



## TCV+ STUDY ON ONLINE FERTILIZER RECOMMENDATION: AUTOMATION OF DATA PROCESSING AND UPDATING

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Service @ Doorsteps

Access to Information (a2i) Programme  
Prime Minister's Office



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## II. ACRONYMS

<b>a2i</b>	Access to Information
<b>PMO</b>	Prime Ministers' Office
<b>SRDI</b>	Soil Research Development Institute
<b>OFRS</b>	Online fertilizer Recommendation Services
<b>SIF</b>	Service Innovation Fund
<b>TCV</b>	Time cost and visit
<b>UAO</b>	Upazilla Agriculture Officers
<b>UDC</b>	Upazilla Digital Center
<b>AIS</b>	Agriculture Information Service
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>UNDP</b>	United Nations Development Programme
<b>UN</b>	United Nations

### **III. EXECUTIVE SUMMARY**

The main concern of this study is to evaluate the required the TCV (Time, Visit and Cost) through project implementation entitled “Online Fertilizer Recommendation: Automation of Data Processing and Updating”. is an important part of SRDI. Previously, people had to go to Dhaka city to test soil for further cultivation. Now the automation process and online fertilizer recommendation made the process much easier. SRDI officials test soil sample and enter the fertilizer recommendation in the database. It turned the expenditure of time, cost and visit of beneficiaries into the least. As this Study focuses on the monetary benefits in terms of TCV and non- monetary benefits as well, this study is projected as TCV plus to show other non-monetary benefits like beneficiary satisfaction, willingness to accomplish goals and other indicators that reflects non-monetary outcome of these projects.

## 1 INTRODUCTION AND BACKGROUND

Soil Research Development Institute introduced a project named Online Fertilizer Recommendation under SIF of a2i programme. According to the project objectives, it will make an automation of data processing and data updating to make an easy solution to fertilizer recommendations among farmers.

In the earlier form, soil had to be tested only in the Dhaka office and the results had to be collected from the Dhaka office. Therefore, people and other stakeholders had to travel to Dhaka for soil testing and getting results, which used to entail extra costs, time and hassles. Under the automation of data processing and data updating project, it is now possible to upload soil test results done at different regional labs. SRDI has established about 22 labs in regional offices as of now by using other funds, by the concerned officers with an admin password. Through the web, the results can be obtained by the stakeholders including farmers. Thus, the contribution of the project is that it eases the whole process and reduces time and cost for both the administrator and the end-users.

Bangladesh is primarily an agrarian economy and about 48 percent of the total labor force is engaged in this sector. This sector covers up the income generator sector, poverty alleviation and food security as well. Therefore, timely recommendation of fertilizer based on soil quality is important to get the maximum benefit from fertilizer use. Considering these urgency, an improved process of fertilizer recommendation was a burning need. Soil Resource Development Institute (SRDI) in collaboration with Catalyst has undertaken a project to develop online fertilizer recommendation system. Here, soil samples collected from the field are being sent to the laboratory for analysis. Then, Soil sample analysis results are sent to the concerned scientist and later location-based information and maps are used to get fertilizer recommendation. Through this service, farmers are getting online fertilizer recommendation and having an easy access by this facility.

According to the project vision, it will provide an easy and fast fertilizer recommendation to the farmers. It also expects that this project will reduce time, visit and cost of farmers.

Besides, it will ensure increased agricultural production. This research will explore the monetary benefits of farmers in terms of TCV and also explore other benefits as non-monetary benefits.

## **2 OBJECTIVE OF THE STUDY**

Broad objective of this study is to find out the monetary and non-monetary benefits of online fertilizer recommendation.

Specific objectives of this study are:

- To determine the amount of time saved on average of those farmers receiving online fertilizer recommendation.
- To determine the amount of cost saved on average of those farmers receiving online fertilizer recommendation.
- To determine the number of visits saved on average of those farmers receiving online fertilizer recommendation.
- To understand the general perception of the beneficiaries due to the facilities of newly introduced online fertilizer recommendation system.

## **3 METHODOLOGY**

This study has been conducted among those farmers, who receive fertilizer recommendation for cultivation. Most of these interviews were conducted through telephone interviews. In total, a survey of 150 telephones has been done. Few were done by face to face interviews.

The proposed study was based upon two types of data — Primary and Secondary. During the task, major focuses of the review included – (1) Conceptualize the problem, understand the situation and define the problem statement for the project and (2) Assess relevancy, efficiency and effectiveness of the intervention. Primary data were collected through consultation and Structured Interview.

### **3.1 Research Approach and Design**

This study is both qualitative and quantitative manner. This research defines quantitative research as a formal, objective, systematic process to describe and test relationships and examine cause and effect interactions among variables. A descriptive survey design was used. It provides an accurate portrayal or account of the characteristics, for example behavior, opinions, abilities, beliefs and knowledge of a particular individual, situation or group.

