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## Exploring the Consumers Willingness of Using E-Commerce to Purchase Geographical Indication Based Crops, a Case Study of Udupi Jasmine

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### Abstract

Udupi jasmine cultivation has proven to be a successful viable community-based enterprise (CBE) in coastal Karnataka of India. Jasmine cultivation plays a major role in the socio-economic status of this CBE. This study focuses on exploring the consumers willingness of using e-commerce to buy Udupi jasmine. An e-commerce test web application was built and was demonstrated to consumers. Demographic details, jasmine buying purpose and frequency, online shopping details and willingness of consumers to buy jasmine online was captured. Study showed positive correlation between consumers willingness of using e-commerce to buy jasmine and recommending the e-commerce web application to others. The study validates the e-commerce framework using which the web application was built to market Udupi jasmine which has a Geographical Indication (GI) tag. Hence the study provides new approaches in marketing crops that are specific to a geographical location and presents new direction in the sector of GI based crops.

### Keywords

Geographical Indication, Udupi jasmine, e-commerce, community-based enterprise, socio-economic, policy making, ICT.

D'souza, D. J. and Joshi, H. G. (2020) "Exploring the Consumers Willingness of Using E-Commerce to Purchase Geographical Indication Based Crops, a Case Study of Udupi Jasmine", *AGRIS on-line Papers in Economics and Informatics*, Vol. 12, No. 2, pp. 63-69. ISSN 1804-1930. DOI 10.7160/aol.2020.120206.

### Introduction

The role of ICT in socio-economic development of an individual, society and nation is considered central to rural and national development (Gupta, 2006). Bhatnagar and Schware (2000) shows the successful use of ICT in rural development by enriching the existing processes. ICT encompasses various technologies including e-commerce as it uses ICT for it for its operations and extension (FAO, 2017). The use of e-commerce in agriculture has helped in promoting agricultural products to a wide range of consumers. In this digital age, e-commerce has become a symbol of globalization and represent a whole new way in which business is conducted (Aydın and Savrul, 2014). The advent of e-commerce has provided numerous prospects and challenges for commerce around the world. E-commerce can be defined as the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, including the internet

(Turban et al., 2008). It has become a cornerstone for the success of any industry. E-commerce application in agricultural sales will enable farmers to plan the production of crops on a rational basis and thus avoid the asymmetry in information, which is the general case in traditional farming. There has been much evidences that e-commerce offers an important opportunity for cost reduction and demand enhancement (Leroux, 2001). E-commerce in agriculture have revolutionized the way agricultural produces are sold and has changed the way of interaction between agribusiness and consumers through communication channels (Folorunso et al., 2006).

Geographical indications are important identifiers developed as a Trade Related Intellectual Property Rights (TRIPS) by World Trade Organization (WTO). It is used to identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is

essentially attributable to its geographical origin. Based on their scientific importance or nutritional contents equivalent to a geographical location, Geographical Indication (GI) tags are given to such products (WIPO, 2004). The GI tag is awarded as a community intellectual property for a product. Many GI products are from the agriculture sector, it helps in creating an export marker with the GI mark. With the GI mark a regional product will have an edge as it will get a boost in the exports and more visibility internationally. It gives a competitive edge to farmers of a region over individuals who sell counterfeit products (Banerjee, M. and Nausahd, 2010). Geographical Indication Registry, of India, as of 2019 has identified and sanctioned GI status to 615 products (GI: Intellectual Property India: Government of India, 2019). Udupi Jasmine is a good example of an intellectual property owned by a community was registered under the Geographical Indication (GI) tag in 2013 (K'taka gets highest number of GI tags | Business Standard, 2018).

