Research Article

Constraints and Gap Analysis of Model Farm Services Center Approach

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Abstract | Constraints and gap analysis of Model Farm Services Center (MFSC) approach was investigated in District Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan, during year 2015. For the present study, a sample of 306 respondents was selected based on Sekaran sampling technique while using descriptive research design. Well-prepared and pre-tested interview schedule was utilized for collection of data. Descriptive statistics i.e. frequency, percentages and rank order was calculated. Chi-square test was performed to find out association among demographic characteristics and MFSC registration duration and Rank Based Quotient was calculated for problem identification. It was found that machinery was provided to almost half of the respondents. Similarly seed was the most provided input followed by fertilizers. Top most source of agriculture information was input dealers followed by Model Farm Services Center. The top learned skills by respondents in MFSC were the agronomic practices whereas there was big gap in horticultural practices. Major constraints identified were less machinery utilization duration, complication in machinery booking process, costly rental prices, out-dated machinery, preference of progressive farmers, no timely availability of Inputs, unviability of crop specific machinery. It was recommended that MFSC may take initiative to compel private companies to sponsor schemes for low cost inputs. MFSC may take initiative for funds on account of pragmatic trainings arrangement, subsidized inputs and crop specific machinery.

Introduction

Public sector commitment is essential to promote agriculture extension and communication for rural development and food security (Ajieh et al., 2008; Oladele and Obuh, 2008). This concept of public-private partnership in agriculture is being working throughout the world but with different names; somewhere it is known as farming association, farming learning groups, farming cooperatives, village farm association, women farm service centers and FSCs (Singh and Narain, 2008). Public-private partnership had many advantages, which are observed by researcher and confirmed by the quantitative data. This partnership not only released the burden of funding from the shoulders of public sector but also improved the quality of technical knowledge and supply of inputs through private to farmer relations (Haq et al., 2013).

The Model Farm Services Centers (MFSC) conceived with a view to organize and empower small farmers at a platform where full technical support of

sub-sector of agriculture is available to them at regular intervals on monthly, quarterly, crop seasons basis along with all major production inputs seed, fertilizers, pesticides and machinery (Haq et al., 2009). The intention is aptitude improvement and to orchestrate input beforehand to be saved from any deficiency and dark advertising. It is a volunteer, public private partnership program (Dad et al., 2007). These FSCs has the power that they make any move for the improvement of cultivating group and any individual not less than 18 years of age having his own agricultural land, poultry ranch, diary-ranch, fish ranch, occupant of agribusiness activities etc. will be eligible for enrollment in center. The Model Farm Services Centers is then mindful to give the paying to provide the following services to the enrolled member by paying membership charges of Rs. 100/- and a membership fee of Rs. 500/- each. i.e. safeguard farmers rights and interests, upgrade farmers aptitude in homestead administration, arranging and need evaluation, boost the modernization of agribusiness, create country economy of rural people and give affirmed seed, fertilizers, to the member who are registered with the MFSC.

Greater part of ranchers in Pakistan are unskilled, socially prohibited and inadequately educated about the headway in field of farming (Zakar, 2007; Khan, 2010) because of which they are not able away of their produce and need specialized skill of produce preparing for quality expansion and showcasing.

Saadi et al. (2008) and Singh et al. (2011) contend that the worldwide market today, our ranchers ought to have most recent data with respect to new systems of cultivating, new strategies for development, seeds, pesticides, better government arrangements in regards to agribusiness and well fare potential for their harvests and after all procurement of convenient inputs. To accomplish this, the ranchers ought to be provoked to embrace enhanced and generally adequate innovation (Hassan, 2000). To solicit farmers to change their agricultural activities from conventional to modern and to give relief to them, a need was therefore felt to launch MFSC approach to overcome these factors because nothing would be achieved if inputs are not provided timely and at low cost. The current study is supposed to examine the services being provided in MFSC with the objectives to identify the gap in provision of good services to farmers through MFSC and to comprehend constraints of farmers in getting benefit from MFSC.

Materials and Methods

Study area
District Dera Ismail khan, Khyber Pakhtunkhwa, was the universe, where study was conducted during year 2015. It lies on 71.07° longitude and 31.57° latitude and 500 m above the sea level. This is the principal suited locale for generation of extensive variety of agricultural harvests (Saleem et al., 2011).