### **3.2 The Study Area and Population**

The study was conducted in Mymensing and Tangail district. This study has been conducted among those farmers, who receive fertilizer recommendation for cultivation under the pilot project of Online Fertilizer Recommendation: Automation of Data Processing and Updating. In total, 150 respondents were interviewed in this regards.

### **3.3 Data Analysis**

Data entry or importation was done concurrently with data collection. Data was analyzed into SPSS software (IBM, v22). The researchers reviewed, edited and cleaned the data by performing a series of frequency and data range checks. Any inconsistencies were checked visually by comparing the electronic entry to the entry on the original questionnaire. Data was analyzed by using descriptive statistics.

### **3.4 Limitation**

- The researchers faced several challenges at the time of collecting data, such as; contact numbers of previous method were unavailable. As a result, interviewers had to spend considerable time for set up appointments.
- Some appointments had to be rescheduled due to the unavailability of target respondents.

## 4 FINDINGS

### 4.1 General Information

This study has been conducted among farmers who used to receive fertilizer recommendation service. Farmers used to receive fertilizer recommendation from the Upazilla Agriculture Office and the agricultural officer. It used to take a huge time to avail this service and it caused hassle to the farmers. Recently under Service Innovation Fund, SRDI has introduced automated data processing and data updating to provide fertilizer recommendation easily to the farmers, but many of them used to receive this service in both online and manual process.

#### Way of receiving fertilizer recommendation Service

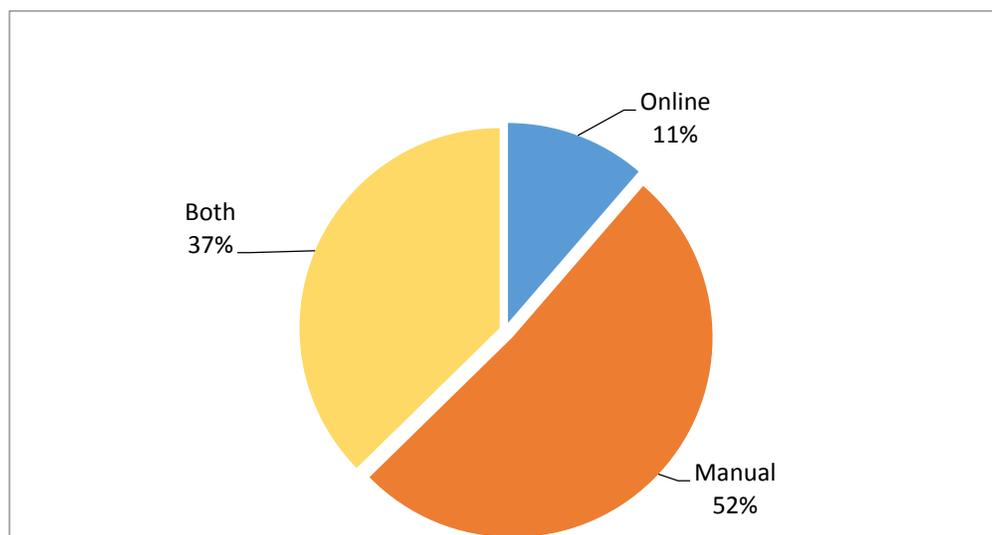
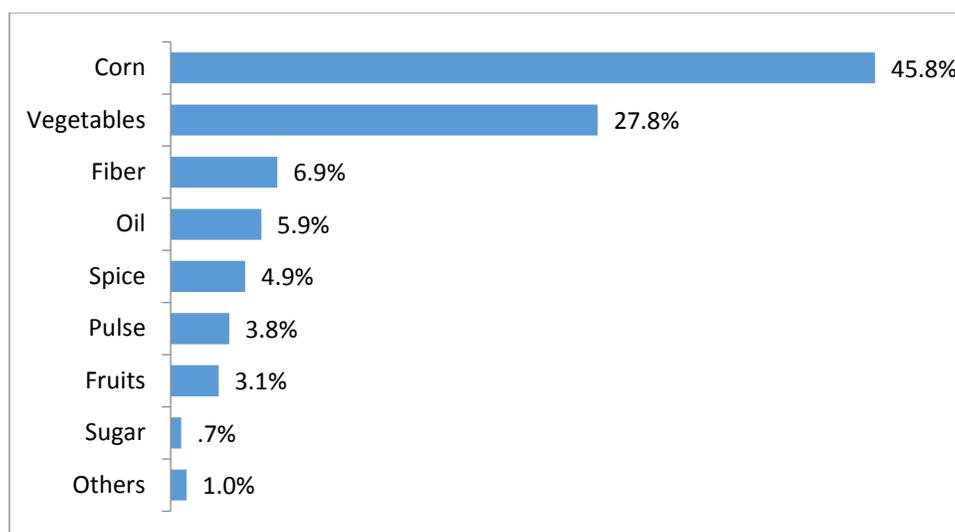


Figure 1: Way of Receiving Services

Study findings revealed that about 52% of the farmers have received this service of fertilizer recommendation manually and 11% of the farmers have taken this service in online process. Rest of the farmers (37%) has taken this service through both online and manual process. Thus, study found that 48% of the farmers have experience of receiving online fertilizer recommendation.