The Udupi jasmine community-based enterprise, by the rule of thumb has developed a working system of pricing, supply, distribution and marketing. This community has kept poverty at bay through mutual trust and cooperation for generations. Cultivation of jasmine has a prominent socio-economic impact on the growers. Despite having other sources of income, cultivation of jasmine still proves as an important source of income (D'souza and Joshi, 2018). Agricultural marketing using the internet poses several challenges like quantity, shelf life, location, storage and price. Udupi jasmine is one among several crops that are specific to a geographical location in India. As the ground conditions differ for each crop existing e-commerce framework cannot be applied to these crops. In order to market such crops e-commerce localization is necessary (D'souza and Joshi, 2019). Thus, an e-commerce framework specific to market GI based crops like Udupi jasmine will prove highly beneficial (D'souza and Joshi, 2019). Hence, the study explores the willingness of consumers towards the usage of e-commerce website to purchase jasmine online. In order to achieve this an e-commerce web application was built using the framework proposed by D'souza and Joshi (2019). This application was used to gauge the willingness of consumers in using e-commerce to buy jasmine. This will provide necessary impetus to develop a full-fledged web application to market crops that are specific to a geographical location.

## **Materials and methods**

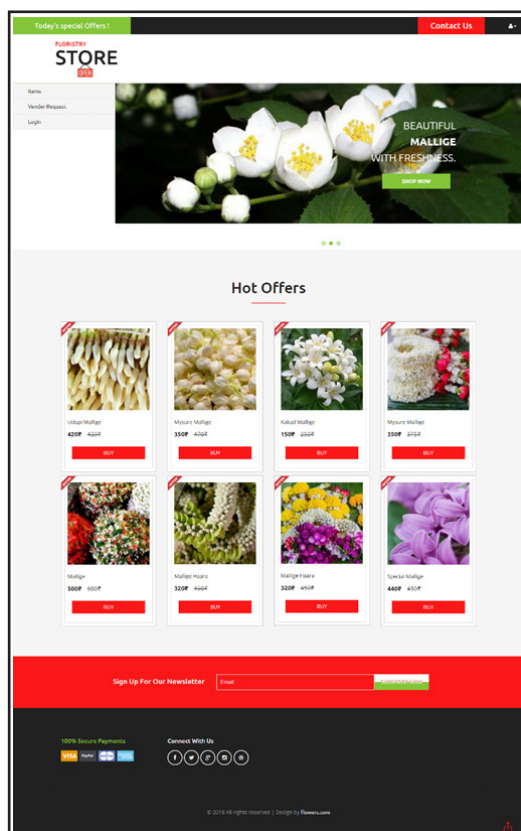
Delivery of information to the key stake holders involved is critical for an e-commerce project. The study is conducted to explore the consumers willingness of using e-commerce to purchase GI based crops with specific reference to Udupi jasmine. By doing so the study attempts to validate the e-commerce framework for strategic marketing of Udupi jasmine proposed by D'souza and Joshi (2019). The framework proposed is localized to market Udupi jasmine and the framework considers several factors that govern the entire jasmine growing community-based enterprise. Based on the framework proposed the e-commerce test web application was built. The test application was built using Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript. The web application incorporated the complete features as proposed by the framework. The application had various features that would assist the user in buying jasmine online. The test web application had the following features to buy jasmine:

- Landing page: The page contained general information and price information of various flowers including Udupi jasmine. The user selects the product "Udupi Mallige (jasmine)" and redirected to the next page for selecting quantity and date.
- Product details page: The page contained information on the product "jasmine" and options to select a date of delivery. The page also displays price trends for the present month and any future month the user selects. Price analysis is generated using the "Price Analyzer" function of the model. Once the user selects the date of delivery a notification message is displayed with information that the future prices displayed are approximate prices and actual price will be conveyed via SMS/ email on the day of delivery. User is then redirected to the login page.
- Login page: Login options were provided in this page where new user will be redirected to the sign-up page and existing users will be redirected to the shopping cart page.
- Shopping cart page: The page displayed the items selected by the user along with the price information. The user is provided with an option to select

the quantity. If the user has selected a future date for delivery, during the selection of quantity a notification message is displayed with information that the delivery of the quantity selected will be confirmed one day prior to the date of delivery via SMS/email. An advance amount (1/4) of the total amount is charged to complete the order. Complete amount is charged one day before the actual date of delivery. For users who have selected the present date complete amount is charged. The user is then redirected to the payment gateway page.

