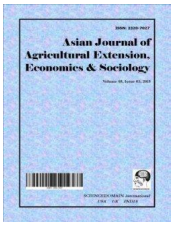

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Benefits and Perception of Dry Chilli Farmers in Online Marketing: Experiences from Karnataka State, India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

In recent years e-commerce has found its way in agricultural sector in India, in line with other sectors, agricultural businesses have taken up e-marketing, or internet marketing. For implementation of agricultural marketing policy to bring an efficiency and transparency in the agricultural marketing system for efficient price discovery to benefit farmers, the initiation was taken by Government of Karnataka and the NCDEX Spot Exchange Limited in this direction.Unified Marketing Platform (UMP) an initiative by the state govt. launched in 2014 by the Rashtriya e-Market Services (ReMs). The present study attempts to assess the benefits and perception of farmers in online marketing of dry chilli in Hubballi and Byadgi regulated markets, about 60 online dry chilli farmers and 60 traditional farmers were selected. The descriptive statistics used to analyze the data. Total returns obtained by traditional farmers with Rs.30,585/acre and comparatively less than online farmers was Rs.34,525/acre. Percentage price of commodities across marketsin online marketing was more than traditional marketing price. In online marketing the infrastructures like lot entry, adequacy and time price information, wider market area, better price and SMS alert were adequate, gate entry, storage, computers, e-payment were partially

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adequate. Grading and cold storage were inadequate. Maximum number of traditional farmers preferred progressive farmers for market information followed by friends as source of information. Online farmers were used mobile phone as major source of information followed by newspaper. Majority of online farmers were involved in grading and got SMS registration, got remunerative price. Very few of traditional farmers had knowledge about banking, SMS registration and grading. Infrastructure for post-harvest management needs to be strengthening primary level on public-private partnership mode. There is need to create awareness about online marketing through training, campaigns and other extension activities to farmers.

Keywords: Online marketing; ReMS; UMP; GDP; Dry chilli; perception; India.

1. INTRODUCTION

The share of agriculture in the Indian GDP has reduced from 30 per cent in 1990-91 to less than 14 per cent in 2016-17. However, 52 per cent of total workforce is still dependent on farm sector for their livelihood. The central and state Govt. have concentrate only on improving soil quality, irrigated land and produce but there has been less focus on improving the sub-sector of post-harvest, supply chain and infrastructure of agricultural marketing that directly impacts the income and living standard of primary producers. The bane of Indian agriculture is, not lack of technologies, research and development effort; but the inadequacy and inefficiencies in the dissemination of certain relevant information to the farming sector, which is like root of a tree. Amongst various sources of information and communication available, internet plays a crucial role in the agribusiness. In recent years e-commerce has found its way in agricultural sector in India. The internet has changed the world. In line with other sectors, agricultural businesses have taken up e-marketing, or internet marketing, expanding the producers and buyers beyond their conventional marketing areas. For implementation of agricultural marketing policy to bring an efficiency and transparency in the agricultural marketing system for efficient price discovery to benefit farmers and other market participants, the initiation was taken by Government of Karnataka and the NCDEX Spot Exchange Limited in this direction. Unified Marketing Platform (UMP) an initiative by the state govt. launched in 2014 by the Rashtriya e-Market Services (ReMs). As of early 2016, ReMS had integrated 105 of the 155 APMCs online across Karnataka, through a single licensing system. According to the government, UMP has multiple benefits, along with the auctioning of the crop; it involved in weighing, invoicing and accounting. UMP helps farmers in discovering the best prices for their produce.

Chilli is the universal spice or Spice of India. Chilli is nature's wonder. Indian chilli and its products exporting to countries like Sri Lanka, Bangladesh, Saudi Arabia and USA for dry chilli. Similarly, Oleoresin is exported to USA, Germany, Japan, United Kingdom and France. Dry chilli is being a high commercial value crop domestically and internationally, it needs online marketing throughout the country. Online trading of the agriculture commodities was the recent introduced policy intervention by the Govt. of Karnataka. There are many challenges in implementing this policy initiative. Further, what are the benefits of online trading to the farmers needs to be examined. Hence the present study is a right step in right direction. It mainly attempts to examine the perception and benefits of online marketing of Dry chilli in Karnataka.