Research design
Descriptive research designed is mostly used to depict the participants in an accurate way or to describe characteristics of a population or phenomenon being studied so descriptive survey (Khooharo, 2008) research design was selected because primary role of the present study was to contemplate the yield change of enrolled agriculturists by the help of MFSC.

Selection of sample size and respondents
The aggregate number of enrolled agriculturists in MFSC was 1500, the list of these farmers was provided by MFSC office. As indicated by Sekaran (2003) for populace of 1500 the sample of 306 will be fitting. In view of Sekaran (2003) sampling procedure from a given populace, 306 respondents were chosen aimlessly from enlisted ranchers of MFSC all through the area, and examined through individual meeting strategy. The farmers enrolled no less than 2 years with MFSC were considered as the respondents of the study because less than 2 years of experience was inadequate for the study

Research instrument (interview schedule)
Well-structured and pre-tested interview schedule on 20 farmers was developed for data collection. Cronbach's Alpha test (Cronbach, 1951) was calculated to check the dependability of the research instrument by using Statistical Package for Social Sciences (SPSS). The general worth was 0.838. Resultantly some minor changes were consolidated in the research instrument. Likert scale of 5 points was also used to find out magnitude of farming practices learnt from MFSCs. In the 5 point Likert scale weight assigned to each number were as; 1 for very low, 2 for low, 3 for medium, 4 for high and 5 for very high. Information was gathered from the respondents by collaborating with them at MFSC through individual meeting technique.

Data analysis
Data collected was analysed using Statistical Package for Social Sciences (SPSS). To find out the association

among demographic characteristics of the respondents and MFSC registration duration chi-square test (equation 1) was used whereas MS Excel 2013 was used to calculate the Rank Based Quotient (RBQ) of the constraints identified, the formula for RBQ is given below in equation 2.

$$\chi^2 = \sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(O_{ij} - e_{ij})^2}{e_{ij}} \dots\dots(1)$$

Chi-square values were calculated by taking squared summation of frequencies for each cell, dividing by the expected frequency. The calculated values were compared with tabulated values of Chi-square for relevant degree of freedom at a specific probability level to determine the significance of association. The relevant degree of freedom was calculated as follows:

$$df = (r–1)\ (c–1)$$

The major problems identified in the MFSC were listed and Rank Based Quotient (RBQ) of constraints was calculated based on the ranking done by 306 respondents. Low the value of RBQ represents less severity of problem whereas higher the value of RBQ showed high severity of problem. Rank Based Quotient was calculated using following formulae given by Sabarathnam (1988):

$$RBQ = \frac{\Sigma f_i (n + 1 - i) \times 100}{N \times n} \dots\dots\dots(2)$$

Where
i = Concerned ranks, N = Number of farmers, n = Number of ranks, f_i =Frequency of farmers for ith rank

Results and Discussion

Respondents profile in relation to MFSC registration duration

The data pertaining to various age categories depicted that 46% of the respondents were from middle age while 27.78% and 26% were from young and old age respectively. These respondents when associated against their registration duration with MFSC, depicted highly significant (P≤0.01) association among age of the respondents and their registration duration (Table 1). This positive association might be attributed to the more farming experience of older and middle age farmers and their better understanding of MFSC facilities. Comparatively more trend in middle age group might be attributed to the reason that they

have more exposure than younger and thus making wise decisions. The same trend may also be attributed to the reason that they were more energetic and active regarding participation in various agricultural activities as compared to older ones. These results are more or less in consonance with the findings of Muhammad et al. (2008), Chuks (2014) and Sharma (2014) who reported that most of the respondents belonged to middle age subsequent to young and old age category. Similarly literacy status and family system also had a significant (P≤0.05) association with MFSC registration duration and it was observed that trend of registration was increased with increase in literacy level. The positive association between literacy status and registration duration might be due to the reason that most of the investigated respondents have better literacy level (matric 40%, intermediate 14.4% & above intermediate 34%). Highly significant (P≤0.01) association was also observed among landholding and farming experience with MFSC registration duration. The mean farming experience was 14.59 years. Significant association of farming experience with registration are in agreement with the findings of Chuks (2014) who also observed that 52% respondents had more than 10 years of farming experience. Although tenancy status and full/part time involvement had non-significant association with MFSC registration duration however owners were found to be more interested in agricultural activites. These results are in line with the previous findings of Ashraf (2008) and Muhammad et al. (2008) who also observed that owners were more interested and actively participated in agricultural activities. Major source of income also had highly significant (P≤0.01) association with Model Farm Registration duration i.e. those respondents who had agriculture as a major source of income had higher registration duration with MFSC. These results are also in line with that of Verma et al. (2013) who also reported that majority of the respondents i.e. 53.3% had agriculture sector as their major source of income. Significant (P≤0.05) association was also there among awareness source and MFSC registration duration i.e. those who got awareness from extension agents had greater experience with MFSC (Table 1).

