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Utilization Behaviour of Digital Tools by Farmers for Marketing Their Produce during Covid-19 Lockdown Period

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The present study was conducted to examine the role of digital tools in agricultural marketing during the Covid-19 lockdown period in Tamil Nadu. The study aimed to understand how farmers leveraged digital tools to overcome marketing difficulties in marketing their produce during the lockdown period. The research focused on the time spent on digital tools, the purpose for which farmers used digital tools, and the awareness of e-commerce web portals for marketing their produce. The research was conducted in three districts of Tamil Nadu, viz., Krishnagiri, Erode, and Madurai, which were selected based on highest production of tomatoes, banana, and jasmine respectively. The findings revealed that the time spent by farmers on phone calls increased for marketing their produce during Covid-19 lockdown period, followed by SMS/WhatsApp/Telegram messaging to engage in direct communication and share information with buyers. Social media platforms such as Facebook, Twitter, and Instagram, Digital payment platforms like Phonepe, Gpay, Bhim and E-commerce portals and apps were not used much by farmers for marketing their produce during the lockdown period. Most of the farmers used digital tools for getting market information, arranging transport and labour. However, farmers didn't use the digital tools for processing and storage purposes., The awareness on E-commerce web portals among the farmers differed among the three crops. None of them were aware about the portals like Jaivik Kheti, Kisan Mandi, and Arya.ag. However, farmers had relatively higher awareness on e-NAM portal. These findings have implications for policy makers and stakeholders in devising strategies to enhance farmers' awareness and access to digital tools and to develop digital interventions for improving their marketing capabilities in times of crisis.

Keywords: Covid-19 lockdown; digital tools; agricultural marketing; horticultural crops.

1. INTRODUCTION

In December 2019 an epidemic in Wuhan, China, led to the discovery of a new virus called Covid-19. Containment efforts fell short, allowing the virus to spread to other parts of Asia and then to the world, which resulted in the dreaded COVID-19 pandemic. On January 30, 2020 in Kerala three Indian medical students who had just returned from Wuhan, became the first people to contract COVID-19 in India. Due to the rapid spread of the virus infection, lockdown was announced in Kerala on 23rd March 2020, and on 25th March 2020 in the rest of the country. All economic activities were shut down during the lockdown period, except for some essential services and activities. In the case of agriculture, lack of public transport and limited operational market timings forced farmers to sell their produce to the market intermediaries who offered lower prices for the harvested produce and even consumers were often paying more. Resourceful farmers were reluctant to go to markets due to the risk of corona virus infection [1].

When the whole world fought against the pandemic spread of COVID-19, digital communication tools played a big role in creating public awareness, prevention, surveillance, diagnosis and treatment. Digital tools became one of the most effective, widely used and popular modes around the world to fight against the pandemic.

In the agriculture sector, digital tools have the ability to convey agricultural information to farmers in a timely and effective manner. Information regarding weather, new innovations, cost of inputs, fertilizer application and even marketing opportunities can be received through digital tools. Farmers use their phones for everyday communication, such as keeping in touch with family and friends and also to obtain information about new farm technologies, market prices etc [2-4].

Due to the pandemic restrictions, it became a challenge for agricultural extension agents to reach farmers. The utilization of digital tools like WhatsApp, Facebook, Twitter and YouTube as well as Zoom App for Video Conferencing and Webinars for continuous and improved communication therefore became pertinent. Various apps and portals and other digital tools interventions for agricultural marketing emerged during the Covid-19 lockdown period.

Aggarwal et al. [5] in their study on things learned from Kenyan farmers during Covid-19 implied that 80.00 per cent of the farmers called or messaged their friends and family, followed by 64.00 per cent of the farmers used smartphones

to send or receive money and 22.00 per cent of the farmers used phone calls to coordinate with other farmers to sell the produce.

The introduction of the Kisan Rath mobile app in India during Covid-19 lockdown period had a registration of over 80,000 farmers and 70,000 traders in the first week after it was launched [6].

