Int.J.Curr.Microbiol.App.Sci (2020) *9*(4): 755-766

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 9 Number 4 (2020)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2020.904.090

Constraints Perceived by the Beneficiaries of Agriculture Technology Management and Quality Improvement Centre of SKNAU, Jobner, India

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Keywords

ATMQIC, Constraints, Technical, Financial, Marketing, Single Window system, farmers

Article Info

Accepted:
07 March 2020
Available Online:
10 April 2020

A B S T R A C T

Agriculture Technology management Quality Improvement Center (ATMQIC) project was initiated in the year 2014-2015 and the duration of the project was three years. ATMQIC project was started to provide the facility of a 'single window' approach. The kind of information and the way it is to be used are critical factor to the growth of agriculture. The present study was conducted in three selected villages' viz., I Dhan Ka bas of Panchayat Samiti Dudu and khejrawas, Dhani Boraj of Panchayat Samiti Sambhar Lake of district Jaipur, Rajasthan. Where the ATMQIC project was only introduced and implemented the activities related to agriculture. Out of prepared list of total beneficiaries of ATMQIC, 120 respondents were selected from these selected villages through proportional allocation to the size of the population. In the present investigation the constraints were categorized into 4 categories viz., general constraints, technical constraints, financial constraints and marketing constraints. It was found that among all the studied constraints, General constraints were found as the most important constraints (68.56 MPS) and ranked first followed by Financial constraints (60.69 MPS) and ranked second however, the Technical constraints (52.72 MPS)and Marketing constraints (52.69 MPS) were ranked third, fourth, respectively.

Introduction

Agriculture is the backbone of Indian economy. Agricultural growth plays an important role in achieving certain national goals, such as reducing rural poverty, providing food and nutritional security, supplying raw materials to major industries. The cornerstone of India's agricultural revolution has been the availability of improved varieties of cereals, oilseeds, and pulses etc., breeds of livestock including poultry and fisheries; horticultural plant materials, and improved management practice for increasing the productivity, sustainability and stability of various crops and livestock enterprises.

This has raised the search by farmers for future availability of seeds, planting materials and other materials, easy accessibility to diagnostic services for soil fertility and plant

protection, availability of appropriate information through leaflets and pamphlets and increased scope in sale of consultancy services. Often the farmers are not aware as to whom and where to approach for field problems. It is felt that the facility of a single window‟ approach at the entrance of the Indian Council of Agriculture Research (ICAR) Institute/ State Agricultural Universities (SAUs) will enable the farmers to have the required information for the solution to their problems related to the areas in which the concerned institute is involved.

Because of the dominance of small and resource poor farmers and concentration of poor people in several sectors, public institutions like ICAR Institutes and SAUs will continue to play a vital role in supply of information for increasing the overall productivity in agriculture. Based on feedback received from States, experiences garnered during implementation in the 12th Plan and inputs provided by stakeholders, RKVY guidelines have been revamped as RKVY – RAFTAAR – Remunerative Approaches for Agriculture and Allied Sector Rejuvenation to enhance efficiency, efficacy and inclusiveness of the programme for the remaining period of the Fourteenth Finance Commission.

In addition to supporting individual farmer, farmers groups, public and private agencies in supplying quality materials techniques/ technologies/ knowledge etc. the information services and supplies under ATMQIC include: Agriculture technology (Prototype & model) including crop Demonstrations at farmer's field, Trainings, Farmers advisory services, Kisan Call Centre, Exposure Visit, Agriculture Educational Museum, Agriculture Resource Centre, ICT Hub station with Video Conferencing Facilities, Smart class room for farmers training, Demonstrations Units, Dairy husbandry, Integrated Farming System, Announcements of events, Extension activities, supply and services for farmers, professional and field functionaries.

Materials and Methods

The present study was conducted in Jaipur district of Rajasthan. The district Jaipur was selected purposely because the ATMQIC project was only introduced and initiated the activities related to agriculture in the selected area of Jaipur district. As the district Jaipur comprises 15 Panchahyat Samiti's, but the ATMQIC project activities were implemented in the selected villages of Panchayat Samiti of Sambhar Lake and Dudu. Therefore Panchahyat Samiti's Sambhar Lake and Dudu were selected purposely.