Gap analysis

Source of mechanization
MFSC has been equipped with the farm implements needed by the farmers including tractors and other farm machinery because of the reason that provision of farm machinery on rent is also an important

Table 1: *Association among demographic characteristics and MFSC registration duration*

Variable	Association with MFSC registration duration (years)				
	Categories	Up to 3	4-6	Above 6	C² Value
Age of respondents	Young	77 (25.16)	8 (2.61)	0 (0)	32.755**
	Middle	94 (30.72)	31 (10.13)	16	
	Old	55 (17.97)	25 (8.17)	0 (0)	
Literacy status	Illiterate	14 (4.58)	4 (1.31)	0 (0)	24.885*
	Primary	8 (2.61)	4 (1.31)	4 (1.31)	
	Matric	100 (32.68)	16 (5.23)	8 (2.61)	
	Intermediate	32 (10.46)	12 (3.92)	0 (0)	
	Above Intermediate	72 (23.53)	28 (9.15)	4 (1.31)	
Family system	Nuclear	70 (22.88)	34 (11.11)	8 (2.61)	11.853*
	Joint	156 (50.98)	30 (9.8)	8 (2.61)	
Tenancy	Owners	195 (63.73)	54 (17.65)	16 (5.23)	4.535 NS
	Tenant	0 (0)	0 (0)	0 (0)	
	Owner-Cum-Tenant	4 (1.31)	3 (0.98)	0 (0)	
	Lessee	27 (8.82)	7 (2.29)	0 (0)	
Landholding	Small	179 (58.5)	20 (6.54)	12 (3.92)	63.554**
	Medium	35 (11.44)	24 (7.84)	0 (0)	
	Large	12 (3.92)	20 (6.54)	4 (1.31)	
Involvement in farming	Full Time	107 (32.97)	31 (10.13)	6 (1.96)	0.643 NS
	Part Time	119 (38.89)	33 (10.78)	10 (3.27)	
Farming experience	Up to 10 Years	44 (14.38)	4 (1.31)	0 (0)	65.666**
	11-20 Years	179 (58.5)	40 (13.07)	12 (3.92)	
	Above 20 Years	3 (0.98)	20 (6.54)	4 (1.31)	
Major source of income	Agriculture	84 (27.45)	44 (14.38)	16	41.707**
	Business	52 (16.99)	12 (3.92)	0 (0)	
	Govt. Servant	52 (16.99)	4 (1.31)	0 (0)	
	Other	38 (12.42)	4 (1.31)	0 (0)	
Awareness source of MFSC	Fellow farmer	43 (14.05)	8 (2.61)	0 (0)	10.324*
	Extension Agent	171 (55.88)	48 (15.69)	16 (5.23)	
	Self-Contact with MFSC	12 (3.92)	8 (2.61)	0 (0)	

* and ** Indicates significance at 5% and 1% level of probability, respectively

function of MFSC. In this regard respondents were probed using a five point Likert scale (1-5) to measure the gap/magnitude of the farm machinery granted which is presented in Table 2. The data shows that cultivator was provided to almost half (51.31%) of the respondents by MFSC. Among the sample respondents 17.32% had their own cultivators and these were the large farmers. Cultivator from fellow farmers was taken by 19.61% while 11.76% of the respondents utilized other sources for cultivator i.e. private cultivator owners (Table 2). Respondents to which cultivator was not provided might be due to the less number of cultivators in MFSC while their demand is high enough. Similarly 114 respondents utilized rotavator which was solely provided by MFSC

to these respondents. During study it was observed that mould board plough was also solely taken from MFSC and the beneficiaries were 94 in number (Table 2). Disk plough was utilized by 134 respondents out of 306 and majority (56.72 %) of respondents reported MFSC as source for this implement. The second most used source for disk plough was private source i.e. 18.66%. Fellow farmer source was utilized by 17.16 % while small fraction of sample respondents had their own disk ploughs (Table 2). During study it was recorded that single furrow was utilized by 81 respondents out of 306 among which majority (51.85 %) of the respondents have their own single furrows. The second major source for this implement from which respondents take advantage was MFSC