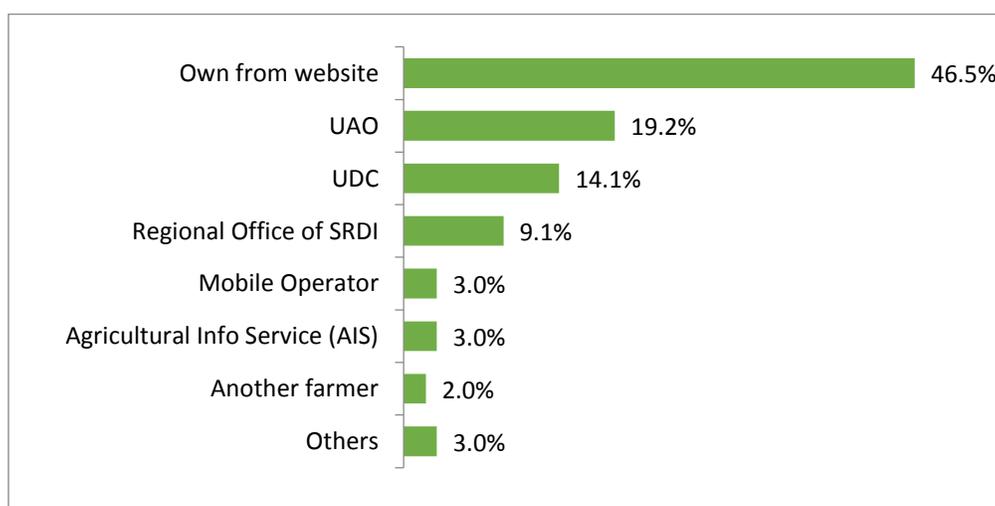
## Types of Cultivated Crops



**Figure 2: Types of cultivated crops by respondents**

Study revealed that 45.8% of the farmers cultivate crops and 27.8% cultivate vegetables in their lands. On the other hand about 6.9%, 5.9%, 4.9%, 3.8%, 3.1%, 0.7% of the farmers cultivate fiber, oil, spice, pulse, fruits, sugar respectively and for their cultivation progress they need fertilizer recommendation for better work. Most of the time, they get this information from the agriculture offices and the agriculture officers.

## Sources of Instruction



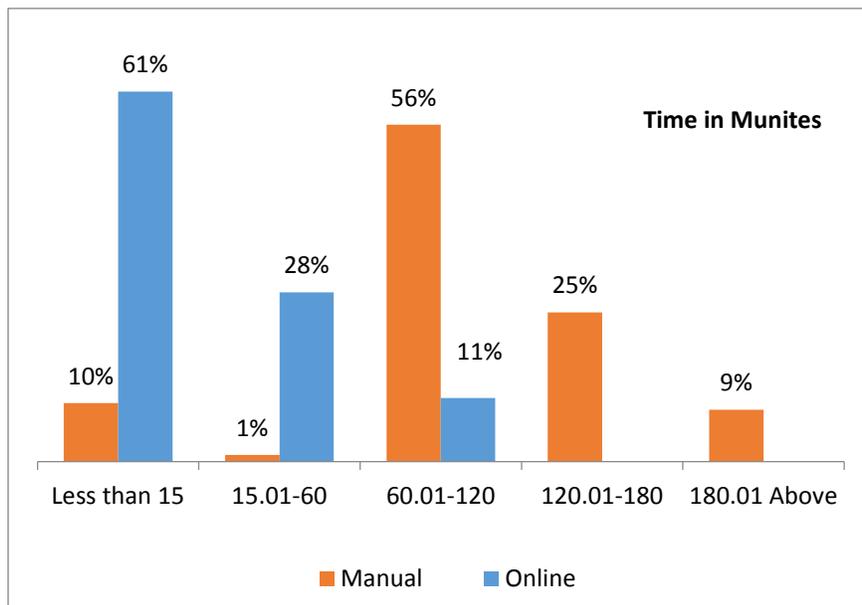
**Figure 3: Sources of Instruction**

After implementation of the online fertilizer recommendation services, farmers who receive online recommendation for fertilizers; 46.5% stated that they knew about this information from website. 19.2% mentioned that they got their fertilizer recommendation from upazilla agriculture officers and 14.1% mentioned that they received this service from UDC.

## 4.2 TCV analysis

TCV analysis will give the description of Time, Cost and Visit analysis of provided facility by SRDI with their online fertilizer recommendation.

