

Analysing Purchase Preference Towards Geographical Indications (GIs) Using Consumer Segmentation Approach

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Abstract

Consumers of local food products often face a dilemma regarding their purchase decisions due to the non-availability of information that is required to assess the quality of the product. To reduce this information asymmetry, the Geographical Indication Registry in India issues a Geographical Indication tag (GI tag) as a community right to the growers of local special products originating from a region, town or country. The GI tag symbolises uniqueness, curtails counterfeit products' spread, and reduces information asymmetry. This study has taken a select case of Udupi Mattu Gulla Brinjal, a GI horticulture produce grown by a community-based enterprise (CBE) in the Udupi District of South India. This research work aims to study and analyse consumer preference towards Udupi Mattu Gulla Brinjal (GI) using a consumer segmentation approach. The Principal Component Analysis technique has been used to identify statements with discriminatory power. Subsequently, the statements of research importance have been used to identify consumer segments using a two-step clustering approach. The study results have identified three important consumer clusters based on the analysis of consumer preference characteristics. Thereafter, marketing strategies have been proposed after analysing the profile of each segment. The study is undertaken as a response to an initiative from the Sustainable Development Goals (SDGs) Coordinating Centre, Government of India, to partner the development of agriculture in the local area of Udupi District. The objectives of the study are consistent with SDG goal 11 (sustainable communities) and SDG goal 12 (responsible consumption).

Keywords

Consumer preference, consumer segments, rural markets, rural marketing, Geographical Indications (GIs), Community-Based Enterprises (CBEs).

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Introduction

Consumption of fruits and vegetables with Geographical Indications (GIs) have received significant literary attention in recent years. Consumers are willing to buy innovative, high-quality (Zhao at al., 2014; Lopez-Bayon at al., 2020; Niederle and Gelain, 2013) and health-guaranteed products (Mattas at al., 2020), at a premium price enabling agri-business to evolve and compete (Mesic at al., 2017) in the market place (Uzar, Pejanovic, 2022). In recent years, increased focus on healthy eating habits has encouraged consumers to seek more information regarding characteristics of products, their place of origin (Alphonse at al., 2015) and production methods. Consumers have become more aware and informed and have developed a curiosity to know more about geographical indication

tagged fruits and vegetables and its value-added products (Russo at al., 2021; Cardoso at al., 2022). However, the tastes and preferences of the consumers may not be consistent with the specifications that these GIs provide, leading to information asymmetry between consumer preferences (Savelli at al., 2021; Arora and Gupta, 2020) and producer offerings. Moreover, consumers maintain a positive attitude towards the consumption of GI products towards a reconnection to the local region, both for identity, safety, and environmental reasons. These patterns of preferences and attitudes of consumers' reconnection can provide a detailed understanding into the purchase intention and behaviour. Thus, Geographical Indications identifies its benefits on consumer markets whose specific quality comes with a strong link to its territory of origin (Fandos-Herrera, 2016).

Geographical Indications as a community right provide the growers with the necessary incentive to increase margins and contribute to local development (Alphonse et al., 2015). The extent to which these GI tags can contribute to local agri-business development would depend on the nature of consumer demand. GIs can increase the visibility of producers' products and bring higher returns on investments. Benefits derived from GIs encourage producers to increase their production (Lopez-Bayon et al., 2020). The Government of India is promoting geographical indications through production, technological and marketing-linked interventions to boost the acceptance and sales of these unique products across the country. (Torok et al., 2022). However, in the case of some GIs, particularly horticulture-based produces have seen limited marketing push (Medeiros and Passador, 2021) to promote exports in international markets.

Studies have highlighted the advantages that local producers derive from the GI tag. GIs provide a distinct regional identity and add value to the products, thereby confining a competitive edge to the local producers (Stasi et al., 2011). To increase the value of GI products in the domestic market and subsequently scale up in the world market (Torok and Moir, 2018), a developing country like India should study and understand consumer preferences for its less-known GIs in the local market (Cei and Stefani, 2018). Many studies have reported that higher prices for their produce are the main attraction to participate in a GI for producers (Traversac et al., 2011; Jena and Grote, 2012; Lamarque and Lambin, 2015). Consumers are willing to pay a higher price for products with superior quality (Ghosh, 2016; Quiñones-Ruiz et al., 2017; Mattas et al., 2020).

According to the Ministry of Commerce and Industry, India has issued 432 Geographical Indications as on December, 2022. The States of Karnataka, Tamil Nadu, Uttar Pradesh and Kerala hold the maximum number of GIs in the country. The Department for Promotion of Industry and Internal Trade (DPIIT) issues these special tags to promote the transfer of diverse products amongst the states to contribute in building a vibrant cultural society. GI is a premium recognition to various regional products, arts and crafts mastered by many generations over the years. Several activities have been undertaken by the Department for Promotion of Industry and Internal Trade to promote these special tags by collaborating with state apparatus

(prominently National Bank for Agriculture and Rural Development) and local stakeholders to create sustainable consumer markets.

The present study is conducted in Udupi District in the state of Karnataka, India. The State of Karnataka has 48 GIs registered as on November, 2022 in the category of manufactured products, handicrafts, sweets, agriculture and food stuff. Udupi District is home to three GIs, namely Udupi Jasmine, Udupi Mattu Gulla Brinjal and Udupi Sarees. This research paper examines the consumer preferences towards the famed Udupi Mattu Gulla Brinjal to understand the nature of consumer preferences, identify key consumer segments and propose marketing strategies to increase producer margins and contribute to local development (Belletti et al., 2017).

Distribution inefficiencies, inability to develop market linkages and networks, lack of market infrastructure (Lamarque and Lambin, 2015) and extension facilities are some of the key problems faced by the Udupi Mattu Gulla Brinjal growers. The inability to work with an open mindset towards positive change and the lack of team work on the part of the Mattu farmers has also obstructed the sustainable development of Udupi Mattu Gulla Brinjal. This aspect of lack of coordination and team skills among local farmers has been reported by other studies in South India (Anson and Pavithran, 2013; Bashir, 2020).

Over the recent years, several interventions have been designed and implemented by the Government of Karnataka through its special apparatus (Niederle and Gelain, 2013) aimed to promote and develop the activities of the association in Mattu village. Of this, the most noteworthy scheme is the creation of Farmers Producer Organization (FPOs) introduced by the National Bank for Agriculture and Rural Development in 2018, an initiative by the Government of India to foster rural development. This initiative has been unable to gain momentum due to a lack of coordinated efforts on the part of the farmers. However, the farmers strongly believe that demand creation in the local, domestic and international markets, as a challenge, by far outweighs the other problems that they encounter. Given this background, the researchers have taken up this study to undertake an analysis of consumer preferences towards Udupi Mattu Gulla Brinjal, a unique Brinjal variety grown in the west coast line of Karnataka State in South India. Due to its unique taste, the Geographical Indication tag was awarded to the Mattu Gulla

Growers Association as a community right. Brinjal is also called 'gulla' in the local region due to its round shape.

The succeeding sections of this paper is presented as follows: First, a literature review of earlier studies on consumer preferences towards Geographical Indication agricultural produces is presented. In the next section, the methodology is explained, which includes the research instrument, sample design and the process of identifying consumer segments using factor analysis and cluster analysis techniques. Finally, the results on key consumer segments identified are discussed to draw inferences and conclusions on deploying marketing strategies that will help stakeholders like producers, consumers, marketers and policy makers.