It was reported by Magaji and Lawal [7] that amid of the Covid-19 pandemic, digital facilities were extensively utilized by farmers, with SMS being used by 85.8%, phone calls by 80%, digital agri-input services by 76%, and Facebook and WhatsApp platforms by 61.5% and 59.6%, respectively during Covid-19 pandemic in their study related to the Impact of Covid-19 pandemic and agricultural knowledge sharing for small scale farmers in Katsina state in Nigeria.

In his study on the impact of Covid 19 in the agricultural system, value chain, and food security, Das [8] noted that 78.00% of the farmers in the Cooch Behar District of West Bengal said that mobile-based agro-advisories may aid in farm productivity.

In his study on the use of information and communication technologies (ICTs) by farmers during the Covid-19 pandemic in Taraba State of Nigeria, Audu [9] noted that radio (94.30 percent) and mobile phones (98.20 percent) were the primary sources of information used by farmers.

Many studies around the world have investigated whether people are complying with recommended preventive measures in the early set of the pandemic including changes to daily life, social isolation and economic losses. Several articles have also been published about the impact of the lockdown on agriculture. However, only a few studies have focused on the role of digital tools in agricultural marketing during Covid-19 lockdown period. Hence, this study was taken up with the following objectives:

(i) To ascertain the time spent by farmers on digital tools for marketing their produce during Covid-19 lockdown period.
(ii) To examine the purpose of using the digital tools by farmers for marketing their produce during Covid-19 lockdown period.
(iii) To find out the awareness on E-commerce web portals by farmers for marketing their produce during the lockdown period.

2. METHODS

The research carried out on three types of horticultural crops viz., Vegetables (Tomato), Fruits (Banana) and Flowers (Jasmine) which were the most affected crops and more perishable commodities during Covid-19 lockdown period. The study was purposively undertaken in three districts viz., Krishnagiri (Tomato), Erode (Banana), and Madurai (Jasmine) which were selected based on highest area under the respective crops in Tamil Nadu [10]. From each district, two blocks were selected based on highest area under these crops viz., Kelamanagalam, Thally (Krishnagiri district); Gobichettipalayam, Tukkanayakanpalayam (Erode district); and Thiruparankundram, Usilampatti (Madurai district). From each block, 40 respondents were selected using proportionate random sampling method (80 respondents per district/crop). The variable 'Time spent by farmers on digital tools by farmers' was measured on a three-point continuum of 'No change', 'Decreased' and 'Increased' with scores of 0, 1 and 2 respectively. The variable 'Purpose of using digital tools' was measured on a dichotomous response of 'Yes' or 'No' with scores of 2 and 1. 'Awareness on E-commerce web portals' variable was measured on a dichotomous response of 'Aware' or 'Unaware' with scores of 2 and 1 respectively. Percentage analysis was used for meaningful interpretation of data.

3. RESULTS AND DISCUSSION

3.1 Time Spent by Farmers on Digital Tools for Marketing Their Produce during Covid-19 Lockdown Period

The findings in relation to the time spent by farmers on digital tools for marketing their produce during Covid-19 lockdown period is presented in Table 1.

Table 1 revealed that during the Covid-19 lockdown period, over three-fourths (81.25%) of the tomato growers experienced an increase in the time spent on phone calls for marketing their produce. This was followed by SMS/Whatsapp/ Telegram (28.75%), Facebook/Twitter/Instagram (12.50%), and Phonepe/Gpay/Bhim/Paytm (8.75%).

It is also observed that all the tomato growers had reported no change in the time spent on E-commerce Portals/Apps or Zoom/Google meet/

Teams/Webex, followed by Phonepe/Gpay/Bhim /Paytm (91.25%), Facebook/Twitter/Instagram (87.50%), SMS/Whatsapp/Telegram (71.25%) and Phone calls (12.50%).