The ATMQIC project was operated in the three selected villages namely I Dan Ka Bas, Khejravas, Dhani Boraj and various activities of the project were implemented in the selected villages. Hence, these three villages were selected for the study purpose.

Table.1 Selection of respondents of ATMQIC

Name of selected Panchayat Samiti	Name of selected villages	Total no. of beneficiaries	No. of selected respondents
Dudu	I Dhan Ka Bas	140	60
Sambhar Lake	Dhani Boraj	80	34
Sambhar Lake	Khejrawas	60	26
Total		280	120

A list of all the respondents/ farmers of three selected villages that has been benefited under ATMQIC was prepared with the help of ATMQIC project staff and 120 beneficiaries were selected from these selected villages randomly through proportional allocation to the size of the population. To find out the constraints that hinders the adoption of agriculture technology of ATMQIC, a separate schedule was prepared for study.

All possible constraints on the basis of expert's opinion and literature reviewed were included in the schedule in accordance with the Agriculture technology. The responses obtained from respondents were recorded on a three point continuum scale viz. high, medium, low and were assigned 3, 2 and 1 score, respectively. Frequency and percentage of so obtained score by the farmers in each category were calculated. Further, to determine the intensity of constraints, mean per cent score for each item was worked out and ranked, accordingly.

Results and Discussion

Adoption of technology depends upon various factors which may either accelerate or inhibit the adoption. It is an important on the part of extension functionaries to identify such factors so as to make the dissemination of the technology in line with the farmer's perception and need. Therefore, the constraints which hinder the adoption of agriculture technology of ATMQIC was considered and identified under present investigation.

In the present investigation the constraints were categorized into 4 categories *viz*., general constraints, technical constraints, financial constraints, marketing constraints. The results pertaining to each category is presented in the subsequent tables.

General constraints perceived by the beneficiaries

For working out the general constraints faced by respondents in adoption of agriculture technology of ATMQIC, in all twelve aspects related to general constraint were considered. The mean per cent score (MPS) was calculated for each statement and rank was assigned accordingly. The results of general constraints have been present in table 1 and diagrammatically in figure 1.

The data presented in table 1 reveal that among all the general constraints, "Fluctuations in weather at the time of crop maturity" was perceived as the highest constraints and ranked first (76.67 MPS) by beneficiaries of ATMQIC. "Problem of grazing animals" (79.11 MPS) was ranked second and "Lack of follow up" (72.78 MPS) ranked third.

Similarly, "Lack of coordination with other developmental departments" (71.94 MPS), "Lack of availability of sufficient electricity" (71.67 MPS), "Farmers using traditional concept of training" (71.11 MPS), "Inadequate technology suited to the farmers conditions" (65.28 MPS), "Low risk bearing ability of farmers" (67.22), "Lack of time for attending ATMQIC activities" (69.17),"Lack of availability of irrigation water" (66.67), "Lack of regular contact with extension workers" (65.28) were ranked fourth, fifth, sixth, seventh, eighth, ninth, tenth, eleventh respectively.

The lowest rank *i.e.* twelfth was assigned the constraints "Lack of interpersonal relationship with extension workers" (64.72). It might be concluded from the findings that among general constraints "fluctuation in weather at the time of crop maturity" and "problem of grazing animals" were the important constraints as perceived by most of the

respondents. Whereas least important constraint was "lack of interpersonal relationship with extension workers" as felt by the respondents.

It might be concluded from the findings that "Fluctuations in weather at the time of crop maturity" has been perceived as the most important general constraint in adoption of agriculture technology by beneficiaries of ATMQIC. This might be due to the reason that farmers are not aware about weather forecasting reports viz. rainfall, cloud humidity, frost, cyclone, highly wind velocity.

Farmers face many problems like as reduction in quality of product and low production by highly incidence of insect-pests and diseases during maturity of crops due to fluctuations in weather. These findings are in accordance with the findings obtained by Raju and Reddy (2003).