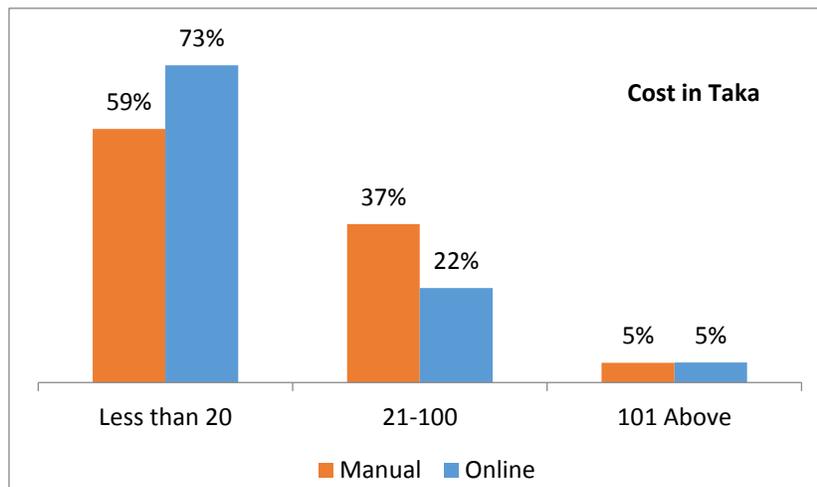
### Time Required



**Figure 4: Time required in both process.**

In the findings, about 61% respondents mentioned that this process takes less than 15 minutes than the manual system. On the other hand, about 56% said that they had to spend more than one hour to receive the service manually.

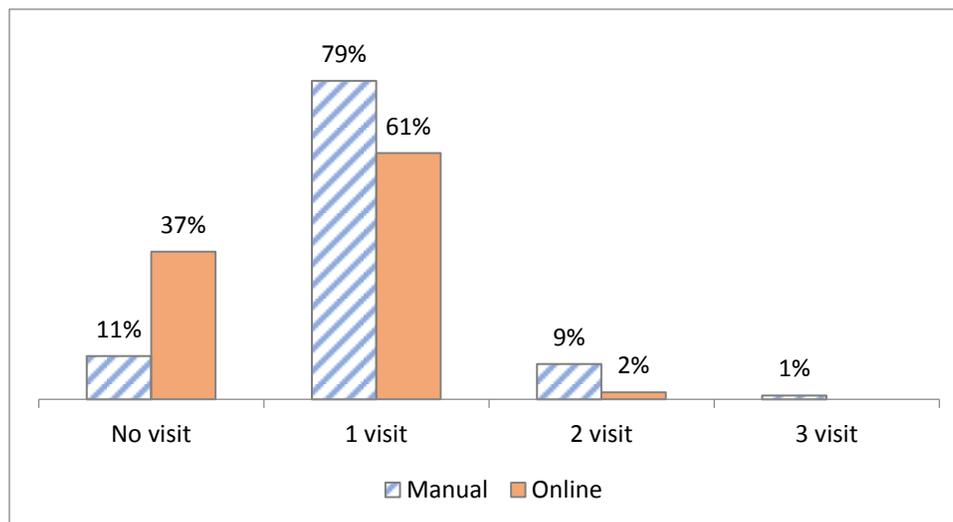
## Cost Required



**Figure 5: Total average cost in both processes.**

In the analysis of average cost process, 73% informant who receive the service online mentioned that they only spend less than 20 taka to avail the service; at the same time who receive the service manually, 37% of them mentioned that- they spend from 20 taka to 100 taka to avail the service.

## Visit Required



**Figure 6: Frequency of visit in both processes**

Figure 6 revealed the visits required for availing online recommendation service. Study revealed that in online process, 7% of the farmers could avail service without going

anywhere and majority of them goes to nearby service point for receiving service online. In contrast, manual process around 80% farmers needed one visit and another 10% needed two and more visits for availing service.