Table 2: *Distribution of respondents regarding their sources of agricultural machinary*

Source	Culti-vator	Rota-vator	Mold board plough	Disk plough	Single furrow	Laser leveler	Drill	Ridge maker	Thresh-er	Maize sheller	Tractor trolley	Hand spray machine	Boom sprayer
Own	53 (17.32)	-	-	10 (7.46)	42 (51.85)	-	24 (20.17)	8 (0.76)	32 (10.46)	42 (17.65)	24 (7.84)	71 (78.9)	-
MFSC	157 (51.31)	114 (100)	94 (100)	76 (56.72)	21 (25.93)	163 (100)	56 (47.06)	38 (46.34)	-	77 (32.35)	4 (1.31)	19 (21.1)	73 (100)
Fellow Farmer	60 (19.61)	-	-	23 (17.16)	11 (13.58)	-	20 (16.81)	22 (26.83)	128 (41.83)	53 (22.27)	72 (23.53)	-	-
Other	36 (11.76)	-	-	25 (18.66)	7 (8.64)	-	19 (15.97)	14 (17.07)	146 (47.71)	66 (27.73)	206 (67.32)	-	-
Total	306 (100)	114 (100)	94 (100)	134 (100)	81 (100)	163 (100)	119 (100)	82 (100)	306 (100)	238 (100)	306 (100)	90 (100)	73 (100)

Values in parenthesis are percentages

i.e. 25.93% respondents took single furrow from MFSC.

Due to importance of laser leveler the farmers were also evaluated about the provision of this implement and their responses are presented in Table 2. It was observed that 163 respondents utilized this implement and it was available only in MFSC. It can be concluded that farmers were much devoted to their crop improvement and to get high yield that's why they were using new-fangled implements on their farms. It was found that seed drill was utilized by 119 respondents among which the major portion of respondents (47.06 %) utilized MFSC source. Almost 20.17 % of respondents had their own drills followed by the respondents which used fellow farmers source for this implement i.e. 16.81 %. Ridge maker was utilized by 82 respondents and major source of ridge maker was the MFSC i.e. 46.34 %. About 26.83 % of the respondents had used fellow farmer source for ridge maker while 17.07 % used other source as well. Only a minute number of respondents (0.76%) had their own ridge maker. Thresher was utilized by all of the respondents but none of the respondents had utilized MFSC as a source of thresher (Table 2). The non-availability of threshers might be due to less number of threshers available at MFSC which got hooked on the Farms of Agriculture Extension Department. The maize sheller was utilized by 238 respondents out of 306 sample respondents. It was found that greater part (32.35 %) of the respondents had a MFSC source for maize sheller. The second important source for maize sheller was other source i.e. 27.73 % (Table 2). Tractor Trolley is also an important implement but unfortunately it was not provided to the respondents and farmers used other sources for this implement. i.e.

other source (67.32%), fellow farmers (23.53%) and own trollies (7.84%). The non-availability of tractor trollies might be attributed to the availability of meager trollies at MFSC. About 90 respondent utilized hand spray machine in which the major portion of the respondents was of vegetable growers. It was found that majority (78.9%) of respondents had their own hand spray machines while 21.1 % of the respondents utilized MFSC source for this implement. As hand spray machine is cheap and farmers can afford easily so instead of traveling long distance to MFSC each time, farmers bought their own hand spray machines. Boom spray machine was utilized by 73 respondents out of 306 and they use only the source of MFSC for this machine. As boom spray machine is tractor driven and not affordable for all the farmers. Thus it was found that only progressive farmers having >100 Acres of land holding (Table 2) utilized this implement.