Technical constraints perceived by the respondents

For working out the technical constraints faced by respondents in adoption of agriculture technology of ATMQIC, ten aspects related to technical constraint were considered. The mean per cent score (MPS) was calculated for each statement and rank was assigned accordingly. The results of technological constraints have been present in table 2 and diagrammatically in figure 2.

The data presented in table 2 reveal that among all the technical constraints, "Inadequate technology available at farmers level" was ranked first (79.72 MPS) by beneficiaries of ATMQIC. "Farmers are not getting guidance on use of improved farm technology" (73.89 MPS) was ranked second and "Unavailability of recommended variety of different crops at local level" (55.83 MPS) ranked third. Similarly, "Lack of infrastructural facilities for using the technological skill on occupational basis at the home town/ village level" (50.00 MPS), "Lack of improved agricultural tools in the local market" (49.44 MPS), "Inadequate knowledge of farmers about Agricultural schemes" (49.17 MPS), "Lack of knowledge about critical stages of crops for irrigation" (47.78 MPS), "Unavailability of chemicals for seed treatment" (46.94 MPS) and "Irregular availability of electricity" (46.39 MPS) were ranked fourth, fifth, sixth, seventh, eighth, ninth respectively. The least important constraints as perceived by the ATMQIC beneficiaries were "Weed control through weedicides is technically complex practice" (45.56 MPS) and lowest rank *i.e.* tenth was assigned accordingly.

The inferences may be drawn from the findings that inadequate technology available at farmer's level has been regarded as the most important technical constraint in adoption agriculture technology of ATMQIC by beneficiaries.

This might be due to the reason that unavailability of latest agriculture technologies regarding crop sowing pattern, seed treatment, water harvesting technology, fertilizer dose, weed management, insect-pest management, disease management, irrigation management, nutrient management and storage insect-pest management etc. at village level which might have created problems of reduction in product quality. These findings are in accordance with the findings of Deshmukh (2007).

Financial constraints perceived by the respondents

For working out the financial constraints faced by the respondents in adoption of agriculture technology by beneficiaries of ATMQIC, 8 aspects related to financial

constraint were considered. The mean per cent score (MPS) was calculated for each statement and rank was assigned accordingly. The results of financial constraints have been presented in table 3 and diagrammatically in figure 3.

The data given in table 3 reveal that among financial constraints, "Lack of credit facility to start work in the area" was ranked first (89.17 MPS) by beneficiaries of agriculture technology of ATMQIC. "Non-remunerative price affect repayment of crop losses" (88.61 MPS) was ranked second.

"Higher rate of interest on credit and Complex formality for loan" (71.67 MPS) ranked third.

"High cost of weedicides/ insecticides and pesticides/ fertilizers/ cultivator" (55.83 MPS), "High cost of plant protection equipment's (sprayer and duster)" (51.11 MPS), "Cost of certified seed/ high yielding varieties (seed) is high" (49.17 MPS) and "High labour charges for agricultural operations" (47.22 MPS)were ranked fourth, fifth, sixth and seventh, respectively.

The least important constraint as perceived by the ATMQIC beneficiaries was "Lack of knowledge about crop insurance" (43.61 MPS) and lowest rank *i.e.* eighth was assigned accordingly. It might be concluded from the findings that majority of the farmers reported that Lack of credit facility to start work in the area is the most important financial constraints faced by an average farmer to adopt agriculture technology.

This might be due to the reason that small land holding, low annual income, costly equipment, High initial investment and Lack of money to buy machineries might have encouraged them for such type of constraints because farmers were not very much aware about cost benefit ratio of installation of machineries for better crop production.
These findings are in accordance with the findings of Patel *et al.,* (2017).

Marketing constraints perceived by the respondents

For working out the marketing constraints faced by respondents in adoption of agriculture technology of ATMQIC, 10 aspects related to marketing constraint were considered.

The mean per cent score (MPS) was calculated for each statement and rank was assigned accordingly. The results of marketing constraints have been present in table 4 and diagrammatically in figure 4.