- Payment gateway page: The page provides the user with various options of payment such as cash on delivery, bank cards, net banking etc. Once the user selects the mode of payment the user will check out and the order is placed.

The web application was demonstrated to the general public who purchase jasmine from the market. Data collection was done based on personal interviews. Ninety-six correspondents from Mangalore and Udipi district of coastal Karnataka, India were interviewed based on quota sampling technique, the most important sample in the group of non-probabilistic samplings.



Source: own research and processing

Figure 1: Snapshot of the web-application.

A quota sampling is often used in market research because of its simplicity and relatively good results. From all non-probabilistic samples, quota sample is, by its logic, the closest to a probabilistic sampling (Yang and Banamah, 2014). The snapshot of the web application is shown in Figure 1. A face to face interview was conducted with the selected jasmine buyers. Even though it was a difficult proposition, the fieldwork was done in a justifiable manner with the purpose of understanding the response of jasmine buyers. The characteristics used for the selection of candidates were based on those who purchased jasmine from the market and familiarity with online shopping. All the constructs were measured using multiple-item 5-point Likert scale, with strongly disagree (1) and strongly agree (5) as the anchors. The collected data were analyzed using SPSS.

An important requirement in using the questionnaire form of research instrument is that the instrument needs to be subject to the test of reliability. Cronbach's Alpha Coefficient was used as a measure to test reliability. The closer Cronbach's alpha is to 1, the higher the internal consistency reliability (Sekaran, 2003). The Cronbach's Alpha coefficient helps to examine whether all the items in the scale really tap into one Factor. Generally, a Cronbach's Alpha of 0.70 is considered a 'satisfactory' measure of internal consistency and reliability in measuring inter-item correlations which tap together to form a 'Construct'. A pilot study is conducted to measure the internal consistency. Before directing a questionnaire or structured interview schedule to a sample selected, pilot study is always considered advantageous. As pilot study test the questionnaires to ensure that they are as effective as possible before the main study starts it is considered quite essential. A pilot test can serve to reduce the measurement error that is associated with a faulty survey instrument (Bryman and Bell, 2011). If the alpha scores were less than 0.70 when measuring the factor, the same question was modified to bring back the alpha coefficient to 0.70 to measure good reliability in the final survey. For the questionnaire measuring the willingness of consumers to buy jasmine online a value of 0.76 advocates a good internal consistency.

## Results and discussion

The demographic details, jasmine buying pattern and online shopping pattern of the respondents is shown in Table 1.

	Category	Percentage (%)
Gender	Male	43
	Female	57
Occupation	Student	10
	Employed	54
	Un-employed	20
	Homemaker	16
How often do you buy jasmine from the market?	Daily	0
	Weekly	48
	Monthly	20
	As needed	33
What is the purpose of using jasmine?	Personal Use	21
	Religious Use	23
	Both	56
How comfortable are you with shopping online?	Extremely comfortable	34
	Quite comfortable	64
	Not at all comfortable	2
How often do you do online shopping?	Weekly	28
	Monthly	21
	Sometimes	51
What kind of device do you use for online shopping?	Smartphone	56
	Computer	10
	Both	34

Source: own research and processing

Table 1: Demographic details, jasmine buying pattern and online shopping pattern. (N = 96).

The sample was made up of 43% males and 57% females. Nearly 54% were employed and 20% were unemployed. While 10% were students and 16% were homemaker shows a wide range of consumers regardless of their economic background buy jasmine. In terms of jasmine buying pattern 48% bought jasmine on weekly basis, 20% on monthly basis and 33% as needed goes to show that jasmine purchase is done frequently.

Majority of the respondents (56%) purchased jasmine for both religious and personal use. While doing online shopping majority (64%) were quite comfortable and 34% were extremely comfortable. Similarly, in terms of frequency of doing online shopping was also found to be considerably good. Majority of respondents (56%) used smartphones for online shopping while 34% used both computers and mobile phones for shopping.