Sources of seed

MFSC provided the seed of sugarcane, wheat, maize, rice, gram, tomato and onion to the respondents (Table 3). The data presented in Table 3 depicted that astounding majority (71.4%) of the respondents had obtained sugarcane seed from MFSC. The second major source for sugarcane seed was home seed (15%) whereas 11.1% respondents obtained sugarcane seed from fellow farmer as well. Similarly superabundant (72%) respondents were enriched with wheat seed by MFSC followed by home seed (23.7%) and agriculture research station (4.3%). About 55.5% of the respondents took maize seed from MFSC followed by home seed (20.6%), agriculture research station (11.8%), market (10.5%) and fellow farmer (1.7%). Rice seed was also provided to the respondents in good majority (55.7%) whereas 29.1% of respondents also utilized

Table 3: *Distribution of respondents regarding their sources of seed*

Crop/Vegetable	MFSC	Home seed	Fellow farmers	Market	Agriculture research station	Total
Sugarcane	167 (71.4)	35 (15)	26 (11.1)	6 (2.6)	-	234
Wheat	216 (72)	71 (23.7)	-	-	13 (4.3)	300
Maize	132 (55.5)	49 (20.6)	4 (1.7)	25 (10.5)	28 (11.8)	238
Rice	44 (55.7)	23 (29.1)	-	12 (15.2)	-	79
Gram	18 (52.9)	9 (26.5)	7 (20.6)	-	-	34
Tomato	33 (40.2)	-	-	49 (59.8)	-	82
Onion	32 (25)	-	-	96 (75)	-	128

Values in parenthesis are percentages

Table 4: *Distribution of respondents regarding their source of fertilizers*

Fertilizers	MFSC	Input dealer	Total
Urea	172 (60.4)	113 (39.6)	285
Single Super Phosphate (SSP)	130 (67)	64(33)	194
Supper Micron	38 (100)	-	38
Supper Silica	52(100)	-	52
Di-ammonium Phosphate (DAP)	132(57.4)	98(42.6)	230
Nitro-phos (NP)	44(37.9)	72(62.1)	116
Gypsum	25(100)	-	25

Values in parenthesis are percentages

home seed. Gram seed was also one of the commodity about which 52.9% respondents responded postively regarding its supply by MFSC. Tomato seed was almost takken from market (59.8%) whereas 40.2% of respondents got chance to take tomato seed from MFSC. Onion seed was also obtained from market by 75% respondents while rest of them got a chance to take it from MFSC. Overall seeds availiability was less for vegetables in comparison to crops. This might be due to the easy avaliability of crop seeds in MFSC due to the seed farms of Agriculture Extension Department. It was also observed that vegetable seeds were mostly provided on demand which might be due to less trend of horticultural crops in the farming community of the locality. From the results it is clear that crop seed availability was satisfactory due to the efforts of MFSC.

Sources of fertilizers
Tale 4 shows the data regarding the sources of various fertilizers which respondents utilized to fullfil their requirment. It was found that urea was provided to 60.4%, SSP 67%, DAP 57% and Nitrophos to 37.9% of respondents by MFSC while rest of them obtained fertilizer from market (input dealers). Whereas Sup-

per micron, supper silica and gypsum were utilzed only by 38, 52 and 25 out of 306 respondents obtained from MFSC (Table 4). It is obvious from the results that supply of fertilizers was also satisfactory to some extent. Although the farmers had enhanced the use of balance fertilizers in obtaining potential yield so their demand was enhanced which resulted in hampering of smooth supply and timely availability of these inputs. But still some of the respondents were furnished with supply of fertilizers they demanded.

Source of agriculural information
Data in Table 5 indicates that input dealers was the major source of agriculture information for the farmer and ranked on top with the mean Likert scale of 3.72. This might be due to easy approach and contact with input dealer (present in growing locality of farmers). The MFSC ranked second for farmer's agriculture information source with 3.55 mean. Moreover most of the respondents were from rural areas and they can't approach MFSC easily, thus preferring the input dealers. The third important source for farmer's agriculture information recorded was fellow farmers having mean value of 3.54. Similarly farmer's meeting was also a source of agriculture information for the respondents and stood at 4th rank with 2.82 mean. The 5th rank was of Agriculture Extension Department with mean of 2.61. This was the source of agriculture information for those respondents who had built terms with agriculture extension staff and taking information from them. The 6th and 7th rank was of mobile phone and TV with means of 2.48 and 2.32 respectively. The 8th and 9th rank was of field day and radio with mean of 1.99 and 1.57 respectively. The last rank was of research station with mean of 1.26 (Table 5).