### Comparative Analysis of Time, Cost and Visit

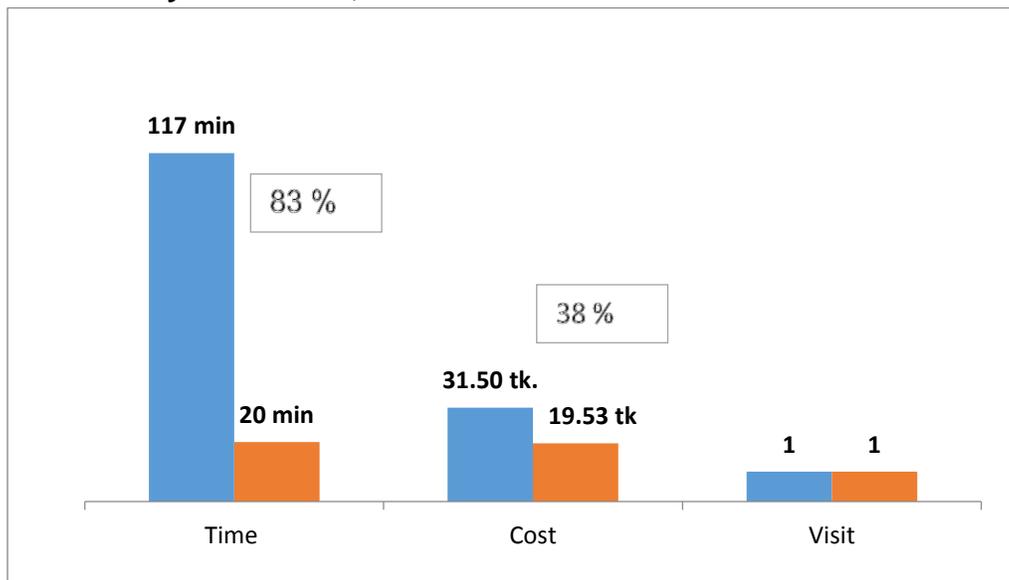


Figure 7: Average Time, Cost and Visit

This chart shows the TCV findings of this study. If we fragment the service intake process into two parts, before and after- it will give us a brief understanding on this issue. In the previous service procedure, farmers used to spend 117 min in an average to avail this facility. They had to pay around 31.50 taka for taking this service and they had to visit the office for one time at least.

On the other hand, after implementation of online fertilizer recommendation, farmers have to spend 20 min to take this facility and have to pay 19.52 taka on an average. Therefore, with the use of this facility, time has been reduced up to 83% and cost has been reduced up to 38%.

### 4.3 A TCV+ Analysis

#### Manual System vs. Online System: Advantages and Disadvantages

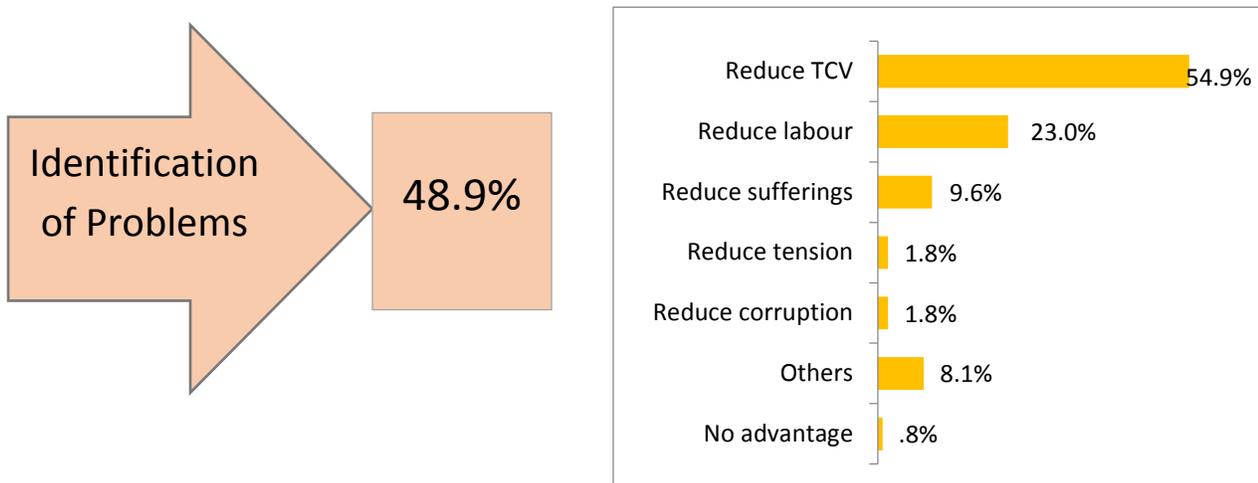


Figure 8: Advantages of Receiving Online Services

In manual system, farmers can identify their problems directly. This is one of the major finding of this section- 48.9% farmer mentioned about this advantage while conducting this study. On the other hand, this online service has reduced their TCV. 23% responded this online facility has reduced their labor and 9.6% responses mentioned that this facility reduced their sufferings.

