoilage. This situation points to a need for improvement, such as enhancing market access or upgrading local infrastructure to better support farmers.

In terms of the sales location, about 47.3% of farmers prefer to sell their vegetables at nearby weekly markets. This reflects that farmers favor these markets due to their proximity and the recurring nature of these sales opportunities, which offer convenience and consistent access to buyers.

Regarding the details of vegetable sales, approximately 36% of farmers depend on village-level middlemen to facilitate their sales, which indicates that middlemen play a key role in connecting farmers with larger markets, often handling logistics and negotiations and 43.3 % of the farmers reported partial involvement of middleman.

About 73.3% of farmers choose to store or preserve their vegetables at home. This approach helps farmers gain greater control over their produce, managing supply and improving market timing. A majority (74.7 %) of the farmers use jute bags and gunny bags for packaging, as they are made from natural fibers, making them biodegradable and environmentally friendly. Unlike plastic packaging, they do not contribute to long-term environmental pollution, aligning with sustainable agricultural practices.

Transportation used for selling vegetables to the market shows that nearly (37.3 %) of the farmers use bicycles, as it is a low-cost transportation option that helps farmers reduce expenses related to market access and distribution, thereby increasing their profit margins. The variety of transportation methods farmers use underscores the urgency of addressing transportation challenges, such as inadequate infrastructure and costly options. Implementing shared transportation schemes or investing in rural road development projects could enhance farmers' market access and decrease transportation expenses.

Regarding the payment pattern, around 80% of the farmers receive payment at the time of selling. This immediate payment method ensures a prompt return on their produce and ensures smooth cash flow, which can improve overall financial health and farm productivity. Farmers are also less reliant on credit or loans to meet their short-term financial obligations, reducing the burden of interest payments and the risk of debt accumulation.

Association between Select Socio Economic Characteristics and the Marketing Practices of Farmers

The socio-economic characteristics such as age, gender, educational qualification and annual income with the farmers' marketing practices is essential for understanding the ways in which farmers sell and distribute their produce. To assess the association between these socio-economic characteristics and vegetable marketing practices, a chi-square test was conducted, with the results presented in Table 2.

Table 2. Association between Socio Economic Characteristics and Marketing Practices of Farmers

Socio Economic Characteristics	Chi square	df	P value
Age	314.313a	42	.000**
Gender	84.444a	14	.000**
Educational Qualification	434.800a	70	.000**
Income	258.641a	42	.000**

*** significant at 1 % level*

All four socio-economic characteristics (age, gender, educational qualification and income) have statistically significant relationships with the marketing practices of the farmers. The p-values for all variables are (.000**) shows that the observed associations are significant at (1% level). Therefore, these characteristics play a crucial role in marketing practices. As younger farmers are often more willing to embrace new and innovative marketing strategies, farmers with higher educational qualifications tend to be more knowledgeable about market trends and opportunities. Higher income levels provide the financial means to invest in better marketing infrastructure and traditional gender roles may influence who is responsible for making marketing decisions. Thus, it shapes how farmers engage with and navigate the marketing of their produce, highlighting the need for marketing approaches that address these specific socio-economic dimensions.

Factors Influencing Marketing Practices among Vegetable Farmers

The marketing practices adopted by the farmers are influenced by a range of factors, each of which plays an important role in their decision-making process that are highlighted in Table 3.

Table 3. Factors Influencing Marketing Practices

Sl. No.	Factors Influencing Marketing Practices	N=150	
		Mean score	Rank
1	Rapid sale of vegetable due to their perishable nature	4.18	I
2	Cultivation cost of Vegetables	3.80	II
3	Limited storage facilities	3.55	III
4	Seasonal Price Fluctuation	3.35	IV
5	Access to accurate and timely marketing Information	2.17	V
6	Improved training facilities	2.06	VI
7	Inadequate transport facilities	1.95	VII
8	Efficient distribution channel	1.91	VIII
9	Increased use of mass media	1.48	IX
10	Availability of Bank credit schemes	1.35	X
11	High Cost of Packaging	1.20	XI

Table 3 indicates that the factor 'Rapid sale of vegetables due to their perishable nature ranked first with the highest mean score of 4.18. Hegde and Madhuri (2013) had stated that Vegetables are highly perishable and subject to swift degradation from biological and chemical processes such as enzymatic activity and microbial growth, which significantly shorten their shelf life. As a result, farmers prioritize selling their produce quickly to avoid spoilage, maintain profitability and meet consumer demand for fresh produce.