To gauge the willingness of the correspondence of using e-commerce to purchase jasmine a test web application was demonstrated to the correspondents and were subjected to a questionnaire the same is demonstrated in Table 2. The response

of the consumers was collected using a 5-point Likert scale and the results in percentage are shown in Table 3.

Question No	Question
Q1	I find buying jasmine online is more effective than buying from a market.
Q2	I find buying jasmine online is convenient than buying from a market.
Q3	This proposed online shopping site to buy jasmine is helpful.
Q4	This proposed online shopping site to buy jasmine is easy and simple to use.
Q5	This proposed online shopping site to buy jasmine improves my performance (e.g. saving time or money)
Q6	It is beneficial to have an option to buy jasmine on future dates.
Q7	It is beneficial to get information on jasmine price on future dates.
Q8	Receiving notification on daily price of jasmine is helpful.
Q9	Buying jasmine online is trustworthy.
Q10	Overall, I am satisfied with the features with the proposed online retail site.
Q11	I would buy jasmine online if an online retail store is provided.
Q12	I would like to recommend this proposed jasmine shopping retail site to friends or a family member.

Source: own research and processing

Table 2: Questionnaire to check the willingness of using e-commerce to buy jasmine online.

The analysis of the responses obtained is shown in Graph 1. The analysis of the data shows that most of the correspondents show a positive response towards buying jasmine online and with the features of the framework. For those who responded to this survey, it is found that there is a positive correlation between satisfaction of the correspondents with the features of the proposed online jasmine retail site with their likelihood in buying jasmine online if an online retail store is provided, with  $r = 0.11$ . Similarly, there is a positive correlation between correspondents buying jasmine online if an online retail store is provided with the likelihood of the correspondents recommending the proposed jasmine shopping retail site to friends or a family member, with  $r = 0.36$ .

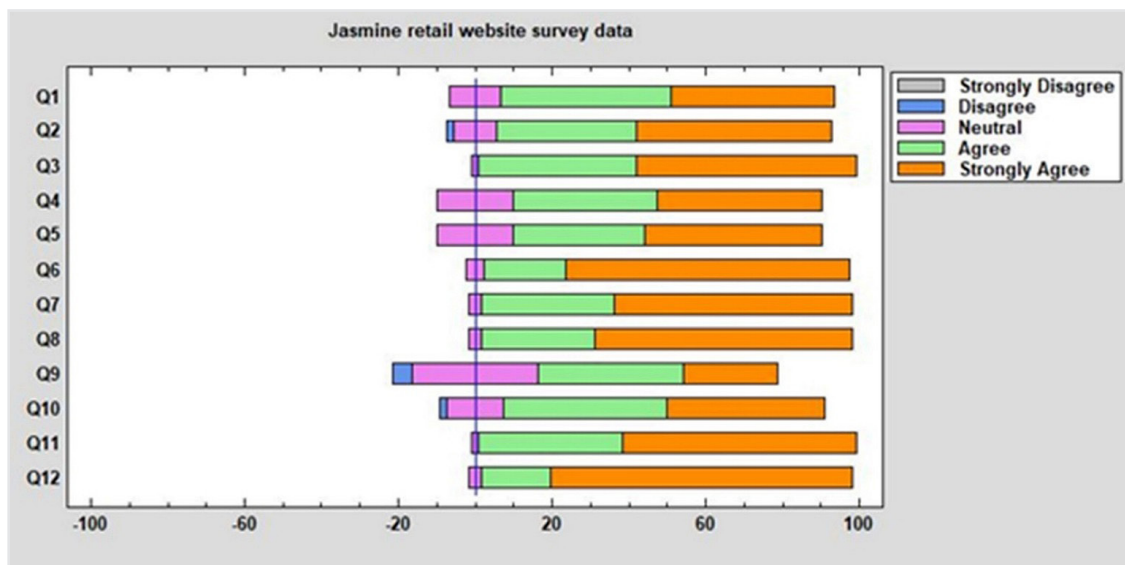
The result shows that if the consumers were to be provided with an option of buying jasmine they would most likely buy it online and they would be willing to recommend the web application to their friends or relatives. For any e-commerce model to succeed validation from the end consumers is