Learning of agriculture technology/skills from MFSC
Responses of sample respondents were measured in imparting training regarding various agricultural

Table 5: *Distribution of respondents regarding extent of agriculture information they got from various sources*

Source	Ranks					Score	Ranking	Mean± SE
	Very Low	Low	Medium	High	Very High			
MFSC	16(5.23)	32(10.46)	86(28.10)	113(36.93)	59(19.28)	1085	II	3.55±0.06
Agriculture Extension Office	58(18.95)	72(23.53)	137(44.77)	8(2.61)	31(10.13)	800	V	2.61±0.06
Fellow Farmer	9(2.94)	61(19.93)	65(21.24)	99(32.35)	72(23.53)	1082	III	3.54±0.07
Research Station	227(74.2)	79(25.82)	-	-	-	385	X	1.26±0.03
Mobile Phone	71(23.2)	97(31.70)	83(27.12)	31(10.13)	24(7.84)	758	VI	2.48±0.07
Field Day	118(38.6)	111(36.27)	39(12.75)	38(12.42)	-	609	VIII	1.99±0.06
TV	74(24.18)	141(46.08)	38(12.42)	24(7.84)	29(9.48)	711	VII	2.32±0.07
Farmers Meeting	74(24.2)	77(25.16)	38(12.42)	65(21.24)	52(16.99)	862	IV	2.82±0.08
Radio	131(42.8)	175(57.19)	-	-	-	481	IX	1.57±0.03
Input Dealer	24(7.84)	37(12.09)	74(24.18)	38(12.42)	133(43.46)	1137	I	3.72±0.08

Values in parenthesis are percentages

Table 6: *Distribution of respondents regarding learning of agriculture skills from MFSC*

Skills	Yes	No	Rank order
Technology use	146(47.1)	160(52.29)	X
Fertilizer Application	274(89.54)	32(10.46)	I
Sowing Methods	239(78.1)	67(21.9)	III
Seed Bed preparation	220(71.9)	86(28.1)	VI
Plant protection Method	200(65.36)	106(34.64)	VII
Chemical Application	230(75.16)	76(24.84)	V
Post-Harvest Technology	190(62.09)	116(37.91)	IX
Seed Storage Methods	195(63.73)	111(36.27)	VIII
Budding Skills	58(18.95)	248(81.05)	XII
Grafting Skills	62(20.26)	244(79.74)	XI
Harvesting Skills	237(77.45)	69(22.55)	IV
Threshing Skills	254(83.01)	52(16.99)	II

Values in parenthesis are percentages

skills/aspects and presented in Table 6. It was observed that fertilizer application was the top most skill which farmers have learned from MFSC i.e. 89.54 % respondents. The second most learning skill was the threshing skill as reported by 83.01 % of the respondents. Sowing methods, harvesting skills and chemical application were on 3rd 4th and 5th rank as reported by 78.1 %, 77.45 % and 75.16 % respondents respectively. Seed-bed preparation, plant protection method, seed storage methods and post-harvest technology were the 6th, 7th, 8th and 9th most learned skills from MFSC and reported by 71.9 %, 65.36 %, 63.73 % and 62.09 % respondents respectively. Technology use like machinery and their management although is the most important skill to be learnt, stood on 10th rank as reported by 47.1 % respondents. It might be due to the

reason that MFSC staff is not sufficient to guide all the farmers effectively. The horticultural practices like grafting and budding skills were the least learned from MFSC and reported by 20.26 % and 18.95 % of the respondents respectively (Table 6). From these results we can concluded that agronomic skills were the most focused skills taught to the farmers which might be due to the reason that most of the farmers were indulge in cultivating field crops like sugarcane, wheat, gram, rice etc. While some of them were cultivating horticultural crops like tomato and onion and none of the respondent reported fruits cultivated by them and this might be the reason of least taught horticultural skills.

Empowerment of farmers by MFSC

Empowerment refers to strengthen the capabilities of farmers in decision making regarding how to utilize various resources and their management. Farmers were investigated regarding their empowerment by MFSC and their responses were recorded and presented in Table 8. It was observed that remarkable respondents were empowered in time of sowing of crops in which they were interested with mean of 4.48. Fertilizer selection stood on second rank and farmers were much empowered regarding fertilizer selection as reported with mean of 3.79. Water management practices, selection of better varieties, farm management, integrated crop management and food preservation technique, stood on 3rd, 4th, 5th, 6th and 7th ranks with means of 3.68, 3.51, 3.4, 3.22 and 2.78 respectively (Table 7). The respondents were of the view that they are not much empowered in variety selection and they are still taking information from MFSC regarding variety selection. This might be due the release of new varieties and thus farmers depend