1.1 Objective

To study the benefits and Perception of online marketing to farmers

2. METHODOLOGY

The study is mainly based on both primary and secondary data for achieving objective. The study area comprises of Hubballi and Byadgi Agricultural Produce Market Committee (APMC). The primary data were collected by using pretested schedule from sample respondents. The study mainly concentrated on the farmers of drychilli. The data were mainly contain functioning, infrastructural facilities, cost and returns and benefits of online marketing to farmers. All those information collected from both online farmers and traditional farmers. Online farmers were selected from Hubballi market where online trading was initiated and traditional farmers were selected from Byadgi market. Thus the total farmers selected for the study was 120. The personal interview method was used to collect data from respondents, while it ensured

that data made available by farmers was precise and relevant.

Data collected on the functioning and benefits of online trading were analyzed by using descriptive analytical tools like percentage and averages. The benefits of online trading were presented in tabular analysis.

2.1 Paired 't' Test

Paired T test is based on the differences between the values of each pair, that is one subtracted from the other. In the formula for a paired t-test, this difference is notated as d. Formula of the paired t test is the ratio of the sum of the differences of each pair to the square root of n times the sum of the differences squared minus the sum of the squared differences, all over n - 1.

$$t = \frac{\sum d}{\sqrt{\frac{n(\sum d^2) - (\sum d)^2}{n-1}}}$$

Where, Σd = Sum of the differences.

3. RESULTS AND DISCUSSION

3.1 Socio-economic Status of the Traditional and Online Farmers of Dry Chilli

Socio-economic status of dry chilli farmers are expected to provide a overall view of the general features prevailing in the study area, Therefore, an attempt has been made to analyze some of the important general characteristics of the sample farmers. The knowledge of general characteristics such as age, education, occupation, are etc. of sample farmers would facilitate better understanding of realities of study area.

The data reveal that more number of young and middle aged farmers traded in online 30.00 per cent, 56.66 per cent compare to traditional farmers with 5.00 per cent, 41.66 per cent respectively. About 53.33 cent old age farmers were traded in traditional market and only 13.33 per cent were traded in online market. As per education concerned, majority of online farmers were completed secondary school, PUC, graduation (30.00%, 26.66%, 25.00%) respectively compared to traditional farmers, where there were more illiterate and primary school education completed with 31.66 and 30.00 per cent. Among the sample farmers, majority had undertaken farming as main occupation, while (27-30%) were found engaged in other activity. In case of size of land holding, more number of small and marginal farmers were traded in traditional marketing compared to online marketing. Because of majority of farmers were young, educated and large farmers they can be considered as early adopter of new technologies, innovation of marketing compared to old aged, illiterate and marginal farmers.

Similar findings were observed by Kittur et al. [1], who observed that growing smart phone penetration in the rural regions of India is encouraging the growth of m-commerce models to focus on agribusiness. Younger and educated farmers in the state tend to use internet for making farm related decisions.

3.2 Cost and Returns of the Dry Chilli Farmers in Traditional and Online Marketing

The results of economic aspects of dry chilli cultivation and marketing presented in Table 2. Which was revealed that, total production cost incurred by traditional farmers was ₹ 10,709/ acre is less than ₹ 11,753/ acre by the online farmers and there was no significant difference between online and traditional farmers in cost of cultivation in study area. Because quality of produce which was importance parameter for grading and the grading of produce is mandatory in online marketing incurred more cost. Total marketing cost incurred by traditional farmers was ₹210/qtl. while it was with than ₹318/qtl by online farmers, because transportation cost was high in online marketing (wider the market area) compare to traditional marketing. Total cost of dry chilli (cost of cultivation + marketing cost) incurred by traditional farmers was ₹11,243/acre and in case of online farmers it was ₹ 12,579/acre and there was significant difference at 1 per cent. Total returns obtained by traditional farmers was ₹30,585/acre and it is comparatively less than online farmers with ₹ 34,525/acre. Statistical test 't' test was found to be significance at 10 per cent level of significance in selling price, it indicating online marketing was more significant than traditional marketing. This is due to higher price in online marketing resulting from grading of produce and higher participation of market functionaries throughout the state.