Literature review

Udupi Mattu Brinjal Growers Association - A Community-based Enterprise (CBE)

Peredo and Chrisman extensively reported about the concept of community-based enterprises (CBE) in their seminal research work in 2006. In this work, the authors argued that the community members engaged in businesses like farming, weaving, pottery, fishing, and other such occupations collectively form an enterprise called as the CBE. It requires genuine community participation from the beginning: identification and acceptance of the problem, an agreement that it needs to be addressed, an understanding of the target group's socio-economic situation and a hunger to collectively solve business problems and the engagement of influential people in the set up to build a network of community groups. Whole-of-community (schools, parents, leaders, adolescents) are engaged in collaborative effort (Fotu et al., 2011). Such an enterprise naturally evolves an economic and social form (Handy at al., 2011) to achieve sustainable development of the local region. The members of the community launch the CBE as a solution to alleviate themselves from poverty and target economic and social development (Welsch and Kunhs, 2002; Parwez, 2017). Similar to the characteristics of the CBE conceptualized by Peredo and Chrisman and other authors, the workings of the Udupi Mattu Brinjal Growers Association embark on mutual trust and cooperation (Powe, 2019) driven by its members. Dissatisfied by the lack of success as individual units, the farmers chose the collective approach to come out of the distress sale. In 2011, the growers' association was conferred the Geographical Indication tag as a community

right. Thus, Udupi Mattu Brinjal Growers Association is a special case, where a Geographical Indication of horticulture produce is grown, marketed and sold by a community-based enterprise.

Problem statement

The Mattu farmers prefer to sell the crop through intermediaries as they transport the produces to other regions as aggregators (mainly Karnataka and Maharashtra State). The farmers, mostly from low-income families, do not have the financial wherewithal to establish a distribution system and transport facility on their own. The first crop reaches the market between the end of September and early October every year, and fetches the maximum price (Rs. 150/kg). The prices reduce gradually as the season continues. Around the end of March, the last crop is grown, which is small in size. During this time, the farmers are forced to sell at lower prices (as low as Rs. 10 per kg) and resort to distressed sales as the demand continues to dwindle. Until 2018, there was no transparency in price fixation, as the agents controlled the market dynamics. Agents look after their self-interest and do not allow farmers to sell their produce to market directly. However, the scenario has changed after 2018 when National Bank for Agriculture and Rural Development (NABARD) introduced the Farmers Producer Organization (FPO) as an intervention focussed on sustainable agriculture development in Mattu village. Under this arrangement, NABARD appointed Producers Organization Promoting Institutions (POPIs) led by Non-governmental Organizations and other local partners with a clear mandate of forming and nurturing Farmers Producers Organizations to improve market linkages and encourage the benefits of cooperation. To address the demand side of the problem, studies should investigate consumer preferences towards Udupi Mattu Gulla Brinjal, a local GI. The sustainability of these community-led enterprises will depend upon the efforts directed towards increasing sales driven by a strong consumer demand. In the Indian context, several well-known GIs, like Darjeeling tea, Nagpur Orange, etc., have made a mark and become popular brands in the domestic and international markets. Palakkad Rice (Anson & Pavithran, 2013) is another GI from Kerala State with a strong presence in South India. Comparatively, Udupi Mattu Gulla Brinjal has not been able to achieve the distinction that it deserves both in terms of awareness and acceptance of its products (produce and value additions) in the domestic and international markets. Therefore, this study examines the reasons why consumers

prefer Udupi Mattu gulla Brinjal in its raw and value-added form. This study is a response to the call that the researchers received from Government Support Institutions engaged in the development of agriculture in the State of Karnataka. A broad vision statement is envisaged by the Government of Karnataka to make Community-based Geographical Indications financially independent. Udupi Mattu Gulla Brinjal is one such case under study in the district of Udupi (267 villages, census, 2021). In recent years, the popularity of Udupi Mattu Gulla Brinjal has grown immensely due to the wide coverage of its production, packaging and labelling and its promotion in the local print media. But this popularity is limited to the local area of Udupi and Dakshina Kannada district. Marketing efforts to popularize it in neighbouring states need to increase. Hence, a study on consumer preferences towards horticulture-based geographical indications will help marketers to design and deploy marketing strategies. In the long run, Mattu farmers will stand to gain by selling more to consumers and thereby increase margins.

Consumer preference towards Geographical Indications

GIs are considered as key assets of growing relevance, particularly in the case of developing countries as it has significant potential to lift these countries from weak economic conditions. The year 2022-23 has witnessed a sharp rise in agriculture-based geographical indications in India. The Department for promotion of Industry and Internal Trade (DPIIT) awarded GIs to three more products like Mysore Silk, Kandra Tea, and Thanjavur Paintings to the exclusive list of existing GI products, taking the total tally to 429 in March, 2023, up from 349 GIs in August, 2022. Many studies have reported that consumers tend to highly regard quality, originality and authenticity in their purchase and therefore prefer Protected Geographical Indications (PGIs) over other products (Glogoveţan et al., 2022; Likoudis et al., 2016; Barska and Wojciechowska-Solis, 2018). It has been found that consumer perception about sensory attributes of Geographical Indications is influenced by Product Designation of Origin Labels (PDO labels) (Savelli et al., 2021; Bonetti et al., 2020; Pikturnienė and Treigytė, 2009). The combined effect of Brand name and PDO labels enhances consumer acceptance (Savelli et al., 2021). Hence, sensory analysis of consumer preference is of significant research importance. In the case of GIs, studies can explore

the relationship between sensory-driven product preference and acceptance of GI value-added products. Therefore, studies should examine the nature of consumer awareness programs and its ability to promote knowledge about the advantages of consuming these products to encourage consumption. Studies have also highlighted the role of government agencies to run consumer education programs and communicate the merits of consuming original and authentic agricultural products, which seemingly are lacking in developing countries. Prior research (Teuber, 2011; Uzar et al., 2022) has highlighted that consumers' perceptions, expectations, and willingness to pay for protected geographical indications are motivated by the positive impacts such consumers' purchases can bring to the local economy. Consumers desire to buy GIs and pay for it and are motivated by higher quality and their interest in local-origin products (Van der Lans et al., 2001; Alcalde et al., 2013; Pilone et al., 2017; Purwanto et al., 2019). Studies on Protection Geographical Indications have perceived labelling as a mark of quality. To exceed consumer expectations, geographical indications are expected to develop a positive brand image among target segments by providing value-additions (De Canio and Martinelli, 2021; Arfini and Bellassen, 2019). More research work is required to examine consumer motivation towards the preference and purchase of value additions arising out of GIs. In a highly competitive food products market with other varieties of horticulture-based food products competing with the GI brand, labelling may be used as a weapon for product differentiation. Research in packaging and the use of labels as a tool of product differentiation is scarce in GI marketing literature. A study (Verbeke, et al., 2016) reveals that consumers regard the symbolic and cultural value of geographical indications more than intrinsic value and utilities. However, the researcher's interaction with consumers and growers of local horticulture GIs has shown a different view where preference is motivated by the benefits derived from purchase. In search of various options, consumers - seek freedom in their purchase and fulfil their desires based on origin, unique products, environment-friendly products, traditional growing methods, and concern for local development (Likoudis et al., 2016). Other papers (Prakash, 2016; Belletti et al., 2017; Barska and Wojciechowska-Solis, 2018) discuss quality certifications carried by GIs are considered positively by consumers as they contribute to improved health conditions. Consumption of certified agri-products improves