With regard to banana farmers, more than two-third (70.00%) of the respondents reported that the time spent on phone calls had increased for marketing their produce, followed by SMS/ Whatsapp/Telegram (20.00%) and Phonepe/ Gpay/Bhim/Paytm (12.50%) during the lockdown period.

It also seen that all of banana growers had reported no change in the time spent on E-commerce Portals/Apps or Zoom/Google meet/ Teams/Webex or Facebook/Twitter/Instagram followed by Phonepe/Gpay/Bhim/Paytm (87.50%), SMS/Whatsapp/Telegram (80.00%) and Phone calls (18.75%).

In the case of jasmine farmers, nearly two-third (65.00%) of the respondents reported that time spent on phone calls had increased for marketing their produce, followed by SMS/WhatsApp/ Telegram (18.75%).

It is also evident that all the jasmine growers had reported no change in time spent on E-commerce Portals/Apps or Zoom/Google meet/ Teams/Webex or Facebook/Twitter/Instagram or Phonepe/Gpay/Bhim/Paytm, followed by SMS/ Whatsapp/Telegram (81.25%) and Phone calls (22.50%).

Most of the tomato, banana and jasmine farmers used phone calls for marketing their produce during Covid-19 lockdown period. This may due to the reason that farmers find it easier to get information through phone calls when compared to other digital tools. SMS/WhatsApp/Telegram messaging was the second most often used tool used by the respondents. This may be due to the reason that many of the farmers are members of WhatsApp/Telegram groups.

3.2 Purpose of Using Digital Tools by Farmers for Marketing Their Produce during Covid-19 Lockdown Period

The findings in relation to the purpose of using digital tools by farmers for marketing their produce during Covid-19 lockdown period is presented in Table 2.

From Table 2 it is seen that more than two-third (70.00%) of the tomato farmers had used digital tools for accessing the market information, followed by accessing information related to transport (43.75%) and labour (33.75%).

In the case of banana farmers, majority (61.25%) of the respondents used digital tools for the purpose of availing transport during Covid-19 lockdown period, followed by accessing market information (58.75%) and labour (27.50%).

As far as Jasmine is concerned, more than half (62.50%) of the respondents used digital tools for availing transport, followed by accessing information related to labour (56.25%), market information (53.75%) and processing and grading (37.50%).

It is noted that none of the respondents of tomato and banana crops, used digital tools for processing and storage, while jasmine farmers used digital tools for processing, but not for storage purpose which may due to ignorance of farmers on processing and storage facilities in their area. Even Phone calls and Whatsapp tools were not used for processing and storage purpose.

Most of the tomato, banana and jasmine respondents used the digital tools for the purposes of accessing market information and transport during Covid-19 lockdown period. The reason may due to less demand and high price volatility of produce during Covid-19 lockdown period.

Secondly, most of the banana and jasmine respondents used digital tools for transport purpose. This may due to the restrictions on movement of vehicles during the lockdown period.

3.3 Awareness on E-commerce Web portals Related to Marketing

The findings in relation to awareness on E-commerce Web Portals related to marketing is presented in the Table 3.

It is seen from Table 3 that none of the tomato, banana and jasmine growers were aware of the Jaivik Kheti Portal, Kisan Mandi, and Arya.ag portals for marketing their produce.

It is observed that tomato (10.00%), banana (20.00%) and jasmine (26.25%) farmers were aware of e-NAM web portal.