The data given in table 4 reveal that among all marketing constraints "Distress sale due to immediate need of money" was ranked first (69.17 MPS) by respondents. Followed by "Lack of transport facilities" about agriculture technology (64.72 MPS) was ranked second, "Procurement price of produce fixed by the Government" (64.17 MPS) was ranked third.

Whereas, "Mal practices of middlemen" (62.22 MPS), "Lack of market oriented education among the farm women (56.39 MPS), "Undue mandi taxes on the poor producer" (52.78 MPS), "Lack of fixing of remunerative prices in advance" (50.28 MPS), "Biasness by mandi supervisor" (42.22 MPS) and "Lack of information on market availability" (41.11 MPS) were ranked fourth, fifth, sixth, seventh, eighth and ninth respectively.

The last rank i.e. tenth was assigned "Unavailability of input in the village" (40.28 MPS) to the constraints as perceived least important constraints by most of the respondents.

Table.1 General constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries n=120

S.No.	General Constraints	MPS	Rank
1	Farmers using traditional concept of training	71.11	VI
2	Lack of availability of irrigation water	66.67	X
3	Lack of availability of sufficient electricity	71.67	V
4	Lack of time for attending ATMQIC activities	69.17	IX
5	Low risk bearing ability of farmers.	67.22	VIII
6	Lack of follow up	72.78	III
7	Lack of regular contact with extension workers	65.28	XI
8	Inadequate technology suited to the farmers conditions	69.17	VII
9	Lack of interpersonal relationship with extension workers	64.72	XII
10	Lack of coordination with other developmental departments	71.94	IV
11	Problem of grazing animals	76.11	II
12	Fluctuations in weather at the time of crop maturity	76.67	I

MPS = Mean Per cent Score

Table.2 Technical constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries n=120

S. No.	Technical Constraints	MPS	Rank
1	Farmers are not getting guidance on use of improved farm technology	73.89	II
2	Inadequate technology available at farmers level	79.72	I
3	Unavailability of recommended variety of different crops at local level	55.83	III
4	Lack of infrastructural facilities for using the technological skill on occupational basis at the home town/ village level	50.00	IV
5	Inadequate knowledge of farmers about Agricultural schemes	49.17	VI
6	Lack of improved agricultural tools in the local market	49.44	V
7	Weed control through weedicides is technically complex practice	45.56	X
8	Irregular availability of electricity	46.39	IX
9	Unavailability of chemicals for seed treatment	46.94	VIII
10	Lack of knowledge about critical stages of crops for irrigation	47.78	VII

MPS = Mean Per cent Score

Table.3 Financial constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries n=120

S.No.	Financial Constraints	MPS	Rank
1	High labour charges for agricultural operations	47.22	VII
2	Lack of credit facility to start work in the area	89.17	I
3	Cost of certified seed/ high yielding varieties (seed) is high	49.17	VI
4	High cost of plant protection equipments (sprayer and duster)	51.11	V
5	Non-remunerative price affect repayment of crop losses	88.61	II
6	High cost of weedicides/ insecticides and pesticides/ fertilizers/ cultivator	55.83	IV
7	Higher rate of interest on credit and Complex formality for loan	71.67	III
8	Lack of knowledge about crop insurance	43.61	VIII

MPS = Mean per cent score

Table.4 Marketing Constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries n=120

S.No.	Marketing Constraints	MPS	RANK
1	Procurement price of produce fixed by the Government	64.17	III
2	Lack of information on market availability	41.11	IX
3	Mal practices of middlemen	62.22	IV
4	Lack of transport facilities	64.72	II
5	Undue mandi taxes on the poor producer	52.78	VI
6	Biasness by mandi supervisor	42.22	VIII
7	Distress sale due to immediate need of money	69.17	I
8	Unavailability of input in the village	40.28	X
9	Lack of market oriented education among the farm women	56.39	V
10	Lack of fixing of remunerative prices in advance	50.28	VII

Table.5 Overall constraints perceived by the farmers in adoption of agriculture technology ATMQIC n=120