The factor 'Cultivation cost of vegetables' ranked second with a mean score of 3.80. Patel et al. (2018) emphasized that the cost of cultivation is crucial in determining the net income from various crops. The high costs associated with vegetable cultivation, including expenses for seeds, fertilizers, labor and water, are essential to the financial sustainability of farming operations. Farmers must carefully factor these costs into their marketing strategies to set sale prices that cover expenses and generate a profit. Consequently, farmers must develop marketing approaches that account for these financial pressures, balancing pricing and market choices to maintain profitability.

Limited storage facilities,' ranked third with a mean score of 3.55, play a critical role in shaping marketing practices for vegetables. Limited storage infrastructure impedes farmers' ability to preserve vegetables for extended periods, leading to increased spoilage and financial losses. The absence of adequate storage facilities compels farmers to sell their produce quickly to avoid deterioration and this urgency to sell can impact potential profit margins. Manamzor and Mamudu (2017) highlighted that the limited storage space for vegetable farmers in Binduri creates challenges in effectively and timely marketing their produce. The availability of bank credit schemes (1.35) and high-cost packaging (1.20) are the least influential factors reported by vegetable farmers.

Barriers experienced by the Farmers in Marketing Vegetables

Farmers experience numerous barriers in marketing their vegetables, which can prevent them from achieving fair returns and sustainable livelihoods. The barriers they encounter in the marketing process are displayed in Table 4 and have been ranked using the Garrett ranking method.

Table 4. Barriers Experienced by the Farmers in Marketing of Vegetables

Sl. No.	Barriers	Garrett Score	Rank
1	Perishability of the vegetable produce is very high.	66.45	1
2	Farmers have limited exposure to information and digital communication tools.	66.33	2
3	Low level of knowledge	56.80	3
4	Middlemen and traders commonly engage in practices	49.41	4
5	Non availability of nearby markets	41.88	5
6	Inadequate storage infrastructure	41.59	6
7	Absence of an effective transportation system.	38.19	7
8	Limited access to adequate banking and credit options.	35.31	8
9	Farmers are not aware of government schemes	34.98	9

The most severe barrier the farmers reported is the vegetable produce's perishability, with a Garrett mean score of 66.45. It indicates that vegetables are highly perishable due to their high water content, which makes them prone to physical degradation. This might be due to a lack of proper storage and preservation methods, such as refrigeration or cold storage, that lead to quick deterioration of quality, appearance and nutritional value. Similar studies by Rohit et al. (2017) reported the marketing challenges farmers face due to the perishable nature of their products, with a Garrett score of 58.125. Consequently, it is essential to enhance post-harvest management infrastructure, such as refrigerated transport chains, precooling units, packing facilities, and short- and long-term cold storage facilities.

Limited access to information and communication technology was another critical barrier, with a garret score of 66.33. This may be due to a lack of digital literacy and limited availability of devices. Farmers miss opportunities to connect directly with buyers and maximize their profits without these tools. The vital role that access to technology plays in modern marketing practices. With adequate ICT, farmers can access real-time market information, which facilitates them in making insightful decisions regarding when and where to sell their produce.

The low level of knowledge barriers, which received a score of 56.30, was ranked third. Soni (2019) highlighted that Indian farmers are illiterate and often lack formal education,

making them more vulnerable to exploitation by moneylenders, traders and middlemen due to their straightforward and trusting nature. Limited access to adequate banking and credit options (35.31) and Farmers not being aware of government schemes (34.98) are the minor barriers reported by the vegetable farmers of the Dibrugarh district.

CONCLUSION

The marketing practices of vegetable farmers in the Dibrugarh District of Assam reflect a dynamic interplay of factors that influence how they bring their produce to market. Farmers' age, gender, educational qualification, and income are significantly associated with the marketing practices of the farmers. Major influencing factors are the rapid sale of perishable vegetables, cultivation costs and limited storage facilities. However, farmers face barriers such as produce perishability, limited technology access and low knowledge level. Effective marketing practices help farmers sell their produce at fair prices, boosting their income and reducing losses. Therefore, to enhance the marketing practices of vegetable farmers, the Government should make strategic investments in developing better storage facilities, improving access to modern technology and implementing training programs designed to elevate farmers' knowledge and skills. These measures are expected to reduce post-harvest losses, improve market access and ensure fair pricing for sustainable agricultural economy in the region.

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