Table 1. Distribution of respondents according to time spent on digital tools for marketing their produce during Covid-19 lockdown period

S.No.	Digital Tools	Tomato (n=80)			Banana (n=80)			Jasmine (n=80)		
		Increased	Decreased	No change	Increased	Decreased	No change	Increased	Decreased	No change
1.	Phone calls	65 (81.25)	5 (6.25)	10 (12.50)	56 (70.00)	9 (11.25)	15 (18.75)	52 (65.00)	10 (12.50)	18 (22.50)
2.	SMS/WhatsApp/Telegram	23 (28.75)	0 (0.00)	57 (71.25)	16 (20.00)	0 (0.00)	64 (80.00)	15 (18.75)	0 (0.00)	65 (81.25)
3.	Facebook/Twitter/Instagram	10 (12.50)	0 (0.00)	70 (87.50)	0 (00.00)	0 (0.00)	80 (100.00)	0 (0.00)	0 (0.00)	80 (100.00)
4.	Phonepe/Gpay/Bhim/Paytm	7 (8.75)	0 (0.00)	73 (91.25)	10 (12.50)	0 (0.00)	70 (87.50)	0 (00.00)	0 (0.00)	80 (100.00)
5.	E commerce Portals/Apps	0 (0.00)	0 (0.00)	80 (100.00)	0 (0.00)	0 (0.00)	80 (100.00)	0 (0.00)	0 (0.00)	80 (100.00)
6.	Zoom/Google meet/Teams/ Webex	0 (0.00)	0 (0.00)	80 (100.00)	0 (0.00)	0 (0.00)	80 (100.00)	0 (0.00)	0 (0.00)	80 (100.00)

** Figures in parenthesis are percentage to total*

Table 2. Purpose of using digital tools for marketing the produce during Covid-19 lockdown period

S.No.	Purpose	Tomato (n=80)		Banana (n=80)		Jasmine (n=80)	
		Yes	No	Yes	No	Yes	No
1.	Market Information	56 (70.00)	30 (37.50)	47 (58.75)	33 (41.25)	43 (53.75)	37 (46.25)
2.	Transport	35 (43.75)	46 (56.25)	49 (61.25)	31 (38.75)	50 (62.50)	30 (37.50)
3.	Labour	27 (33.75)	53 (66.25)	22 (27.50)	58 (72.50)	45 (56.25)	35 (43.75)
4.	Processing/Grading	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)	30 (37.50)	50 (62.50)
5.	Cold storage	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)

** Figures in parenthesis are percentage of the total*

Table 3. Awareness on e-commerce web portals related to marketing

S.No.	E-commerce web portals	Tomato (n=80)		Banana (n=80)		Jasmine (n=80)	
		Yes	No	Yes	No	Yes	No
1.	Jaivik Kheti Portal	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)
2.	Kisan Mandi	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)
3.	e-NAM	8 (10.00)	72 (90.00)	16 (20.00)	64 (80.00)	21 (26.25)	59 (73.75)
4.	Arya.ag	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)	0 (0.00)	80 (100.00)

** Figures in parenthesis are percentage of the total*

Lack of awareness on Jaivik Kheti, Kisan mandi and Arya.ag. portals may be due to lack of adequate promotional efforts of these portals among the farmers. The awareness of e-NAM web portal is relatively higher when compared to other portals/apps because more than 150 regulated markets in Tamil Nadu have been linked to e-NAM web portal.

4. CONCLUSION

During the Covid-19 pandemic, digital tools have played an important role in agricultural marketing. Farmers had spent more time on phone calls to market their produce, followed by SMS/WhatsApp/Telegram messaging to engage in direct conversation and communicate information with buyers. Most of the farmers used digital tools for accessing information related to market, transport and labour. Farmers had high awareness of e-NAM portal while none of them were aware of Jaivik Kheti portal, Kisan Mandi and Arya.ag. Portals. Therefore, the study emphasized the growing significance of digital tools in agricultural marketing, especially during unprecedented situations like the Covid-19 lockdown. The study aligned of farmers' adoption of digital tools with the Government's digital mission and smart agriculture initiative signifies a positive step towards a technology-driven and resilient agricultural sector in India. Policymakers, stakeholders, and industry players can utilize these findings to further strengthen and support the digital transformation of agriculture, ensuring sustainable growth and prosperity for farmers and the entire agricultural value chain.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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