S.No.	Overall Constraints	MPS	RANK
1	General constraints	68.56	I
2	Technical constraints	52.72	III
3	Financial constraints	60.69	II
4	Marketing constraints	52.69	IV

MPS= Mean per cent score

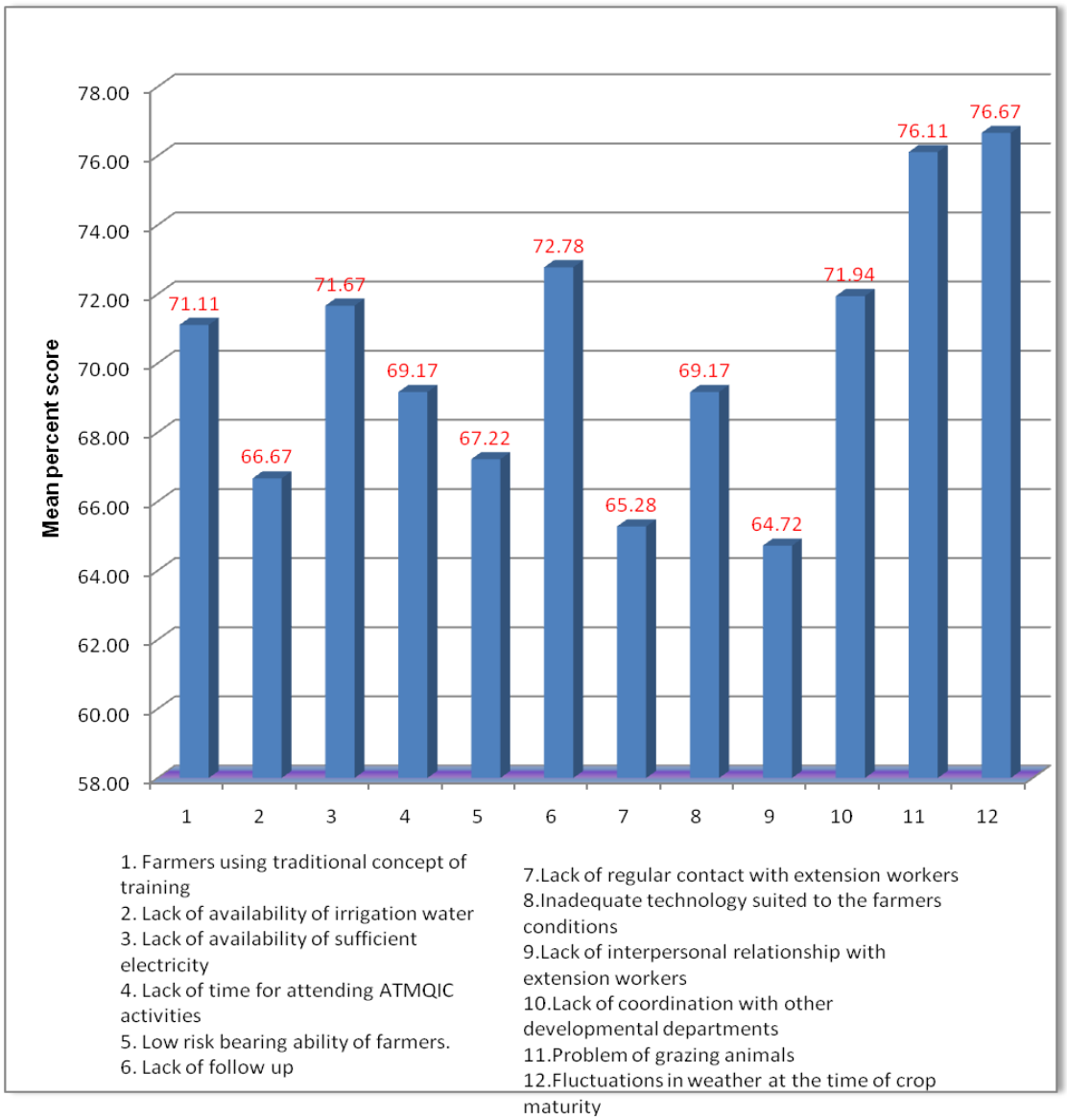