Table 1. Socioeconomic status of the traditional and online farmers of dry chilli

Sl. no.	Particulars	Traditional farmers		Online farmers	
		Number	Per cent	Number	Per cent
1	Sample size	60	100.00	60	100.00
2	Average age of farmer (years)	53		43	
	a. Young (18-35)	3	5.00	18	30.00
	b. Middle age (36-50)	25	41.66	34	56.66
	c. Old age (> 50)	32	53.33	8	13.33
3	Educational level	5th std.		PUC	
	a. Illiterate	19	31.66	1	1.66
	b. Primary school (1-7 std.)	18	30.00	10	16.66
	c. Secondary school (8-10 std.)	15	25.00	18	30.00
	c. PUC	7	11.66	16	26.66
	d. Graduation	1	1.66	15	25.00
4	Main Occupation				
	a. Farming	42	70.00	44	73.00
	b. Others	18	30.00	16	27.00
5	Size of land holding (acres)	3.9		8.1	
	a. Marginal farmer (≤ 2.5)	28	46.66	3	5.00
	b. Small farmer (>2.5 - ≤ 5)	30	50.00	20	33.33
	c. Medium (>5 - ≤ 10)	2	3.33	30	50.00
	d. Large farmer (> 10)	0	0.00	7	11.66
6	Average annual income of the farmers (₹)	64,583		85,250	
	a. > 1 lakh	4	6.66	16	26.66
	b. 50,000 - 1 lakh	19	31.66	20	33.33
	c. < 50,000	37	61.66	24	40.00

Table 2. Cost and returns of the dry chilli farmers in traditional and online marketing

Sl. No.	Total cost of the farmers (₹/ac.)			
	Particulars	**Traditional dry chilli farmers**	**Online dry chilli farmers**	**t value**
1	Production cost			
	A. Material cost			
	a. Seeds	1,047	1,411	
	b. Fertilizer	3,727	3,501	
	c. Pesticides	2,484	3,289	
	B. Operational cost	3,451	3,552	
	Cost of cultivation	10,709	11,753	1.18
2	Marketing cost (₹/q.)			
	a. Transportation cost	134	202	
	b. Loading and Unloading charges	38	50	
	c. Packing	38	66	
	Total marketing cost (₹/q.)	210	318	
	Total marketing cost	534	826	2.43***
3	**Total cost/ac.**	**11,243**	**12,579**	**1.43***
	Yield (q./ac.)	2.5	2.6	
	Selling Price (₹/q.)	12,234	13,278	3.47***
4	**Total returns**	**30,585**	**34,523**	**1.28**
5	**Net returns**	**19,342**	**21,943**	**0.91**

*Note: '***' and '*' indicates significance at 10% and 1% levels, respectively*

These findings were in consonance with Zenit and Dushyant [2] that advantage of online marketing was more compared to traditional marketing, in aspect like low cost, short lead time, high market segmentation, interactive, high flexibility, clarity of the product information.

3.3 Price Difference of the Commodities in Online and Traditional Marketing

Price difference of the commodities in online and traditional marketing are represented in Table 3. The online market price of green gram was 9.52 per cent more than the traditional market price in Hubballi market. About 2.39 per cent more in Naragund market, 9.09 per cent more in Ron market, 4.44 per cent more in Laxmeshwar market and 6.00 per cent more in Gadag market respectively. The online market price of dry chilli was 8.50 per cent more than traditional market price in Hubballi. Similarly,Online market price for all nine commodities namely green gram, bengal gram, black gram, groundnut, soybean, jowar, red gram, dry chilli and cotton in all six markets of online trading namely Hubballi, Naragund, Gadag, Ron, Mundaragi and Laxmeshwar was more than traditional market price. The percentage of online market price over traditional market price for every commodity was computed and it revealed that price of commodities in online marketing was more than traditional marketing price. Farmers were realised the better price by selling their produce in online marketing compared to traditional marketing. Because online marketing mainly aims to realise the better price to farmer by reducing market intermediaries cost and increase the number of traders by wider market area.

3.4 Perception of Farmers on Infrastructural Facilities in Online Marketing

To know the adequacy of infrastructure in online agricultural marketing in selected markets (Hubballi), an opinion survey was conducted and the results are presented in Table 4. The facilities like lot entry, adequacy and time price information, wider market area, better price and SMS alert were adequate in online marketing with percent share of 81.60, 73.33, 73.33, 65.00 and 63.30respectively. Other facilities like gate entry, storage, computers, e-payment were partially adequate with an account of 76.66 per cent, 48.33 per cent, 61.66 per cent, 48.33 per cent respectively. Grading and cold storage were inadequate with about 36.66 per cent and 58.33 per cent respectively in online marketing, because the online marketing of was recently initiated program and all infrastructures need to be developed.

