

# An Analytical Study of Commercial Impact of Farm Mechanization on Farmers of Amravati District (2011-19)

<sup>1</sup>Dr. Ashish Mohata, <sup>2</sup>Mrs. Arpita Laddha

<sup>1</sup>Guide, Asso. Professor, <sup>2</sup>Research Scholar Asst. Professor  
<sup>1,2</sup>Smt. Kesharbai Lahoti Mahavidyalaya, Amravati

## Abstract

Agriculture sector has an important place in Indian Economy even though it contributes only around 20% to GDP of the country and 50% to national income. India is still called an agrarian economy as it supports directly or indirectly about 42% of workforce of the country. India has had record agricultural production of 315.7 million tonnes in 2021-22 although the productivity per acre of land is still a challenge. Indian farmers are looking to increase their income and in order to achieve the same are seeking for mechanization, diversifying their crops, and looking for allied agriculture activities. Although the country is leader in production of tractors and many other agricultural implements yet the penetration of mechanization in the country remains a concern. There are many other concerns in agriculture like lack of power, irrigation, fragmented ownership etc., but what is more important is the solution for these problems which lies in the future which looks promising due to new technologies and innovations which are coming up in the field along with backup from government schemes.

**Keywords:** Agriculture, Traditional Farming, Mechanization

## Introduction

India has been mainly a rural country with almost 65% of its population residing in rural areas in 6.5 lakh villages. Indian economy is basically classified as an agrarian economy. With population over 1.3 billion and majority of which is directly or indirectly depending on agriculture for livelihood. India has the 10<sup>th</sup> largest arable land resource in the world employing nearly 41.49% of working population of the country. Agriculture contributes about 19% to GDP. Overall growth and development of country depends on growth and development of rural areas as rural economy contributes around 50% in national income. The rural economy of India has continuously been supporting and contributing to the economy of India. Studies have shown that even when there was slowdown in the overall economy in India, the rural economy still showed growth and helped the economy in difficult times. Thus, the rural economy of India is backbone of Indian economy.

The foodgrain production has gone up from 252 million tonnes in 2015-16 to record 316 million tonnes in the year 2021-22. Agriculture plays a central role in the development of the country. Agriculture along with rural population contributes significantly in the development of nation in relation to food, raw material, manpower and even in earning foreign exchange through export of various agricultural products. Prosperity of rural India largely depends on progress and prosperity of rural population. Agriculture fulfils the requirement of ever-increasing food demands along with providing raw material for various industries.

Although there is an increase in food grain production, we see that it has grown by around only 2.7% from 1960-61 which is almost equivalent to stagnant and is a bit concerning indicator. Achieving good agricultural growth is a prerequisite for inclusive growth, reduction of poverty levels, development of rural economy and enhancing of farm incomes. To achieve the target we need productive, competitive, diversified, and sustainable agrarian sector to emerge at an accelerated pace.

Today, the concept of traditional farming is going through an overhaul with use of advanced technologies resulting in introduction of high yield seeds, chemical fertilisers, pesticides and developed system of irrigation. The input in form of information through data technology by use of internet, artificial intelligence (AI), use of IOT (Internet of Things) for real time farm monitoring and especially use of mobile phones etc are a major driving factor in improving the way farming is done. The benefits of this advancements are better

return on investment, better earnings, better working conditions, increased productivity, and multiple product uses.

### **Farm Mechanization**

The process of using machines, technology, and automation to do work which was previously done by hand or with the help of animals is called mechanization. Farm mechanization is a term which not only includes the use of machines, whether mobile or immobile, small, or large, run by power and used for tillage operations, harvesting and threshing but also includes power lifts for irrigation, etc. It is the best way to improve productivity, and includes development, application, and management of all mechanical tools for different farm operations such as land preparation, inter-cultivation, irrigation, crop transporting, storing, processing etc. Farm mechanization is an important element of modernization of agriculture. In today's time, nurturing new technologies and refining agricultural research is the key. Despite the huge market size, agricultural sector continues to trail in various sections. Mechanization was one of the large factors responsible for urbanization and growth of industries, it helps in improving production efficiency, encourages large scale production and helps to improve the quality of farm produce.

### **Review of Literature**

G. Singh (2006) in his research has performed quantitative assessment and studied the impact of farm mechanization on human labour, animal draught, yield and cost of cultivation. His study proves that with higher level of mechanization there is an increase in yield due to timeliness but that has not resulted in reducing the involvement of human labour in agriculture as they have allied agricultural work. Verma (2006) in his research work has revealed impact of mechanization on agricultural production, productivity, cropping intensity, income generation and employment of labour have concluded that mechanization has replaced bullock labour by almost 60% but not human labour as mechanization has opened new avenues of supervisory work, maintenance and repair work and many other complimentary activities. Muruganandham V. (2016) in the research study has also witnessed an overall increase in employment of human labour due to mechanization.