#### Challenges of Online Services

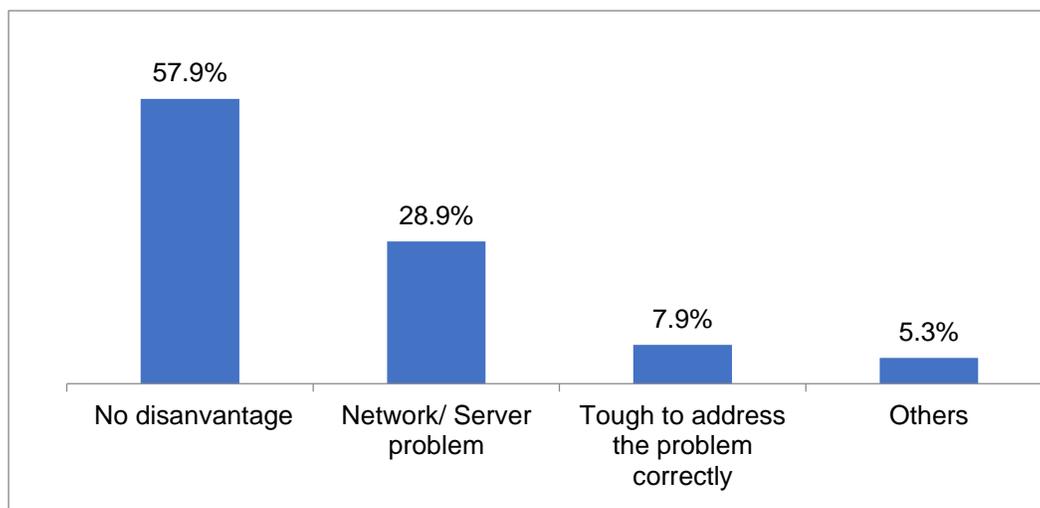


Figure 9: Disadvantages of Receiving Online Services

According to the respondents, 57.9% of them expressed that they do not face any problems. Server or network problem is one of the disadvantages of receiving online facility. 28.9% respondent mentioned this issue.

### Advantages of manual service

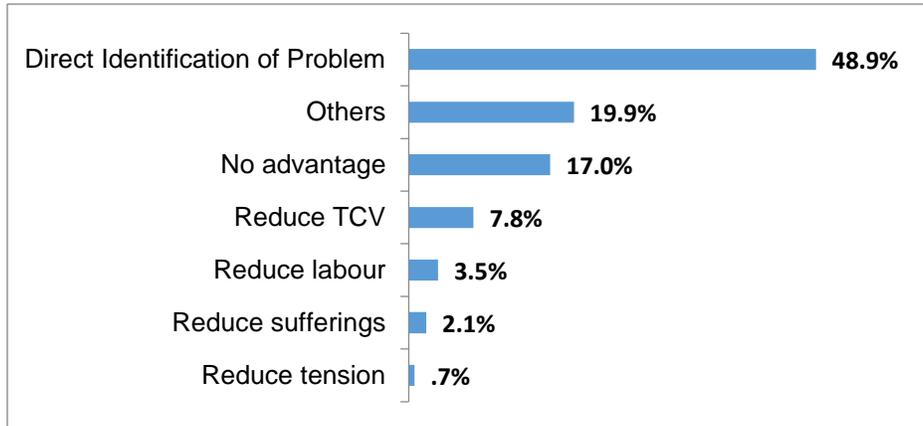


Figure 10: Advantages of Manual Services

This chart revealed that about 48.9% respondents mentioned direct identification of problem was the main advantage of manual service. On the other hand, about 17% respondents said in manual service there was no advantage.

### Disadvantage of manual process

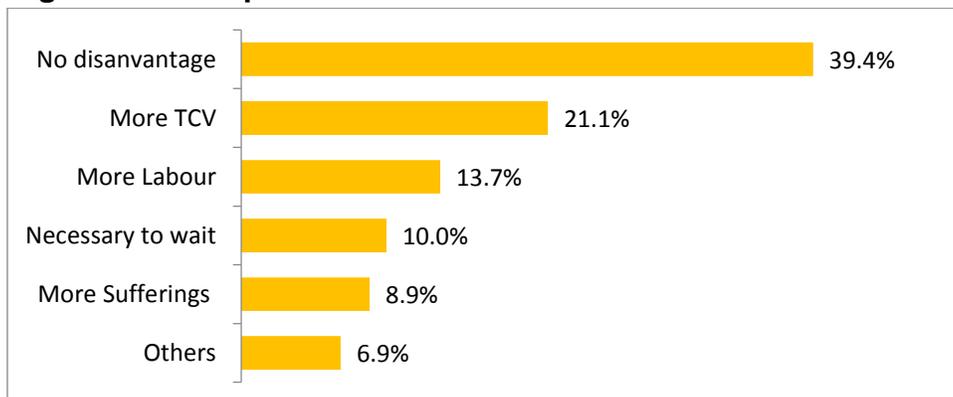


Figure 11: Disadvantage of manual process

Reversely, 21.1% respondents, who receive manual service for fertilizer recommendation, mentioned that- recommendation through manual service made a

huge TCV to avail facilities. On the other hand 13.7%, 10% respondents mentioned manual process needed more labor, necessity to wait.