Fig.1 General Constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries

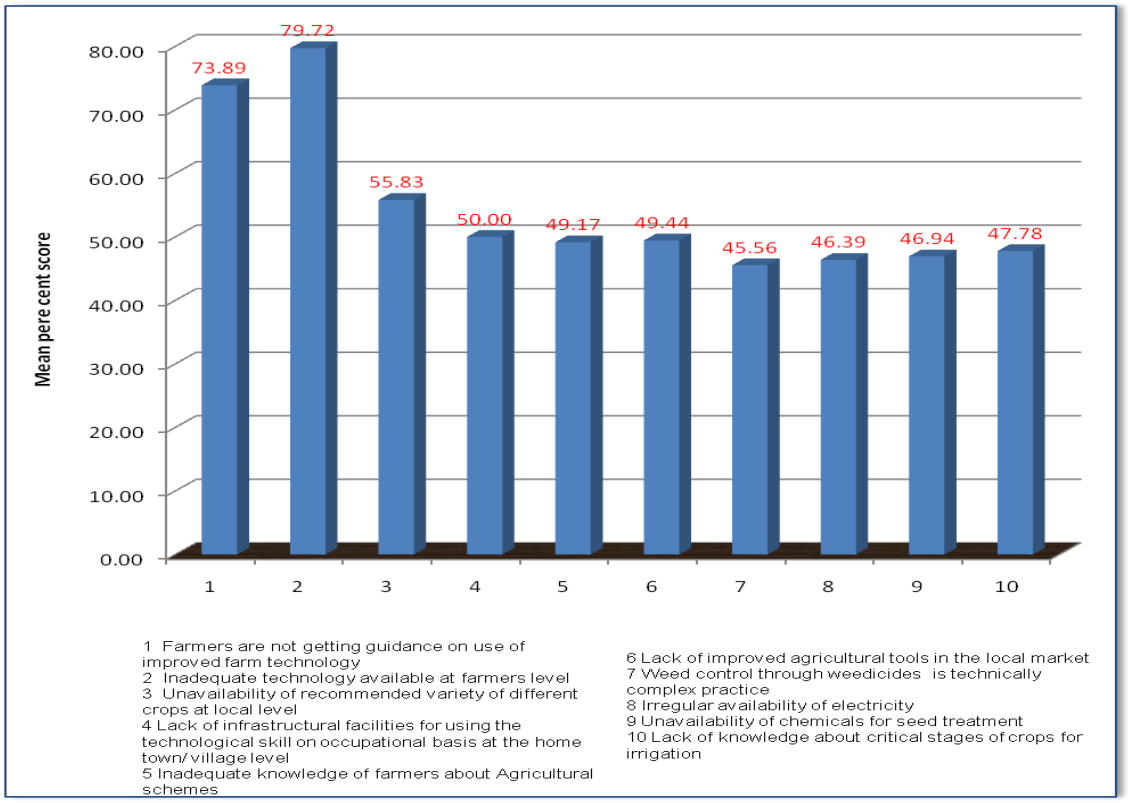

Fig.2 Technical Constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries

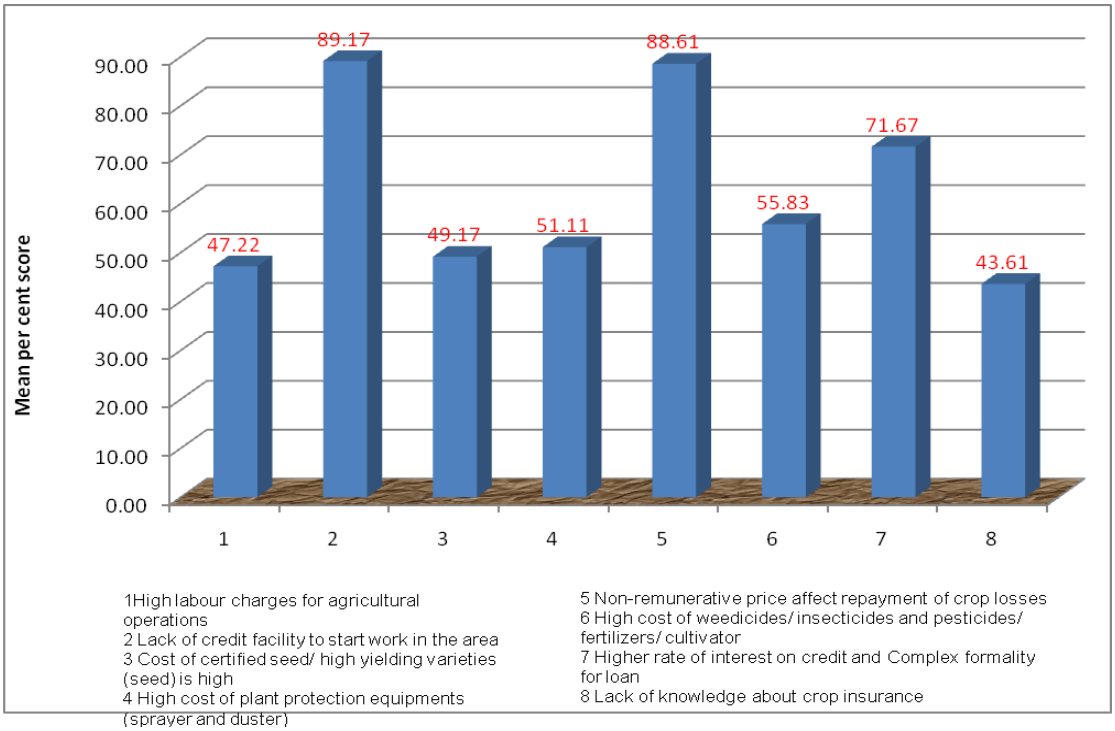