quality of life and help consumers to stay fit despite increasing age. Research can be carried out to identify those aspects of quality-rich products that improve health, like nutritional value, comfort food, and faster digestion which inspire consumer preference. Increased efforts go into purchasing special products (GIs) during free time like holidays, festivals, special occasions in the family, religious celebrations and so on (Likoudis et al., 2016). Studies have acknowledged that there is a higher likelihood among European consumers to recognize quality labels and their logos. Indian consumers fail to understand the ‘power of uniqueness’ carried by GIs. In the case of horticulture-based GIs, buyers cannot identify and pick GIs when placed among other non-GI varieties of fruits and vegetables due to poor marketing efforts of the agriculture-producing promoting agencies. As a result, logos (Brands) fail to unlock the true potential of GIs in India. Studies have covered practical issues, hurdles in processing, convenience and speed of purchasing food products. More literary attention is required to analyse the way in which convenience is relevant in the preparation of dishes and delicacies. India is a place known for its ethnic cuisines due to its geographical spread and cultural diversity. Celebrations often conclude with dining, which connotes a feeling of togetherness. Special food items (value additions) are arranged for outstation family members and guests, with specialty products introduced with love to dear ones and detailed descriptions given to them on its superiority compared to other products. Hence, preference patterns motivated by consumption towards GI value-adds need more literary work. Moreover, limited studies analyse consumption preferences based on consumer segments. Many studies have reported that segments differ in their demographic composition, factors affecting purchase, health and nutrition, price-sensitivity, quality, and benefit-based segmentation (Gindi et al., 2018; Raaijmakers et al., 2018; Montero-Vicente et al., 2019; Haley, 1968). Studies have used cluster analysis as a segmentation technique to group consumers and analyse behaviour. Classical studies (Haley, 1968) used cluster solutions to group consumers based on the benefits they derive from their purchases. Yankelevich (1964) segmented consumers into groups based on what they look for in daily necessities. Segmentation studies have stood the test of time over five decades, and researchers have used cluster solutions as an appropriate method to group and profile consumers (Bertail and Caillavet, 2008; Demydas, 2011; Gindi, Abdullah et al., 2018; Raaijmakers et

al., 2018; Ghosh, 2016; Quinone’s-Ruiz et al., 2017; Hoang et al., 2020; Mattas et al., 2020). Hence, the segmentation approach can provide more literary insights in the case of GIs, as they emphasize unique consumption preference patterns specific to a local region. Segmentation may be an interesting approach as producers use these special tags to increase consumers’ confidence in their products (Mesic et al., 2017; Nugraha et al., 2022). Therefore, when the segmentation approach is employed, consumer groups having unique characteristics will emerge, which will further bolster the idea of deploying marketing strategies for relevant segments. Moreover, several other studies also suggest that consumers are willing to pay a premium price for GI products because of their special characteristics. Based on the background of these observations, our research aims to analyse consumer preference towards Udupi Mattu Gulla Brinjal (GI) using a consumer segmentation approach. Given this scenario, the research aims to answer the following research questions:

RQ 1. What issues do farmers growing Udupi Mattu Gulla Brinjal encounter that force them to resort to distressed sales?

RQ 2. What are the main reasons to consume Udupi Mattu Gulla Brinjal?

RQ 3. Can consumer segments be identified based on the reasons influencing the purchase of Udupi Mattu Gulla Brinjal?

RQ 4. What is the purchase preference of each consumer segment? Are the differences in the purchase preferences between segments statistically meaningful?

RQ 5: What marketing strategies can be formulated and deployed to various segments to achieve increased consumption of Udupi Mattu Gulla Brinjal?

The next section presents the survey design and methodology aspects used in the study.

Materials and methods

Survey area and product description

Mattu village is located on the West Coast of Karnataka in India with GPS coordinates of 13.2592° N, 74.7366° E. In this area, around 200 families are engaged in the seasonal farming of Mattu Gulla Brinjal, a unique eggplant (vegetable) variety (*solanum melongena* L). This

Brinjal variety is famous locally due to its special taste. It has unique features with green colour, thin skin, few seeds, and thorns on the crown of the Brinjal. Due to its round shape, it is popularly known as 'Gulla' among the locals of the region. There is a folk lore that the great seer of the Udupi Krishna (deity) temple, Sri Vadiraj, gave the seeds of Mattu Brinjal to the local farmers of the Billava community to help them come out of acute poverty. This characteristic, whereby the farmers belonging to a community engaged in a particular occupation come together to solve a business problem by collectively setting up an enterprise, is known as a Community-based Enterprise (CBE). In the year 2011, the growers' association applied to the Geographical Registry for a GI tag to gain market advantage and superiority over other types of Brinjal grown in the local area. Subsequently, the Registry awarded the GI tag as a community right to the Mattu Brinjal Growers Association. Currently, in the local market, this produce is offered for sale in three grades (A, B and C) demarcated based on size and quality (pest attack), with 'A' grade sold at a higher price than other grades certifying premium quality.

Survey design and methodology

According to the data published by the Udupi District Statistics Office 2021, Udupi district has 2,78,058 households. Since the purpose was to study the reasons for consuming Udupi Mattu Gulla Brinjal, the investigation has targeted an 'individual purchaser' who visits the warehouse owned and operated by the Mattu Gulla growers association for household consumption. The individual purchaser is a member of the household who is responsible for the act of purchasing vegetables and fruits for his family. Loyal consumers of Udupi Mattu Gulla Brinjal visit the warehouse to get fresh and premium produce harvested directly from the Mattu fields. As the requirement was to collect data from consumers who purchased Udupi Mattu Gulla Brinjal, the researchers decided to stand in front of the warehouse cum office of the Udupi Brinjal Growers Association in Mattu village of Udupi District. Therefore, other purchasers who buy for the purpose of resale, like agents, wholesalers, retailers and those who are purchasing on others behalf, are excluded from the final analysis. A structured questionnaire was developed to collect the data from the 'individual purchaser' visiting the warehouse. The researchers used a purposive sampling method to select the sample, as the units had the characteristics that

the researchers were looking for. The warehouse of the growers association stocks and sells Udupi Mattu Gulla in 'A, B and C Grades of Brinjal produce to retail customers, hoteliers, wholesalers and retailers. The different levels of grades are decided based on the size of the produce and the extent of pest attack. The main aim of our research was to study consumer preference, and therefore the researchers preferred to reach out only to buyers who came out of the warehouse with a 'paid receipt' with them. The warehouse exclusively sells only Udupi Mattu Gulla Brinjal and does not deal with other Brinjal varieties or vegetables. In this warehouse, other tasks such as processing, cleaning, sorting, and grading are done by local women (4 Nos) who belong to the family of local farmers. After satisfying all the criteria of exclusions detailed above, a total of 355 questionnaires were collected from the respondents during October-December, 2022. This period is most suited for the survey as the yield of Udupi Mattu Gulla Brinjal is robust and highly preferred by consumers. 355 original survey answers were scrutinized for completeness and were considered for final analysis after data cleaning.