Table 7: *Distributions of respondents regarding empowerment by MFSC*

Empowerment type	Ranks					Score	Rank order	Mean±SE
	Very Low	Low	Medium	High	Very High			
Farm Management	-	61(19.93)	95(31.05)	90(29.41)	60(19.61)	1067	V	3.4±0.05
Marketing of Produce	72(23.53)	129(42.16)	71(23.2)	14(4.58)	20(6.54)	699	VIII	2.28±0.06
Selection of Better Varieties	-	20(6.54)	162(52.94)	70(22.88)	54(17.65)	1076	IV	3.51±0.04
Water Management Practices	-	16(5.23)	101(33.01)	153(50)	36(11.76)	1127	III	3.68±0.04
Integrated Crop Management	19(6.21)	41(13.4)	129(42.16)	85(27.78)	32(10.46)	988	VI	3.22±0.05
Food Preservation Technique	40()13.07	80(26.14)	123(40.2)	33(10.78)	30(9.8)	851	VII	2.78±0.06
Fertilizer selection	15(4.9)	38(12.42)	38(12.42)	119(38.89)	96(31.37)	1161	II	3.79±0.06
Time of Sowing	-	13(4.25)	24(7.84)	70(22.88)	199(65.03)	1373	I	4.48±0.04
Organic Farming	158(51.6)	90(29.41)	34(11.11)	20(6.54)	4(1.3)	540	IX	1.76±0.05

Values in parenthesis are percentages

on MFSC for the up to date varieties. Marketing of their produce and organic farming were also the issues for them in which they were not empowered and ranked 8th & 9th with mean values of 2.28 and 1.76 respectively (Table 7).

Constraints analysis

Rank Based Quotients of Constraints identified

MFSC plays a significant and imperative role in disseminating information, provision of inputs and skills, provision of machinery and implements. They try their best to improve the farmer's production and boosting the country's economy. In spite of remarkable contribution few constraints were also pointed out during the study. The identified constraints based on Rank Based Quotient (RBQ) were; machinery utilization duration is too less, complication in machinery booking process, costly rental prices, outdated machinery, preference of progressive farmers, no timely availability of Inputs, unviability of crop specific machinery, etc. which are presented in Table 8.

Among these the considerable constraint identified based on rank based quotient (RBQ) was less duration of machinery utilization with RBQ of 76.9%. The farmers were claiming that the machinery is provided for a very short duration. This constraint might be due to the fact that majority of the farmers have large lands and it is quite difficult to cover all field operations in one, two or three days. This constraint can be minimized by providing machinery to the group of registered farmers belonging to same location so they all can utilize it at once in spite of rebooking. The second constraint on priority of farmers was the complication in machinery booking process with RBQ

of 75.7% (Table 8). As already mentioned that machinery is allotted for very short time which limits the farm operations of the farmers to whom it was allotted. Thus they return the machinery very late after due date which causes hurdles for the other farmers as well as MFSC and resulted in complication of machinery booking. As both these top priority constraints were due to shortage of machinery in MFSC and to overcome these, new and more machinery must be provided. Although the rental prices of farm machinery at MFSC was lesser than the private sector prices. Still it was proclaimed as third major constraint by the respondents with RBQ of 74.2%. The investigated respondents were conscious of kind that most of the machinery is out dated and there running costs (fuel consumption) are not economical thus increasing the cost of production. This constraint of out dated machinery ranked 4th with RBQ of 67.6% whereas least subsidy was pointed out as fifth constraint with RBQ of 65.2%. This outdated machinery consumes too much fuel which not only nullify the subsidy provided by MFSC rather increases the cost of production in comparison to other sources. Moreover the cause of outdated machinery as reported by respondents was ephemeral sheds and no proper management. Regarding provision of inputs progressive farmers always got preference while the small famers ignored. This issue was marked as sixth constraint by the respondents having RBQ of 63.3% (Table 8). It might be attributed to the fact that progressive farmers have made peers with the staff of MFSC resulting in their preference regarding provision of inputs. Problem in reaching MFSC ranked 7th with RBQ of 61.1 %. It was due to the fact that FSCs on Tehsil level were not functional and all the farmers have to reach MFSC from Rural-Urban fringes as well as from rural and