Fig.3 Financial Constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries

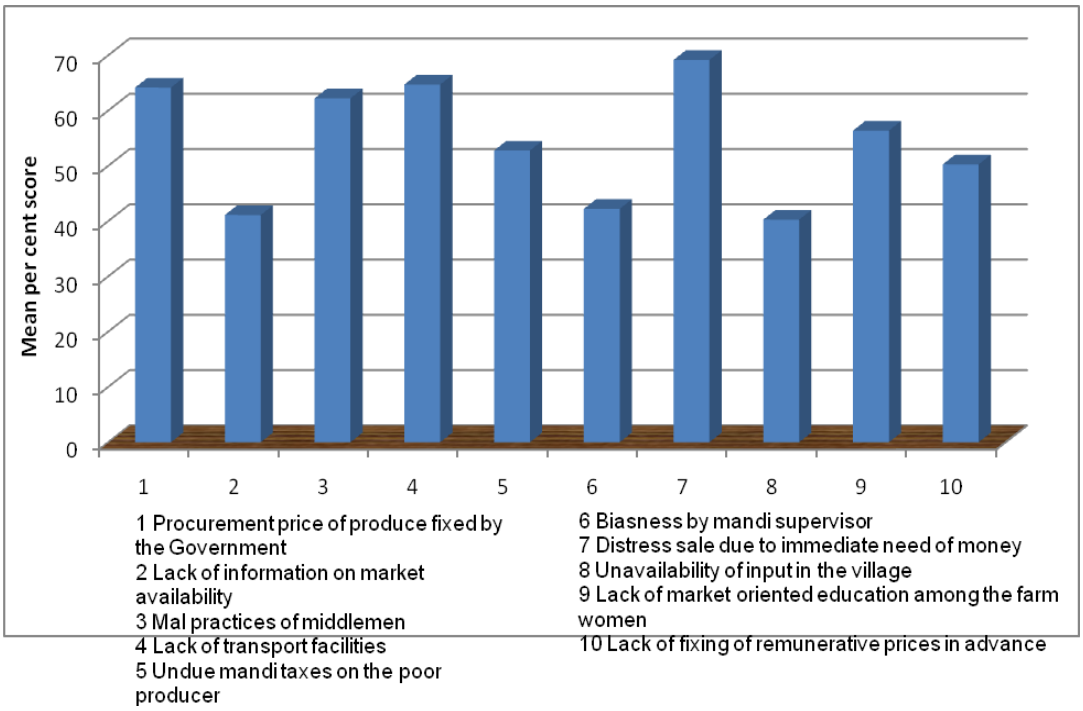

Fig.4 Marketing Constraints in adoption of agriculture technology of ATMQIC perceived by the beneficiaries