The questionnaire contained thirty-eight statements which invited responses on consumer preferences towards Udupi Mattu Gulla Brinjal. These statements were included in the questionnaire after considering the variables extracted from the literature review and also after consulting experts in the area of agriculture to suit local consumer preferences. The research instrument had three parts which included socio-demographic details, questions on product features and quality, and consumer preference-based statements anchored on a 5-point Likert scale. The statements have been set by using the benefit segmentation theory approach (Haley, 1968), as it is the researcher's belief that consumption is motivated by the benefit that a consumer seeks in their purchase. The first section of the questionnaire included details on the social-demographic aspects of the respondents, such as age, gender, family income, marital status, and occupation. The second section included questions on grading, processing, sorting, cleaning, GI tag, expiry date, purchase frequency, seasonality, distribution, point of purchase and distance from purchase. The final section was dedicated to acquiring information about the consumers' preferences towards Udupi Mattu Gulla Brinjal and its value-added products. The preferences were presented in the form

of statements on items which included price, nutritional value, preference towards local produce, taste, size, aroma, shape, colour, freshness, variety of preparations, the convenience of purchase, comfort food, availability aspects, ready-to-eat aspect, product features, quality, consumption safety aspect, packing and packaging. To assess statements measuring consumers' preference towards local GIs, the study used a 5-point Likert Scale with anchors 1 = very low and 5 = very high. The responses collected from 353 participants were used for subsequent analysis. Thirty-eight items from the questionnaire gave a Cronbach's alpha value of 0.74, confirming that the inter-item reliability was statistically significant and the data was ready to run the Principal Component Analysis. In this study, we have used Principal Component Analysis as a suitable data analysis technique as its relevance is found in product acceptance research. Here, we have used it to retain variables of significant research interest to get an insight into the preferences of various Udupi Mattu Gulla Brinjal consumers. Thus, empirical analysis, was performed using principal component analysis (varimax rotation method) to identify important factors that determined consumers' preference towards Udupi Mattu Gulla Brinjal. Factors with higher factor loadings were retained for the final analysis. These factor loadings were further employed to perform cluster analysis to segment consumers. Further, in determining the number of clusters, we adopted the Bayesian Information Criteria as this method optimizes consumer choices in an acquisitive fashion based on the internal complexity present in the data. Two-step cluster method is used to segment consumers

as this is consistent with the researcher's objective of identifying relevant segments to determine marketing needs and increase sales (Chawla and Sondhi, 2011). The two-step cluster analysis technique is employed on the basic premise that the clusters are likely to have differences in the behavioural characteristics of consumers among them. Hence, this study has used the Kruskal-Wallis one-way analysis of variance to test whether the clusters were significantly different, and to examine these differences and for better interpretation of results. Examining similarity among groups and/or differences between groups provides ample scope to devise concentrated marketing strategy for each group. The following sections provide a results, interpretations and discussion of the study.

Results and discussion

The research has used principal component analysis to determine variables with high factor loadings. The study has adopted a greater than 0.70 KMO (Kaiser-Meyer-Olkin Measure) as a threshold value to perform a factor analysis test. The strength of the factor analysis solution by ascertaining that the correlation matrix (KMO) statistics $0.71 > 0.50$; Bartlett's test $p < 0.05$ of the variables is statistically meaningful. Three consumption-led factors explained 20.86 percent, 19.88 percent, and 17.59 percent of the variance, respectively, explaining 58.34 percent of the total variance. Based on the higher factor loadings, the study proceeded towards the naming of factors. Table 1 presents the values of factor loadings after performing the Principal Component Analysis.

Benefits sought from purchase (Statements)	Health benefits	Product appeal	Utility value	Communality scores
It has minerals, vitamins, antioxidants, and phytochemicals good for health	0.85			0.712
It has good taste		0.83		0.733
It has nutritional value	0.86			0.723
It is a light food			0.69	0.587
It is appealing to buy when in big size		0.78		0.612
Its recipes have good aroma		0.68		0.576
Recipes are easy and convenient to prepare			0.70	0.596
It digests fast	0.79			0.628
It is appealing to buy without pest attack			0.71	0.602
It is a comfort food and gives a soothing feeling after being consumed			0.72	0.611

Source: Survey data Notes: (KMO statistics $0.71 > 0.50$; Bartlett's test $p < 0.05$)

Table 1: Factor scores using Principal Component Analysis.

The variance explained by each factor is calculated based on Eigen values using the factor loadings ascertained from the rotated component matrix. Thus, the factors have been labeled (or named) as ‘Health benefits (20.86 percent), Utility value (19.88 percent), and Product appeal (17.59 percent).

Further, the study employed the analysis of variance (ANOVA) test (refer Table 2) to determine the discriminatory power of the extracted statements. We observed that the Anova values of ten statements (which also had a factor loading cut-off of more than 0.70) were significant at 5% level of significance. This strengthened our belief in running cluster analysis techniques and analyse behavioural interpretation using a consumer segmentation approach.

Statements (variables)	F	Sig.
It has minerals, vitamins, antioxidants, and phytochemicals good for health	45.689	.000
It has good taste	24.868	.000
It has nutritional value	52.736	.000
It is a light food	154.223	.000
It is appealing to buy when in big size	51.363	.000
Its recipes have good aroma	92.101	.000
Recipes are easy and convenient to prepare	51.571	.000
Gives a feeling of quick digestion	65.723	.000
It is appealing to buy without pest attack	38.543	.000
It is a comfort food and gives a soothing feeling after being consumed	97.235	.000

Source: Survey data

Table 2: Anova table for consumer purchase preference statements for Udipi Mattu Gulla Brinjal.

Subsequently, cluster analysis is used for groupings based on the results produced by the factor loadings. The two-step cluster analysis approach revealed three groups (refer Table 3). Consumer clusters characterised by statements on ‘presence of minerals, vitamins, antioxidants, and phytochemicals’, ‘nutritional value’ and ‘feeling of quick digestion’, were labeled as “Health-conscious” segments after inferring the common characteristics present in these statements. Going by our field survey experience, we observed that product appeal prompts consumers to buy Udipi Mattu Gulla Brinjal’s value-added products. Hence, statements with good taste, big size, and good aroma were grouped together into one consumer segment and labeled as ‘value-add’ seekers. The third group showed liking towards the usefulness of purchase with statements characterized by light food, the convenience of purchase, quality aspects, and consumption comfort and hence was labeled as ‘utility seekers.

Further, we analysed the socio-economic and demographic profiles of the groups (Table 4) using Kruskal Wallis test and Chi-square test to facilitate better interpretation of results. Kruskal-Wallis test was employed to examine differences in groups by comparing the mean values of metric variables. Chi-square test (X²) was used to examine the differences of segments for nominal variables.

The consumption of Udipi Mattu Gulla Brinjal is influenced by age, marital status and income of the consumer groups as statistically significant differences are observed. When we analyse each

Statements (variables)	Clusters		
	Health conscious	Value-add seekers	Utility seekers
It has minerals, vitamins, antioxidants, and phytochemicals good for health	4.59	2.05	2.64
It has good taste	2.17	4.77	1.72
It has nutritional value	4.47	2.22	1.36
It is a light food	2.23	2.23	3.96
It is appealing to buy when in big size	1.67	4.32	2.74
Its recipes have good aroma	2.34	3.98	2.98
Recipes are easy and convenient to prepare	2.08	1.98	4.51
Gives a feeling of quick digestion	4.17	1.87	3.03
It is appealing to buy without pest attack	2.86	2.62	4.70
It is a comfort food and gives a soothing feeling after being consumed	2.65	2.43	4.08

Source: Survey data

Table 3: Cluster centroids for Mattu Brinjal consumer survey.