### **Problem Definition**

Last two decades have witnessed a tremendous growth in the population of country resulting in the increase in demand of food, housing etc. hence land available for agricultural purposes is getting used up for non-agricultural uses. To keep pace with the growing food requirement we need to improve the productivity of available agricultural land. Hence, the researcher sees a tremendous need and scope for farm mechanization. Mechanization through all these years have become popular among farmers, however, there are few farmers who are not in favour of using mechanization. Hence, on a broader level the researcher wants to enquire into level of mechanization in Amravati District and its impact on farmers and on economy as a whole. The researcher also would want to enquire about the perspective and expectations of farmers in respect to farm mechanization in Amravati District.

### **Objectives**

- 1) To analyze the specific problems of farmers regarding mechanization.
- 2) To study the awareness of farmers about mechanization

### **Hypothesis**

H<sub>0</sub>: There is no significant relation between mechanization and unemployment.

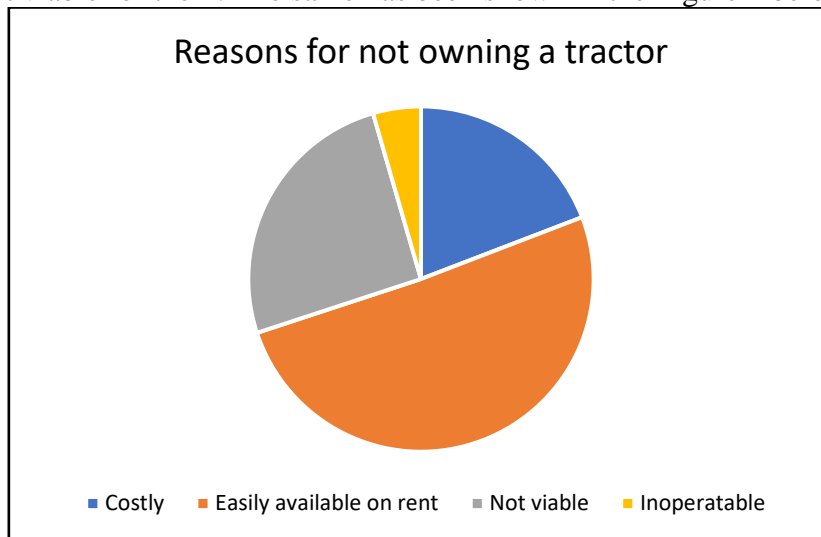
H<sub>1</sub>: There is significant relation between mechanization and unemployment.

### **Methodology**

The present study was conducted in Amravati District of Maharashtra. The data was collected from all the 14 talukas of Amravati district. The required secondary data for the study was collected from various publications. The researcher has taken the sample size of 900 for the research work.

**Results and Findings**

Although the mechanized farming is becoming popular and use of machines have become essential for modern farming. Tractor is a very common machine used by farmers at various stages of farming operations. However, the researcher finds that out of total 800 farmer respondents only 162 farmers representing around 20% of sample own a tractor. On further study the researcher concludes that major reason quoted by almost 56% respondent farmers for not owning a tractor is that they are easily available on rent while remaining feel that it is costly and not viable for them. The same has been shown in the Figure 1 below.



Mechanization is inevitable but there are some difficulties associated with it which respondent farmers have mentioned during the research process. Around 55% people have raised their concern for damage of cattle straw which happens while using mechanization. Unavailability of machine operators is a big problem faced by almost 43% of respondents covered in the research study. 40% people have also mentioned that the available machines are not feasible for small piece of land as they are designed for large farms. Respondent farmers have also mentioned about the damage of soil quality as well as unavailability of repair engineers on time which keeps the machine idle. The Table 1 below shows the problems faced by farmers due to mechanization in agriculture.

S. No.	Problems you face due to mechanization in agriculture	Number
1	Non-availability of machine operators	334
2	Non-availability of repairing engineers on time	151
3	Opposition from agricultural labours	120
4	Damage in soil quality	251
5	Damage of cattle straw	437
6	Non-availability of spare parts	29
7	Increase in unemployment	98
8	Difficult to use in small and marginal lands	323

Table 1 Problems faced due to mechanization in agriculture

Information and knowledge about new technology is an essential part of growing in any area may be a business or any other field. Hence it is equally important to study how the respondent farmers in the area of study are getting to know about the new technologies and machineries which are being introduced in farming business. From the Table 2 and Figure 2 given below we can see that agricultural exhibitions, television and internet are the most widespread sources of information as more than 50% of respondent farmers of Amravati District are getting information about new machineries through these mediums. Whereas periodicals/newspaper/magazines, workshops and guidance from agricultural officers are second must go medium as they have reach to more than 30% of the farmer. Pamphlets, Radio and Speeches have a very limited spread over the farmers. Hence the manufacturing companies should reach farmers through the more widespread mediums.