These finding were in conformity with findings of Chand [3] who observed that, though e-NAM would improve competitiveness in market through larger participation of buyers and more transparent system of bidding, its full benefit would be realized only with linking agricultural markets in the country and putting them on electronic platform.

3.5 Source of the Information of the Traditional and Online Farmers

Table 5 represents the source of information used by farmers was involved in online and traditional marketing. From the opinion survey, it revealed that maximum number of traditional farmers preferred progressive farmers for market information regularly because of accuracy of information and trustworthiness on progressive farmers, followed by friends and KVK as source of information. Online farmers were used mobile phone as major source of information because cheap and easy way of getting information in tip of the fingers, followed by newspaper, information kiosk and internet.

Chauhan and Mehta [4] observed similar findings, Experience of internet use and Mass media exposure are significantly and positively correlated with the judgment of the farmers about the use of Internet for Farming community. More than 70 per cent of the farmers opined that internet is the rich source and fastest way of exchanging information in short time.

3.6 Perception and Practices of Dry Chilli Farmers in Marketing

To know the benefit of online marketing over traditional marketing to farmers, an opinion survey was conducted and data was collected from both online and traditional farmers presented in Table 6. Majority of online farmers were involved in grading and got SMS registration, got remunerative price and had banking awareness in online marketing, because grading, e-payment through bank, SMS registration were mandatory in online marketing. Very few of traditional farmers had knowledge about banking, SMS registration and grading because these facilities were not mandatory at all traditional markets. Majority of traditional farmers had uncleared loan with bank, middlemen and traders, because of this reason they did not participate in online marketing due to fear about e-payment to bank account.

Table 3. Price difference of the commodities in online and Traditional marketing (Rs./qtl.)

S. N.	Commodities	APMCs																	
		Hubballi			Naragund			Ron			Laxmeshwar			Gadag			Mundaragi		
		ON	TR	%	ON	TR	%	ON	TR	%	ON	TR	%	ON	TR	%	ON	TR	%
1	Green gram	4,666	4,200	9.52	4275	4175	2.39	4800	4400	9.09	4700	4500	4.44	4667	4467	6.00	-	-	-
2	**Dry chilli**	**13,278**	**12,234**	**8.58**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Cotton	4,900	4,400	11.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Red gram	-	-	-	-	-	-	3200	3000	6.66	2710	2630	3.04	2733	2503	6.75	-	-	-
5	Groundnut	-	-	-	3472	3319	4.60	4501	3900	15.41	2756	2667	3.10	3533	3243	8.94	4150	3800	9.21
6	Bengal gram	-	-	-	5028	4909	2.42	-	-	-	4150	3856	7.62	4883	4476	10.37	-	-	-
7	Jowar	-	-	-	1987	1620	22.6	2050	1825	12.3	-	-	-	1600	1466	9.14	-	-	-
8	Soybean	2800	2711	3.28	-	-	-	-	-	-	-	-	-	-	-		-	-	-
9	Black gram	-	-	-	-	-	-	-	-	-	-	-	-	2900	2752	5.37	-	-	-

Source: Agricultural Produce Market Committee Hubballi. Anonymous [5]

Note: ON- online market price, TR-Traditional market price, % -percentage of online price more than traditional market price and '-'- No transaction

Table 4. Perception of farmer on infrastructural facilities in online marketing (n=60)

Sl. no.	Facilities	Fully adequate		Partially adequate		Inadequate	
		No. of farmers	Percent	No. of farmers	Percent	No. of farmers	Percent
1	Lot entry	49	81.60	10	16.6	1	1.66
2	Adequate and timely price information	44	73.33	15	25.00	1	1.66
3	Wider the market	44	73.33	15	25.00	1	1.66
4	Better price	39	65.00	20	33.33	1	1.66
5	SMS alert	38	63.30	19	31.66	3	5.00
6	Gate entry	10	16.60	46	76.66	4	6.00
7	Computers	6	10.00	37	61.66	17	28.33
8	E-payment	28	46.66	29	48.33	3	5.00
9	Storage	6	10.00	29	48.33	25	41.66
10	Cold storage	1	1.66	24	40.00	35	58.33
11	Grading	16	26.66	22	36.66	22	36.66