Respondents	Consumer segments			Statistical significance of differences in segments (Kruskal-Wallis/Chi-square (X ²))
	Health conscious	Value-add seekers	Utility seekers	
No of consumers Total	53 -15%	147 -42%	153 -43%	
Frequency of purchase Regularly Occasionally	41 12	113 34	127 26	
Gender Male Female	28 25	76 71	78 75	Chi-square value: X ² (2) = 1.068, p > 0.05
Age 18-25 26-35 36-45 46-60 60 & above	5 6 12 14 16	6 35 41 30 35	7 29 40 38 39	Kruskal-Wallis test: p < 0.05* (H=6.86)
Marital status Single Married Divorced	8 36 9	22 107 18	20 117 16	Chi-square value: X ² (5) = 18.912, p < 0.05*
Occupation Students Farmers Laborers Teachers Professionals Businessmen Self-employed Retired	3 4 3 9 10 4 8 12	4 5 4 14 65 17 10 28	3 3 2 13 68 27 7 30	Kruskal-Wallis test: p > 0.05 (H=2.73)
Family income (in INR per annum) Upto Rs 3,00,000 3,00,000 -5,00,00 5,00,000 – 7,50,000 7,50,000 -10,00,000 Above 10,00,000	15 8 9 11 10	11 13 46 38 39	36 23 42 40 12	Kruskal-Wallis test: p < 0.05* (H=7.65)

Note: *- indicates that the association is statistically significant
Source: Survey data

Table 4: Demographic and socio-economic profile of segments.

segment in detail, it is found that the 'Health Conscious' segment had an older consumer profile (56.6%) when compared to the other two segments, i.e. value-add seekers (44.2%) and Utility seekers (50.32%). The value-add segment was represented mainly by middle-aged (51.7%) consumers as this group had a special liking for Mattu Brinjal recipes and snacks. Further, we also found statistical differences (H = 7.65, p < 0.05)

in the family income of the segments. It is observed that, majority (52%) of the value-add seekers are from a high-income family (> Rs.7,50,000), making them the most potential group to buy A-grade Mattu Brinjal variety and its premium value-adds products. Results revealed that the occupation of the respondents did not show statistically meaningful differences between segments. It has been observed that Udupi Mattu Gulla Brinjal is

regularly consumed by all the segments (Health conscious 76%; Value-add seekers 77% and Utility seekers 83%). This pattern is largely characterized by the availability and seasonality of the produce. Moreover, all segments put together had 52 percent male and 48 percent female respondents. Therefore, deeper insights into the purchase preferences of these consumer segments will serve as a basis to formulate marketing and branding strategies to promote consumption of this GI crop in untapped local markets, domestic markets (other districts and states of the country) and international markets.

The 'Health Conscious' segment showed higher mean values for nutritional value and quick digestion aspect of Udupi Mattu Gulla Brinjal consumption. Marketers should offer Mattu Brinjal salad (locally termed as Gojju) to the 'health consciousness because of its 'healthy recipe' feature. The 'value-add segment' was insensitive to the health benefits side of consumption. This segment was strong on the sensory side of consumption as they showed greater preference towards value-added products made of Mattu Brinjal, especially Brinjal fritters (locally known as podi) and Brinjal sambar (which tastes like thick soup). These differences in preferences among the 'Health Conscious' and 'Value-add' segments were found to be statistically meaningful based cluster centroid values (refer Table 4). The third segment is influenced by the convenience of consumption, comfort food and visual appeal. This segment should be targeted using a salesmanship strategy by training the salesman at purchase point with unique selling tactics. The consumers of this segment expect the retail shop to be closer to their place of stay so that it is convenient for them to pick their produce when they require them. They are also attracted by fresh produce without pest attack and feel that Mattu Brinjal recipe is a comfort and light food. On the other hand, the 'Health-Conscious' segment is largely from the low- and middle-income families with majority of the consumers in middle and old age category. Health conscious are regular in their purchase, and are influenced by nutritional value, dietary habits and overall health and well-being. Value-add seekers favour value added products of Udupi Mattu Gulla Brinjal and are mostly from middle-income category, mainly constituting teachers and working professionals. Finally, 'Utility seekers' look for convenience in cooking and comfort food and are keen on safe food with focus on quality. Thus, it is observed that the three segments are made of consumers who have different patterns

of preference towards Udupi Mattu Gulla Brinjal and its value-added products.

Discussion and managerial implications

The results of this study have provided reflections on how marketing efforts can be designed for an agriculture-based GI product using consumer segmentation approach (Bertail and Caillavet, 2008; Demydas, 2011; Gindi, 2018; Raaijmakers et al., 2018). To transform Community-based Geographical Indications like Udupi Mattu Gulla Brinjal into sustainable enterprises, there is a need to develop market linkages in the local markets. Therefore, locally focused marketing interventions can serve the most relevant consumer segments as identified by the study. In this study, we have observed significant differences in the preference patterns of various segments (Clay et al., 2005; Boca, 2021; Isaak and Lentz, 2020). Studies on GIs which have used consumer segmentation approach have reported that quality, originality and authenticity of GIs motivates consumer preference (Glogoveţan et al., 2022; Likoudis et al., 2016; Barska and Wojciechowska-Solis, 2018). Earlier studies have analysed utility from the lens of economic benefits accruing to producers (Torok et al., 2020; Niederle et al., 2013; Cei et al., 2018). To assist marketers and expand the scope of marketing activities, this study has highlighted the profile and nature of consumer segments most suited to purchase Udupi Mattu Gulla Brinjal value additions. Greater emphasis is given to the demand side by covering the utilitative aspect of Brinjal consumption applicable to product acceptance research. Studies have reported that consumers give more importance to cultural value and intrinsic dimensions than to utility dimensions (Verbeke et al., 2016). However, it is the firm belief of the researchers that utility as a concept is central to the theme of consumer acceptance in case of GIs and is consistent with the concept of benefit segmentation. Hence, this study has introduced two important utility items 'convenience of preparation' and 'comfort food' as motivations for consumers to buy horticulture-based GIs. Also, safe consumption with no pest invasion on crops introduces a unique dimension to how GIs are perceived as ambassadors of quality. During field survey, the researchers have observed cases where buyers have spent reasonable time in inspecting every crop carefully to check pest attack, making the safe consumption criteria, a very prominent parameter in the purchase preference aspect. In another study, (Savelli et al., 2021) it has been

found that Brand name and PDO labels increase the possibility of consumer acceptance. The findings of our study provide greater importance to the grading aspects of GI produces based on the size of the produce and process-oriented functions like cleaning and sorting. It is felt that these grading related aspects can also be viewed as utility-based activities that can bring economic benefits to consumers. Comparatively, we have found economics benefits overarching quality-oriented benefits in GI product acceptance research.

A large majority (62 percent) of 'utility seekers' segment is made of professionals and businessmen, who are in the higher income groups. Moreover, 39 percent consumers in this group live within municipal limits, and the remaining 61 percent live in village panchayath limits. From a marketing strategy viewpoint, a digital marketing strategy (Vijay and Raju, 2019) using the co-branding approach with local e-commerce players are more suitable for convenience (aspect of utility) seekers. The earlier study (Vijay and Raju, 2019) emphasized the role of social media as a tool to effectively market farm products. Continuing and agreeing with the findings of this study, we have advocated a co-branding approach as a suitable marketing strategy in the digital space for GIs. We visited the local offices of three leading cellular operators and obtained the smartphone penetration data in the Udupi district. It is found that more than 95 percent of the urban households had at least one smart phone, whereas only 58 percent of the rural households had at least one smart phone. On this basis, the growers' association should take the support of local e-commerce platforms (apps) like Manipal Grocers, e-Samudaya, Swiggy, and Zomato to sell Udupi Mattu Gulla Brinjal in urban households. Udupi district has a 31:69 urban/rural household proportion. Continuing the urban consumer marketing strategy, the co-branding (Mattu Brinjal Growers Association and Online food players) aspect can be effectively promoted on social media platforms. Fresh Mattu Brinjal produces can be displayed on the dashboards of Manipal Grocers and e-Samudaya with daily price pops. Value-added products can be marketed through the food delivery apps of Swiggy, Zomato and e-Samudaya.