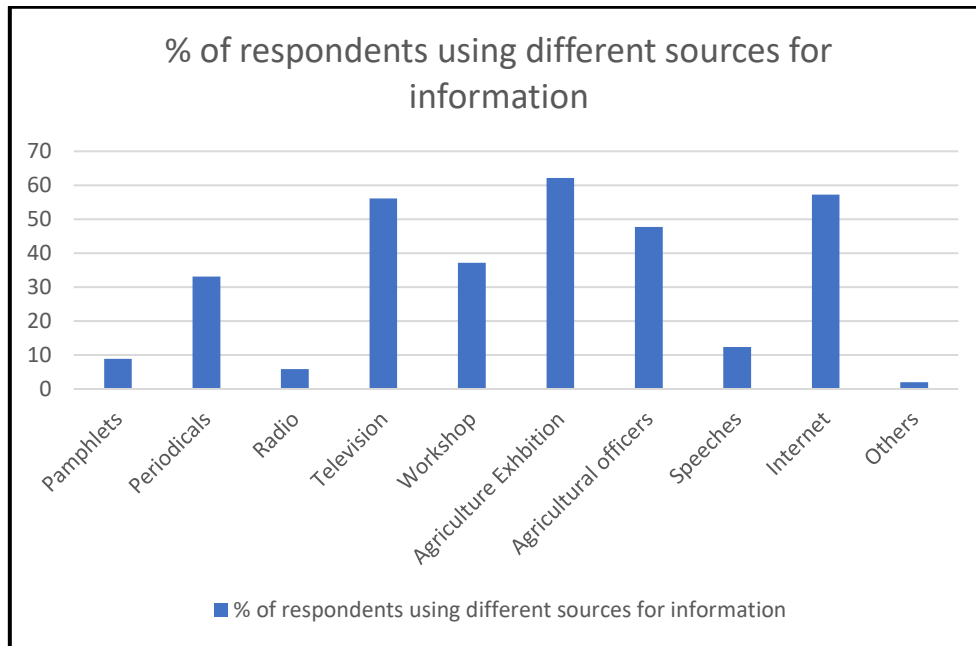


Figure 2 graphical representation of respondents using various sources for information

S. No.	Sources of information about agricultural machineries	Number
1	Pamphlets / Notice	71
2	Periodicals/Newspaper/Magazines	265
3	Radio	47
4	Television	449
5	Workshops/Discussions/Meetings	297
6	Agriculture Exhibition	497
7	Guidance from agricultural officers	382
8	Speeches from others	99
9	Internet/Websites	458
10	Others	16

Table 2 Sources of information about agricultural machineries

### Hypothesis Testing

The researcher in her primary research on respondent farmers of Amravati District has concluded that all the 800 farmers are doing mechanized farming with different levels of mechanization at their farms. The respondent farmers are practicing mechanization for a period of less than 5 years to more than 25 years. The respondents were questioned about unemployment of people involved directly or indirectly in farming business due to mechanization. The responses were collected, recorded, and further tested with the help of Chi-square test at 0.05 level of significance. The null hypothesis would be accepted if  $p > 0.05$ . The result of Chi-square test is as follows: From the Table 2 given below we can observe that most of the farmers opinion regarding unemployment is showing non-significant association with their experience of mechanized farming. ( $p > 0.05$ ). These observations provide sufficient evidence in support of Null Hypothesis ( $H_0$ ) implying there is no significant association between mechanization and increase in unemployment and hence we accept the hypothesis.

Experience in Mechanized Farming	Mechanization increases unemployment		Total	Chi-Square	df	p-value
	Yes	No				
Less than 5 years	3	14	17	2.293	5	0.807
5 to 10 years	10	81	91			
10 to 15 years	37	243	280			
15 to 20 years	22	184	206			
20 to 25 years	20	152	172			
More than 25 years	6	28	34			

**Conclusion**

The researcher in her research has emphasized on commercial impact of mechanization on farmers of Amravati District. The researcher has collected data from all the 14 talukas of the district. The researcher in this research paper has tried to justify two of the objectives set for the research study along with one hypothesis. The researcher here reaches to the conclusion that mechanization is a must for agriculture although there are few problems which are specifically faced by respondent farmers needs to be considered and resolved.