Table 8: *Rank based quotients of constraints identified*

Constraints	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	RBQ(%)	RO
No Timely Availability of Inputs	98	51	17	-	-	48	-	-	15	40	-	10	-	-	12	-	15	58.7	VIII
Problem in reaching MFSC	51	21	13	45	11	38	12	-	36	8	-	56	2	4	-	3	6	61.1	VII
Membership Process is complicated	-	-	-	-	-	-	-	-	-	-	-	-	-	6	22	18	260	7.4	XVII
Complication in Machinery Booking Process	197	58	-	23	-	-	14	-	-	11	3	-	-	-	-	-	-	75.7	II
Machinery Utilization duration is too less	210	68	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.9	I
Machinery is outdated	93	-	14	2	15	14	52	17	17	-	47	29	16	-	-	-	-	67.6	IV
Unviability Of Crop Specific Machinery	89	76	14	14	-	17	19	9	-	16	9	23	12	-	5	-	-	54.6	IX
Non availability of staff or less staff in MFSC	72	-	-	-	-	-	14	19	19	22	18	17	33	44	-	40	27	46.2	X
Non Availability of improved varieties seeds	-	-	15	15	24	-	24	2	10	29	43	33	56	45	45	11	14	39.9	XI
Rental Prices are not economical	120	32	17	35	42	21	-	19	-	-	-	-	8	5	7	-	-	74.2	III
Not too Much subsidy is provided	70	23	30	-	33	50	-	17	28	26	-	-	13	-	16	-	-	65.2	V
Preference Of Progressive Farmers	105	71	21	15	13	-	60	-	5	5	-	2	9	-	-	-	-	63.3	VI
Poor Linkages with other departments	5	7	3	-	-	-	17	-	-	46	67	-	90	45	4	10	12	35.1	XII
Poor Feedback System	1	-	9	-	-	46	-	-	-	23	-	-	6	97	22	102	-	32	XIII
Registration fee is not reasonable	-	-	-	-	-	-	-	-	-	-	-	-	8	69	26	-	203	11.5	XVI
Irregular Soil and Water testing	1	-	3	-	-	4	-	6	6	-	-	-	17	110	23	50	115	17.4	XV
Organizational Constraints	18	-	6	7	7	-	-	16	-	-	-	31	30	18	30	127	30	27.1	XIV

disadvantaged areas. No timely availability of inputs stood on rank 8th with RBQ of 58.7%. The other constraints identified were unavailability of crop specific machinery, non-availability of staff or less staff in MFSC, non-availability of seed of improved varieties on rank 9th, 10th and 11th with RBQ of 54.6 %, 46.2% and 39.9 % respectively. Similarly poor linkages with other departments, poor feedback system, organizational constraints and irregular soil and water testing were also the constraints pointed out by the respondents. While the last two constraints identified were the registration fee is not reasonable and membership process is complicated with RBQ of 11.5 % and 7.4% respectively (Table 8). It was found that the majority of the threats for MFSC were the same as for other programs run in past in the country or different countries of the world (Hanyai-Mlambo, 2002; Bajramovic et al., 2007; Budak at al., 2007; Haq et al., 2013) who also reported some of the major problem been identified in our study.

Conclusions and Recommendations

The study concludes that the top learned skills by respondents in MFSC were the agronomic practices whereas there was big gap in horticultural practices. Similarly execrable performance was observed regarding Linkages building of farmers with other line agencies by MFSC. The major constraints identified were; "machinery utilization duration was too less", "complication in machinery booking process", "rental prices are not economical" and "machinery is outdated". It was recommended that government should take initiative for funds on account of pragmatic trainings arrangements, subsidized inputs and crop specific machinery. Furthermore, ephemeral sheds should be replaced with permanent sheds at MFSC for machinery safety. Separate portability team of advisory group might be established for field visits of registered farmers to address their field problems. Capacity building of Management Committee and MFSC staff should be enhanced in planning, record management, seed procurement and other related fields of agriculture and livestock.

Authors Contribution

Rehmat Ullah conducted the research under the supervision of Muhammad Zafarullah Khan, whose guidance was there at each step of study. Muhammad Zafarullah also helped in designing of study. Data collection, data analysis and overall write-up of manuscript was done by Rehmat Ullah whereas Kalim Ullah fine-tuned the manuscript and corrected technically for submission.

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