It is observed that utility seekers prefer Udupi Mattu Gulla Brinjal preparations because they are comforting, give a 'light body' feeling, and can be prepared quickly. If one needs to grab something quickly with a cup of tea or coffee, he looks for a nearby snack point. These snack points sell

fritters with a cup of hot tea or coffee. Fritters are usually made of potatoes or chillies as the price (per kilogram) of these vegetables is affordable. Brinjal fritters are not regularly tried as a variant in the menu in most local restaurants. However, they are a very popular and most tried item locally as evening snacks. This characteristic of the vegetable has not been popularised as a promotion plan by local food marketers and owners of local hotels and tea/coffee shops. Very rarely do we see restaurants in the Udupi district include Brinjal fritters in their menu as evening snacks. To include Brinjal fritters in the menu, the Udupi Hoteliers Association and the Mattu Brinjal Growers Association need to negotiate a deal on the sale price of B and C grades of Mattu Brinjal. Grade A can be retained for a premium class of customers. Thus, for a utility-driven consumer segment, marketers and sellers of horticulture-based GI should look at the convenience of preparation and intake of comfort food as the main elements of marketing strategy.

'Health-Conscious' are mainly from middle-aged groups and senior citizens (Buscail, 2018). Previous studies (Dias, 2012; Kowalkowska et al., 2018; Lemamsha et al., 2022) have reported the nutritional aspects of consumption and its overall benefits to human health. In this study, we have highlighted the role of marketers such as health agents in promoting and achieving the target of increased consumption. To promote the consumption of horticulture-based GIs like Udupi Mattu Gulla Brinjal, health marketing campaigns should be organized in the local region. For a developing country like India, health marketing campaigns will ensure an increase in vegetable and fruit intake, especially when the consumption is way below the recommended intake as prescribed by the WHO guidelines. Previous studies have referred to health marketing campaigns (Appleton et al., 2016; Demydas, 2011) to promote consumption and public health. Concurring with the views of these authors, this study has detailed an appropriate setting where these marketing strategies can be ideally executed considering the rural market environment. As an addition to the body of literature, we advocate the process by which these campaigns can be implemented on ground for a typical rural marketplace. As a result of this action, the producers of GIs will be benefited as health marketing campaigns will translate into higher sales for the producers. India has a strong chain

of health care workers through the Primary Health Care Centres and Community Health Care centres. Hence, the network of health activists can be used to promote special GIs. The Ministry of Health and Family Welfare commenced the National Health Mission and provided a trained female health activist or Accredited Social Health Activist (ASHA) to promote rural health. The ASHA worker concept is introduced as an interface between the community and the public health system. Consistent with the advice provided by the World Health Organization to consume at least 400 grams of fruits and vegetables every day, the ASHA workers can be used as agents to achieve this target by encouraging such consumption at the Primary Health Care Centre level. Special training can be offered to them on how to promote and sell GI fruits and vegetables as a task favouring national interest. This marketing strategy is a win-win for all stakeholders, i.e., the producers of GI who gain extra revenue, consumers who are likely to increase the intake of vegetables and fruits, and the health activists who can accomplish their mission of promoting public health and welfare.

Further, there are limited studies that explore social embeddedness in all its forms. Niederle, Paulo, and Gelain. (2013) explores institutionalization of communities. Another study (Handy et al., 2011) states that social capital is formed as a result of communities' unified approach in business formation, operational functioning and meeting issues and challenges. Other studies (Welsch and Kunhs, 2002; Parwez, 2017) examine communities' effort to alleviate themselves from poverty for the sake of social development. This research work has laid greater emphasis on social interactions as it is having a 'multiplier' effect on patronising a larger customer pool. Therefore, we suggest that developing countries with a dominant rural market type, having active social life, should take up outdoor health marketing campaigns by leveraging social interactions. India has a higher proportion of rural population (Rural 69%; Urban 31%). Active social interactions can be encouraged through street play, folk dance, drama, exhibitions, road shows, car festivals etc. which take place in an outdoor environment. Therefore, it is easier to promote health marketing campaigns amidst large gatherings through public announcements during such events. Street plays should be organized in the locality of fishermen, weavers, farmers, potters, carpenters, women's self-help groups, and other occupations to gain popularity. The core theme should convey the nutritional benefits derived from healthy

Brinjal value-added products (Ali et al., 2010) like gojju (salad), sambar (dish), and brinjal bartha (pudding) which are vacuum baked health friendly preparations. In the case of GIs, health marketing campaigns will be successful if executed in an outdoor environment where the members of the community participate and interact.

For the value-add seekers, we suggest the categorization of consumers on the basis of age. Young and middle-aged consumers can be targeted with 'taste' and 'flavour' rich products like Udupi Mattu Brinjal fritters (fried snack) and Brinjal yennekai (oil and grated coconut dish). Both these products are very tasty but do not find a place in the rice plate regularly in homes and restaurants. A personal salesmanship approach should be used to convince hotel owners to introduce fritters and yennekai regularly in restaurants and local eateries. Udupi Mattu Gulla was awarded the GI tag for its unique taste. We feel that it is easy to market fritters, yennekai and Brinjal gojju (salad) by leveraging the unique taste aspect by mounting wall signs in restaurants. Wall signs are an easy way to attract potential customers to know about a hotel's offerings.

Previous studies have highlighted the aspects of competitive advantage a GI can offer considering the place of origin (Lamarque and Lambin, 2015; Rahmah, 2017; Egelyng et al., 2017). This study has emphasized the need to undertake innovative marketing strategies to gain consumer confidence and improve producer's margins. A few innovative marketing strategies for horticulture GI value-adds can be introduced in the local market. Value-add products and recipes with high demand, like Brinjal gojju (salad), Brinjal pickle and Brinjal yenne kai (coconut-jaggery dish), will gain acceptance over time if they are offered as samples initially. The idea to introduce ready-to-eat product forms like sambar and rasam powder (available as soup variety with local brands MTR, Maiyya's, and Nayak's) were initially served as items on the rice plate or the banana leaf (food is also served on banana leaf). Later, due to excess demand, the ready-to-eat form was introduced. It then moved on to packets and sachets in-store shelves of local outlets. Likewise, Mattu Brinjal Growers Association has a great opportunity to start their entrepreneurial venture under the banner of the existing CBE as packaged foods like salads, sambar, pickle, curry, and chutney. If the ready-to-eat form must be successful, more efforts must go into the packing and packaging of raw Udupi Mattu Brinjal and value-add products.