### Preferred Services

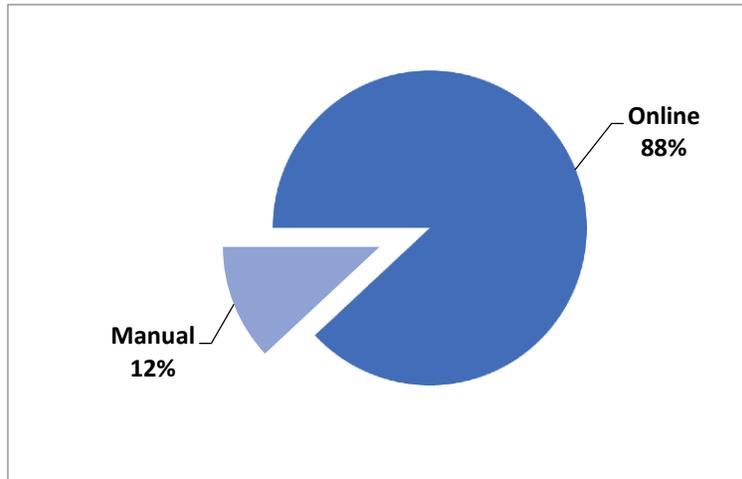


Figure 12: Preferred Services

In this study analysis, we got the percentage of fertilizer users who use manual and online process to get recommendations. In this regard, we found that 88% respondent use online fertilizer recommendation and 12% respondents avail this service manually.

### Causes of preferences

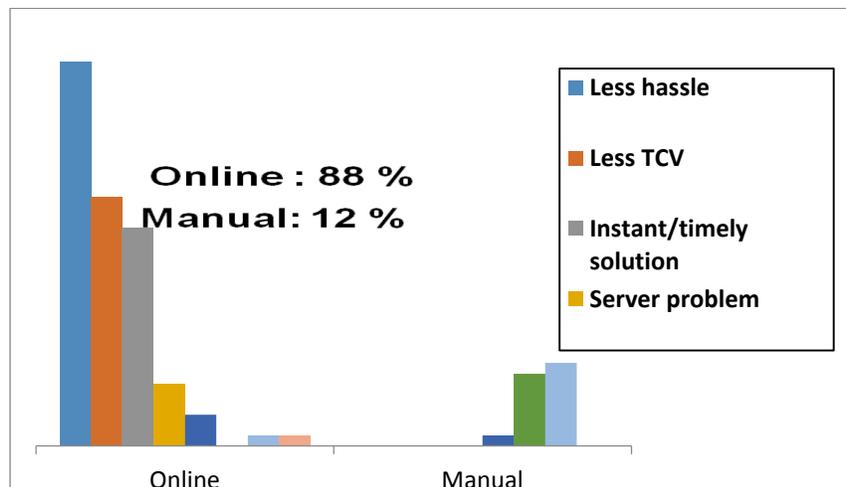
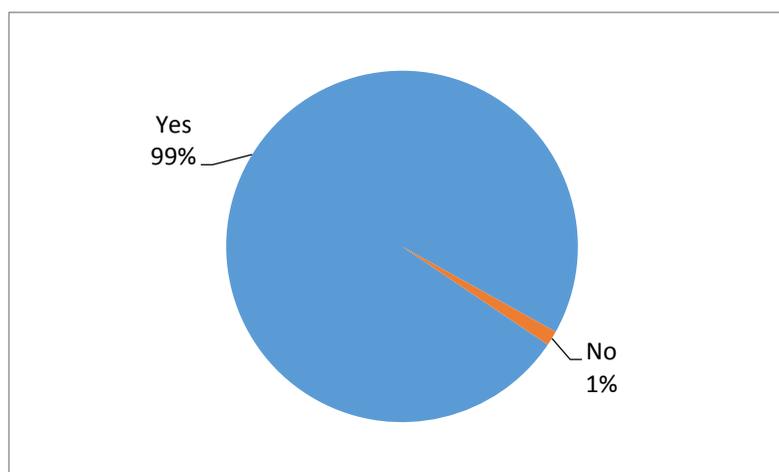


Figure 13: Causes of preferences

In this regard, people who take these facilities online mentioned that they prefer it because it is causing less hassle, less TCV and most importantly it gives an instant solution of their problems. On the other hand, respondents who receive these things manually mentioned that it provides a solution without sample and find a solution without the ambiguity of the Website. These are the basic causes behind using online fertilizer recommendation facilities and manual facilities.