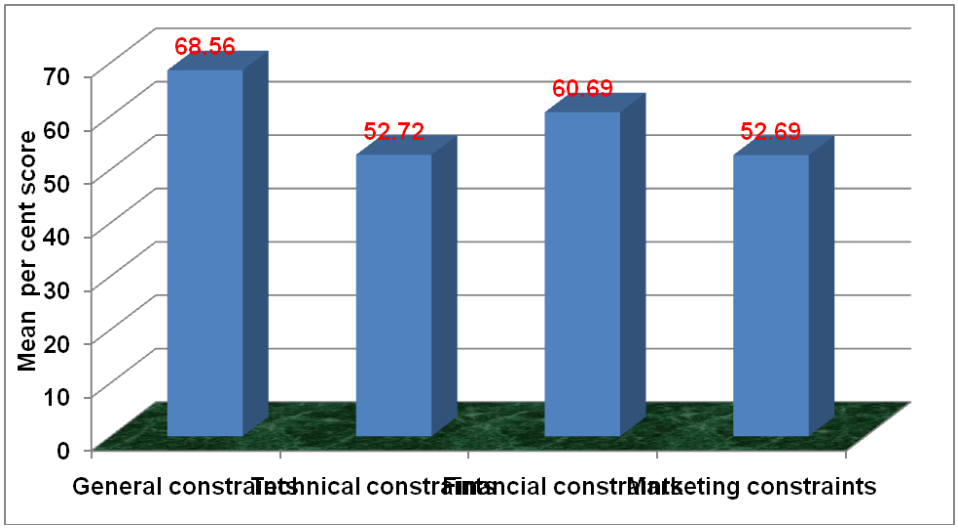

Fig.5 Overall Constraints perceived by the farmers in adoption of agriculture technology ATMQIC

It might be concluded from the findings that "distress sale due to immediate need of money" has been perceived as the most the important marketing constraint in adoption agriculture technology of ATMQIC by beneficiaries his might be due to the facts that most of the farmers were from middle class family and agriculture is the only income source for them and farmers are not aware about the agriculture policies minimum support price (MSP) so that farmers sale their farm product on low price to meet out their

expenses and fulfilling their basic necessities. These findings are in accordance with the findings of Sahu *et al.,* (2012).

Overall constraints perceived by the farmers in adoption of agriculture technology of ATMQIC

To get an overview of constraints perceived by farmers in adoption of agriculture technology. The overall score for each category was pooled and results have been presented in table 5 and diagrammatically in figure 5. The data presented in table 5 reveal that among all the studied constraints, General constraints were found as the most important constraints (68.56 MPS) and ranked first followed by Financial constraints (60.69 MPS) and ranked second however, the Technical constraints (52.72 MPS) and Marketing constraints (52.69 MPS) were ranked third, fourth, respectively.

It was found that among all studied constraints, "Fluctuations in weather at the time of crop maturity" (general constraints) was the most perceived constraints extent, followed by "Inadequate technology available at farmers level" (technical constraints), "Lack of credit facility to start work in the area"(financial constraints)and "Distress sale due to immediate need of money" (marketing constraints), respectively were found as the most important constraints as perceived by the ATMQIC beneficiaries

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How to cite this article:

Pushpa kumawat, J. P. Yadav, Nidhi and Krishna Yadav. 2020. Constraints Perceived by the Beneficiaries of Agriculture Technology Management and Quality Improvement Centre of SKNAU, Jobner, India. *Int.J.Curr.Microbiol.App.Sci.* 9(04): 755-766.
doi: https://doi.org/10.20546/ijcmas.2020.904.090