Few studies in food products marketing report

packaging utility as the least influential factor consumers consider in food quality (Chamuri and Batt, 2014; Gindi et al., 2018; Raaijmakers, 2018; Ali et al., 2010; Pilone et al., 2017; Shruthy et al., 2023). However, we differ from these findings from previous research considering our field experience in the case of horticulture GIs. Consumer acceptance towards GIs (especially horticulture-based GIs) have evolved over the last decade, and it is observed that packing and packaging play a great role in providing safe products, particularly when pest attack is a frequent menace in the local fields. All products should be sorted, processed, and packed with assured quality before they reach the hands of the customers. The packing, packaging and quality assurance aspect of Udupi Mattu Gulla Brinjal needs a makeover if it has to attract more customers.

Earlier studies have observed that consumers are motivated to purchase GIs due to the positive impacts that such purchases can bring to the development of the local community (Teuber, 2011; Uzar et al., 2022). This study has examined GIs through the lens of Community-based Enterprises and suggests that marketing should be led by a strong branding and packaging function. Developing countries with a dominant rural market should enhance branding efforts and focus on superior packaging design. We suggest 'place branding' (Pucci et al., 2017; Florek, 2013) and 'leveraging the potential of the existing GI logo' to achieve greater visibility and acceptance.



Source: <https://www.indiamart.com/mattu-gulla/products.html>

Figure 1: Logo of Udupi Mattu Gulla Brinjal.

Research work on GI marketing has highlighted

the importance of labelling as a mark denoting the quality of products (De Canio and Martinelli, 2021; Savelli et al., 2021). These studies have analysed consumer preferences (Kosciarova et al. 2020; Ahmadi et al., 2019) using quality labels and sensory analysis. In India, selling of vegetables and fruits in open air is a common practice without giving importance to deterioration in quality. Safety of produces and food safety led by packing is a growing area of research importance in the Indian context. Therefore, we feel that the growers' association should widen the scope of marketing and adopt a superior packaging strategy. In India, packing and packaging have gained importance in recent times with stricter norms followed in food safety and food hazard analysis. There is a lack of urgency among local food entrepreneurs towards food safety management and quality assurance. All food establishments like hotels, restaurants, or cloud kitchens (who later go for field delivery), irrespective of whether they offer fresh or packaged foods, must follow food safety management principles as defined by HACCP (Hazard Analysis and Critical Control Point). From the point of view of food safety, every food organization is required to obtain an IndiaHACCP certification – a standard based on the general principles of food hygiene. This certificate is obtained under the Voluntary Certification Scheme for food safety operated by the Quality Council of India (QCI). The level of awareness of Mattu farmers about the concepts of packing and packaging, the focus on safety, and the level of agility to adapt to change are low. Udupi Mattu Gulla Brinjal is sold in open air conditions exposed to sunlight, heat and dust and therefore is often subject to quality deterioration. Thus, the main area of focus for enabling agencies (operated by the government and local setting) is to train the members of the association on packaging and branding. Thus, a robust packing and packaging plan to unlock the true market potential of Udupi Mattu Gulla Brinjal is the way forward. Our views are also seconded by the officials of the local agri-development promoting agencies. From marketing parlance, the value-add seekers segment is the ideal group to sell uniquely packaged GIs, as this segment has high purchasing power. An in-store merchandising strategy at retail stores that provides discounts and offers is a good strategy to attract buyers for packaged, ready-to-eat Brinjal products as an introductory offer.

There is growing literary attention given to sustainability of business ventures (Arfini and Bellassen, 2019; Boca, 2021; Cei et al., 2018; Glogoveţan et al., 2022; Hoang et al., 2020; Török

et al., 2020). In the case of horticulture GIs like Udupi Mattu Gulla Brinjal, institutions that promote local agriculture have been consistently striving to achieve the sustainability of CBEs. While earlier research work has focused on sustainability intended to mean preserving future needs, this research has emphasized the challenges faced by Community-based Enterprises (CBEs) in staying relevant and profitable during testing times. To protect GIs grown by CBEs, government-backed institutions like the National Bank for Agriculture and Rural Development (NABARD) and Agricultural and Processed Food Products Export Development Authority (APEDA) should join hands and launch market extension activities to empower the Udupi Mattu Gulla Brinjal and its value-added products. The Government can select a suitable partner as a CBE Support Agency (CBESA). Such partners should have local knowledge about consumer markets and should be able to design and implement market extensions and create market linkages.

We feel that the food marketers, along with the support of the CBE Enabling Agency, should engage the services of packaging experts to introduce a solution for safe and healthy food products. Packing and packaging strategies should be crafted for fresh produce and value-added products separately and should address packaging solutions at the brand level, grade level, description level and information level. The design and placement of the GI logo, nutritional information, date of production, packing and expiry, nutritional information etc are some aspects that need attention to attract buyers. Although health marketing campaigns are targeted towards the general public, concentrated marketing efforts can be designed on the 'utility seekers' segment as their purchase intention is motivated by benefits derived and consumption value.

The role of this CBESA can be envisaged as follows:

- a) partner with locally operating CBEs (Godrich, et al., 2020), government-owned and promoted institutions, and non-governmental organizations build synergies in the local area to accelerate agriculture development activities of the CBE.
- b) collaborate with CBEs on the implementation of projects using project management skills and design thinking.
- c) Support local food entrepreneurs, food marketers and state-owned agencies to innovate, train to prepare and launch value-added products
- d) design and support policy making
- e) train local salesman in the art of selling, convincing, negotiation and salesmanship.

There is adequate literature in the area of marketing of GIs (Mattas et al., 2020; Gana Shrutya et al., 2016; Vijay and Raju, 2019). However, in-depth insights are required to analyse the role played by salesman in the Agri-value chain (Gal and Jambor, 2020). This research work has examined the pivotal role played by a salesperson as a brand ambassador of local-origin GI products. We feel that there is a scarcity of literature which emphasises the ability of the salesman positioned at retail shops who can act as an ambassador cum change agent and nourish the GI brand to the consumers. These regional specialty items are picked based on the trust placed on the sellers on their knowledge on the quality, which is mainly characterized by grade, seasonality, and expiry of the product. They are also well-informed about various types of value-added products that can be prepared from these unique products. Therefore, the seller is an important partner in the value chain who can influence the buyer's purchase decision in the case of locally grown GIs. Through this study, we address the value chain aspect of GI marketing which is not been discussed in previous studies. In the case of Udupi Mattu Brinjal, Buyers trust the salesman for the correct information that he/she gives regarding the freshness, grade, harvest date, and originality (GI tag). The CBE enabling agency should take up the task of training salespersons on salesmanship skills. Further, the CBE Enabling Agency could join hands with the state-run entities and promote entrepreneurial intent among the local food entrepreneurs, and sell Udupi Mattu Gulla Brinjal value-added products. The Mattu Brinjal Growers Association can benchmark the success story of locally grown (Amasebail village, Kundapura taluk) Okra vacuum fry by a local private firm, a small agri-food unit. A local food entrepreneur from Kundapura taluk introduced a unique okra (vegetable) value-add product that is health friendly and affordable. Launched as an alternative to the traditional okra oil fry, this product received mass acceptance and patronage due to its health benefits and functional value as it compliments well with 'ganji oota' (bowl of porridge). Okra vacuum fry is today a retailers (also local hotels selling porridge) favourite item on the shelf. Udupi Mattu Gulla Brinjal fritters can replicate the Okra vacuum fry success story as it can be positioned as an evening snack by local hoteliers and retailers. However, there is a lot to be achieved if it has to be offered

as a ready to eat a snack in terms of packaging. From a marketing perspective, this product can be offered to all three consumer segments identified by this study.