Questions	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree
Q1	0	0	13	44	43
Q2	0	2	11	36	51
Q3	0	0	2	41	57
Q4	0	0	20	38	43
Q5	0	0	20	34	46
Q6	0	0	5	21	74
Q7	0	0	3	34	62
Q8	0	0	3	30	67
Q9	0	5	33	38	25
Q10	0	2	15	43	41
Q11	0	0	2	38	61
Q12	0	0	3	18	79

Source: own research and processing

Table 3: Results in percentage of acceptance to the proposed e-commerce framework (N = 96).



Source: own research and processing

Graph 1: Analysis of willingness to the proposed e-commerce framework.

critical. These results show a positive consumers willingness of using e-commerce for buying jasmine. This would be useful as it lays a pathway for further investigation of acceptance of technology among consumers if they were to be provided with web application to buy GI based products.

## Conclusion

In India there are over 270 GI products with extraordinary market potential and inimitable characteristics. But in Indian scenario these products have not succeeded in reaping the various benefits of their potential geographic diversity, long heritage

and uniqueness. The future for several agricultural GI products in India depends on gaining attention and acceptance to a wide range of customers. Udupi jasmine grown by a small set of growers has not succeeded in attaining a GI identity and a large market. This faltering block can be observed as in opportunity than an interference for associations, growers and organizations to use ICT especially e-commerce to create a wide market. As there is an acceptance among people in buying the product online, there is a potential for the product to reach a wide range of consumers thereby improving farmers income. As there is willingness among consumers in buying jasmine

online the following recommendations are suggested:

- **Encourage e-commerce cooperation**

With cross-border trade facilitation, encouraging e-commerce cooperation can strengthen agricultural e-commerce in India. E-commerce cooperation can influence existing and future e-commerce projects to use ideas and concepts that are successful. This will also eliminate the time, effort and resources required to start new e-commerce projects at rural level.

- **Encourage agricultural e-commerce investment**

With the evident profitability of e-commerce in different areas, promote investors to invest in agricultural e-commerce through government support system. This will encourage entrepreneurs to explore different agricultural areas that can take advantage of e-commerce. This subsequently will also attract researchers to delve into doing research in agricultural e-commerce. This will help the rural community-based organizations to market their produces on a larger scale.

- **Promotion of GI based crops**

With many crops having GI tag in India, government assistance in promoting these crops is quite essential. The government at the state level needs to form special teams to identify the communities that are involved in producing such GI crops and provide assistance to framing communities that are involved in growing these crops. Assistance can be in the form of modern agricultural techniques, use of ICT, marketing,

and promotion. This will strengthen these community-based farmers in exploring new techniques that will enhance agricultural production.

The areas for further research keeping the above aspects in mind are enumerated as follows:

- 1) There are many other GI products in the horticulture sector and similar studies can be conducted.
- 2) Technology Acceptance Model (TAM) can be further used to validate the framework where a larger sample can be taken and techniques like Structural Equation Modelling (SEM) can be employed to analyze the relationships between various TAM constructs.
- 3) An e-commerce application can be built based on the framework in association with government agencies and can be deployed.

Udupi jasmine is a case of Community based Enterprise (CBE), which has characteristically emerged in an environment of economic stress and thrives on the community's tradition of collective action. E-commerce can be used as a viable solution for marketing this crop which is specific to a geographical location. Doing so could provide much needed thrust in marketing this crop to a wide range of consumers. The willingness of consumers in using e-commerce to buy jasmine reinforces the aspect that GI based agricultural products can be sold online. The most important question arises is that if it is possible to market GI based crops using e-commerce and if yes, can it be extended to other GI based crops. This could pave way for developing e-commerce applications to market other GI based crops as well.

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