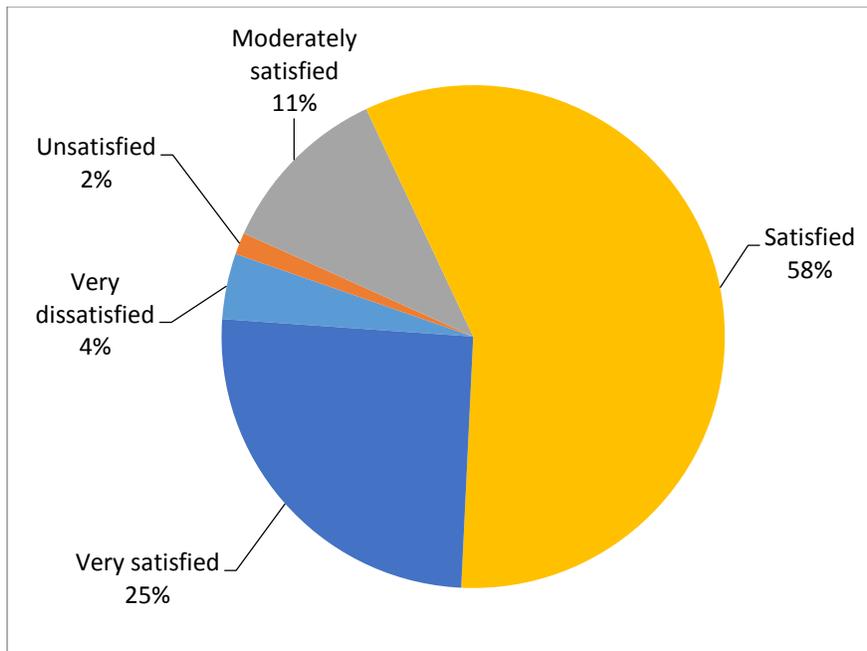
### Service on Time



**Figure 14: Service on Time in online**

As this study provides a TCV+ study on the services of fertilizer recommendation, this study will also focus on other non-monetary benefits, like service providers' behavior, beneficiaries' satisfactory level and other aspects regarding this. In this sector, this analysis will show the non-monetary benefits of this study. 99% respondents mentioned that, they get their services through online facilities on time.

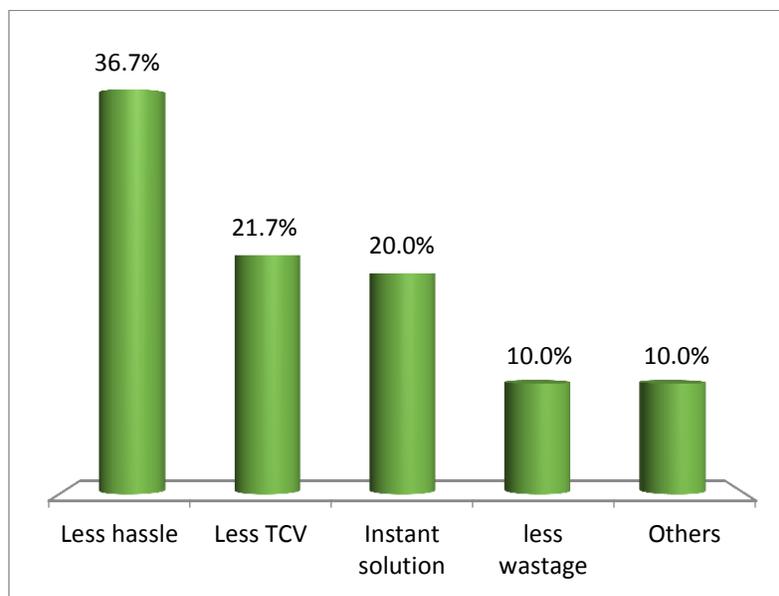
## Level of Satisfaction



**Figure 15: Satisfaction Level of Respondents**

The given graphic presentation is providing the statistical data of the percentage of respondents' satisfaction level and their reasons of satisfaction. About 25% respondents are very satisfied and 58% respondents are satisfied.

## Reason behind Satisfaction



**Figure 16: Reason's Behind Satisfaction Level**

In this Regard, respondents who are satisfied with this service mentioned the above reasons. According to them, this facility is making less hassle, less TCV and providing instant solution.

## **5 RECOMMENDATION**

Though newly introduced service has reduced respondent time, cost and visits there is still scope of improvement. The following recommendations may contribute in this regard-

- Development of the internet server and providing easy access of internet might help beneficiaries' to get online recommendation more flexibly.
- Farmers suggested creating soil mapping based on geographical mapping, which will help them to indicate the area and soil type easily.
- They recommended increasing the campaign about UDC and its activities.
- Increasing UDC's volunteer and work force was a strong recommendation, because it will continue the service of UDC.

## **6 CONCLUSION**

OFRS is considered as the mother project of SRDI. This institute has introduced a facility regarding easy access on fertilizer recommendation. The vision of this programme was to reduce time, cost and visit of farmer in terms of taking fertilizer recommendation. From the analyzed data and gathered report, the scenario could be summed up that the provided new service has made an easy and quick access on fertilizer recommendation. Before, it used to take 117 minutes and now it takes only 20 min with this service. Besides the time, cost and facility reduction, this study also discloses beneficiaries' satisfaction level regarding service time and service provider beneficiaries. Therefore, it could be said that- this newly introduced facility has reduced the time, cost and visit of beneficiaries and also showed a changing scenario about service facility.

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