Currently, food marketers in India are faced with the challenge of responding to the actions of buyers of food products swiftly, considering stiff competition on one hand and public health on the other. Young consumers largely prefer packaged food, which is readily and conveniently available, while the older population avoids them, considering the risks it brings to health. Furthermore, all consumers are willing to eat fresh vegetables, indicating a strong willingness to maintain a healthy diet. This stresses the need to organize social marketing campaigns. An advertisement in the local newspaper can be a good technique to communicate the message of organizing a Brinjal mela (exhibition in the local market) to implement GI branding efforts and make it more acceptable in the local markets. Recently in May 2022, a Jackfruit mela (exhibition organized by local growers) was successfully organized in a public setting, which not only highlighted the value-added products that can be prepared out of jackfruit but also delivered sessions on its nutritional value and health benefits. Using the exhibition as a tool for mass campaigning, food entrepreneurs, marketers, and health workers can join together and promote the health benefits arising from vegetable consumption. Such rural marketing strategies for local-origin GIs can be replicated in emerging economies with similar consumer characteristics.

Conclusion

The findings of this study will be useful for future academic research in consumer segmentation literature in the marketing of Geographical Indications. Our research reveals that CBEs like Udupi Mattu Gulla Brinjal Association grow superior quality products but fail to unlock true market potential mainly due to production, operational, and marketing-related inefficiencies. Therefore, this study has identified relevant consumer segments and analysed their preference to develop and deploy marketing strategies and help local farmers. The research findings will help marketers and policymakers employ suitable interventions in marketing local GIs. Food marketers can use these marketing strategies to target appropriate consumer segments and promote food consumption. Further, by identifying value-add seekers and ‘utility

seekers’ as separate segments for a local GI product, food entrepreneurs and marketers can target each of these segments separately by using a marketing mix and patronise sales. Such segment-strategy mix can also be extended to other horticulture GIs and vegetables in different geographies of the world, especially developing countries having a similar socio-cultural and economic profile of consumers. The findings and analysis of this study will be useful to develop marketing strategies and policies for those economies having dominant rural consumer markets like Asian and African countries. Increased awareness of food safety is also important to improve consumer knowledge on safe consumption. Hence, this study has highlighted the need for a focussed marketing approach for food safety and packaging technology aspects in the case of horticulture GIs.

In developing economies, the concentration of agri-based enterprises is mostly seen in the rural areas. Therefore, our research urges the need to introduce an incubation centre at the Taluk level. To achieve this end, the agencies launched by the State Government working on promoting agriculture in the district should take the lead in designing a collaborative approach. It is found that agri-businesses are most susceptible to rapid market movements. Therefore, farmers do not have the desired level of technical know-how and skills and competencies required to face business-related challenges. Importantly, incubation centres are required to address the needs on CBE sustainability aspects like pooling intellectual capital, identifying sources of funds, addressing marketing problems, leveraging social capital etc. Academic institutions, Government-owned agencies and non-governmental organizations with financial wherewithal, infrastructure and research capabilities are the most suitable players who can participate as ‘partners’ to commence this collaborative approach along with the local government.

To summarise, at the farm level, the study’s results will help farmers to commence new marketing techniques and generate additional revenue. As a specific case example, a marketing intervention was commenced by the research team in the study area of Mattu village. It was decided to label ‘A’ Grade crop of Udupi Mattu Gulla Brinjal as a ‘premium variety’ (priced at Rs. 160/per kg) and sell in the local market on a test basis. Over a period of four months, prices stabilized in the local markets (Rs. 150-160/per kg)

as a result of this labelling intervention. On analysing the reasons for the stability in price, it was observed that the consumers perceived 'brand label' as a quality assurance tool against other local Brinjal variety. Thus, branding a logo, term, certificate or a sign may work as a tool to achieve price stability in the case of GIs. The learnings may be adopted to other fruits and vegetables as well. This, in turn, will bring new value-added products to the eating table for the consumers and increase the intake of fruits and vegetables. By following strict dietary habits focused on good health, improvement in public health can be seen in the long run. At the policy level, marketing decisions can be taken to leverage the collaborative approach proposed by this study involving farmers, agriculture development agencies operated by the state in the local region, and the CBE agency suggested by the study. The elements of the collaborative approach are likely to bring momentum to the overall mission of achieving agriculture development in the state. The study is conceived at a time when the Government of India is keenly focussing on unlocking the market potential of geographical indications in the country as an agriculture development priority. Furthermore, the relevance of the study is consistent with the United Nations Sustainable Development Goals (3, 11, and 12) of building sustainable communities, establishing good public health and well-being, and influencing responsible consumption. The results of the study can also be generalised to a typical rural market in a developing country, aiming to promote the development of local farmers and targeting sustainable agriculture. The generalization and applicability of the marketing strategies proposed may work well for a market with a high rural population proportion, as in the case of India. The urban-rural population proportion in the Udupi district (38:62) is almost consistent with that of the proportion of the entire nation (30:70).

We observe a few limitations in this study. The nature of the urban market (town limits) in the Udupi district cannot be compared to an ultra-urban set-up prevailing in other cities in the country. This may prevent generalization in the urban context. In our opinion, the findings of this study are suitable for a typical rural Indian market, and therefore, can be generalized to the markets of emerging economies of Asia and Africa. Indian cities are classified as Tier I, II and III, and a comparative difference is observed in the income level and lifestyles of people

living in these cities. Future research can analyse consumption behaviour based on such classifications of urban markets. As per the census records of 2021, over 70% of the population in the Udupi district are Hindus. We feel that, a religion-based classification may significantly impact consumer behavior, given that Udupi Mattu Gulla Brinjal is a favoured vegetable offered (as his grace) to Lord Krishna (deity) at the mutt temple in Udupi. Locals from the Muslim community also serve special dishes made of Udupi Mattu Gulla Brinjal. Especially in the case of locally grown horticulture GIs, researchers should analyse the influence of religion as a factor that influences the consumption of fruits and vegetables. From a consumer's point of view, our research limits the findings and analysis to preference-based analysis and deeper insights on religion and caste-based studies, and its impact on the consumption of vegetables and fruits is likely to provide interesting results. Future studies can focus on religion and caste-based classification approaches using a mixed-method approach. Future research can also test whether utility, value-added products and health-related factors positively affect consumer preference using regression analysis and structural equation modelling. We have limited our findings to the extraction of variables of research importance and identification of consumer segments as there is an urge from the agriculture support agency to market select GIs and promote farmers' interest. As GIs are linked to a specific geography, it is also likely that place branding may mediate the relationship between utility and value-added products and consumer preference. This may provide marketers with breakthroughs to establish a focused branding strategy for horticulture GIs.

Given the impetus provided by the current government for agriculture development, there is vast scope to introduce interventions, particularly in marketing, innovation and technology. Many CBEs at the rural level in India are desperate for attention as they have reached the stage of distress and closure. Enabling agencies should play the role of a change agent to revitalize the landscape of such CBEs. For example, Kari Ishad mangoes in Ankola village in Uttara Kannada district, Udupi Jasmine and Udupi Mattu Gulla Brinjal in Udupi District, and superior quality kiwi fruit in Arunachal Pradesh are some prominent local cases waiting for intervention. It is heartening to see that Kari Ishad mangoes are awarded with a GI tag in April 2023 as we conclude this

research work. Future researchers can take each of these CBEs as case examples and work towards their development. There is also a scarcity of academic work in customer loyalty in case

of locally grown horticulture produce. Empirical work may explore the factors determining customer loyalty using a causal research approach.

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