Table 5. Source of the information of the traditional and online farmers

Sl. No.	Source	Traditional farmers (n=60)						Online Framers (n=60)					
		Regularly		Occasionally		Not at all		Regularly		Occasionally		Not at all	
		N	%	N	%	N	%	N	%	N	%	N	%
1	TV	8	13.33	49	81.66	3	5.00	30	50.00	22	36.66	8	13.30
2	Radio	15	25.00	15	25.00	30	50.00	5	8.33	14	23.33	41	68.33
3	Newspaper	2	3.33	26	43.30	32	53.30	40	66.66	19	31.66	1	1.66
4	Mobile phone	10	16.66	10	16.66	40	66.60	41	68.33	16	26.66	3	5.00
5	Information kiosk	15	25.00	15	25.00	30	50.00	40	66.66	15	25.00	5	8.36
6	Internet	02	3.33	02	3.33	56	93.30	22	36.66	30	50.00	8	13.30
7	Panchayat office	48	33.00	11	18.33	1	1.66	4	6.66	28	46.60	28	46.60
8	Friends	55	91.66	5	8.33	0	0.00	30	50.00	15	25.00	15	25.00
9	Publications	2	3.33	5	8.33	53	88.30	18	30.00	10	16.66	32	53.00
10	SMS	12	20.00	11	18.33	37	61.60	33	55.00	16	26.60	11	18.30
11	Tours	0	0.00	10	16.6	50	83.30	4	6.66	28	46.60	28	46.60
12	Progressive farmers	57	95.00	3	5.00	0	0.00	33	55.00	25	41.60	2	3.33
13	ExtensionOfficers	5	25.00	15	25.00	30	50.00	11	18.33	29	48.30	20	33.33
14	KVK/RSK	31	51.66	12	20.00	17	28.30	25	41.66	17	28.33	18	30.00

(Note: N- No. of farmers, %- Percentage)

Table 6. Perception and practices of dry chilli farmers in marketing (n=120)

Sl. No.	Variables	Traditional Marketers		Online Marketers	
		No. of marketers	Per cent	No. of marketers	Per cent
1	Farmers get sufficient traders (Wider market)	18	30.00	52	86.00
2	Farmers involved in grading	10	16.66	60	100.00
3	Farmers satisfied with grading procedure	5	8.33	51	85.00
4	Farmers got remunerative prices	15	25.00	58	96.66
5	Farmers satisfied with their mode of payment	50	83.33	53	88.33
6	Farmers exploited by the middlemen	38	63.30	08	13.33
7	Farmers stored the produce for the better price	18	63.30	45	75.00
8	Farmers got SMS registration	12	20.00	60	100.00
9	Farmers have banking awareness and operation	15	25.00	58	96.60
10	Farmers know well about online marketing	9	15.00	57	95.00
11	Farmers have un-cleared loan with bank	47	78.00	18	30.00
12	Farmers have un-cleared loan with middlemen or trader	37	61.00	9	15.00
13	Farmers have confidence to go for online marketing.	17	28.00	53	88.33
14	Farmers are confident of their product quality	9	15.00	50	83.33

These findings were in consonance with Nabirasool [6] in online marketing, where there was wide range of products, more possibility of cut cost, easier to more customers, faster speed communication with target group and possibility of continuous relationship.

4. CONCLUSIONS

Online marketing of agricultural produce was recently initiated program, Gate entry, storage, computers, e-payment were partially adequate. Grading and cold storage were inadequate. Therefore all infrastructures need to be developed. Total returns obtained by traditional farmers were comparatively less than online farmers due to prices of commodities in online marketing were more than traditional marketing price.Maximum number of traditional farmers preferred progressive farmers for market information regularly followed by friends and KVK as source of information. Online farmers were used mobile phone as major source of information followed by newspaper, information kiosk and internet.Majority of online farmers were involved in grading and got SMS registration, got remunerative price and had banking awareness in online marketing, because grading, e-payment through bank, SMS registration were mandatory in online marketing. Very few of traditional farmers had knowledge about banking, SMS registration and grading. Infrastructure for post-harvest management needs to be strengthened, particularly cold storage, cleaning and grading infrastructure, at primary level on public-private partnership mode. There is need to create awareness about online marketing through training, campaigns and other extension activities to farmers.

5. POLICY IMPLICATIONS

Based on the findings of the study, the following policy recommendations are suggested:

1. Online agricultural marketing was initiated only in six APMCs of North Karnataka on pilot basis. It may be extended to all APMCs in Karnataka.
2. Infrastructure for post-harvest management need to be strengthened, particularly cold storage, cleaning and grading infrastructure, at primary level on public-private partnership mode.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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