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Research Paper

Determinants of Farmers' Adoption Behaviour towards Farm Business Management Practices for Vegetable Farming in Mid-Hills of Himachal Pradesh, India

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ABSTRACT

Today's farmers need to upgrade their skills by continuously introducing new techniques and management functions into their traditional farming to maximize farm productivity. The present study aimed to investigate the factors influencing farmers' adoption behaviour and constraints faced while adopting farm business management practices in vegetable farming, which comprised of a sample of 140 farmers using Likert scale techniques.. Findings revealed that the training, knowledge, proper budget, farm planning, and farm business appraisal were key factors mainly considered by the farmers while adopting the farm business management practices. The study also revealed that lack of quality raw material, ineffective market conditions and pest and disease control were the critical constraints faced by the farmers. In terms of determinants of farmers' adoption behaviour towards farm business management practices, it emerged from the study that these practices helping greatly to save time, managing the labour and net worth pertain cost incurred by the farmers. The findings suggested that agencies, primarily government institutions, shall come forward to highlight these factors and built farm business management practices programmes and package of practices among the farming community.

HIGHLIGHTS

- Training, knowledge, proper budget, farm planning, and farm business appraisal were key factors mainly considered by the farmers
- Lack of quality raw material, ineffective market conditions and pest and disease control were the critical constraints faced by the farmers.

Keywords: Determinants, Adoption behaviour, farm business, vegetable farming

Farm business management (FBM) is an art of managing farm successfully which results to the profitability to the farming communities. It focuses on the constraints and challenges faced by the farmers for managing traditional farming in present scenario (Johl and Kapur, 2017). Farm business management, in the widest sense, includes all of the decisions that a farmer must make when operating his/her farm (Escalante *et al*. 2009). These decisions are of two kinds i.e. planning and operational decisions. Management knowledge provides farmers a basis for sound farming decision-making also it assists in making

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the appropriate decision of agricultural operations based on an individual's financial, labour, land, and risk aversion resources (Kinoshita *et al.* 2015). Informed judgments regarding what to produce, on which part of a farm, how to produce it when to produce it, and in what amount is required to attain the highest potential revenue levels. It supports farmers in managing economic issues involving the maximization of returns and the minimization of costs (Alam Khan and Nazeer, 2019). Farmers need to upgrade their traditional farming practices byincorporating new products/technologies into their farms (Gerasimova *et al.* 2020).

Vegetables plays an important role in Indian agriculture by providing food, nutrition and economic security. However, insufficient efforts have been made to provide proper information to the farmers growing vegetables under the traditional system, and this has always been a major impediment to improving the productivity of vegetables in the country (Meena *et al.* 2009; Thakur *et al.* 2017). Considering this, the role of farm business management is increasing exponentially in traditional vegetable farming. Substantial increase in yield and quality of vegetable crops depends upon several factors viz., quality seed, fertilizers, irrigation, plant protection measures, suitable agronomic practices, and farm business management practices. The farmers' adoption behaviour towards farm business management practices are those which concern the overall organization of the farm business for example knowledge about the type of commodities are to be produced in what quantity, the amount of capital to be invested and its distribution, the labour staff to be employed and how it is organized. Apart from this, what are the hygienic practices, type of quality input material used for cultivation, and training on the farm business are also very important (Thakur *et al.* 2018). Previously, different aspects of farm business management practices adoption for enhanced quality production and profit have been extensively investigated (Wilson, 2014), including the use of hybrid seed for higher productivity, resistance to pests and diseases, and more environmental adaption (Cheema, 2007). However, the mid-hill region of Himachal Pradesh were untouched from aforesaid perspective despite being the fact that a considerable area comes under vegetable production and this venture has now emerged as highly commercial farming. Keeping this fact in mind, the present study makes an earnest effort to carry out the research in the Solan district of Himachal Pradesh and focused on the determinants of farmers' adoption behaviour and constraints while adopting farm business management practices in vegetable farming.

METHODOLOGY

The research area is located in the Solan district falls under the mid hills zone of Himachal Pradesh, India. The area was selected purposively because of its wider adaptability for growing vegetable crops. The primary data was obtained through the use of pre-tested structured schedule administered to farmers selected by multistage random sampling. At the first stage, two blocks out of five blocks in Solan district were selected on the basis of maximum area under vegetable production in all the blocks. At the second stage, list of villages growing vegetable from selected blocks were prepared. From this list, seven villages from each selected block were taken randomly, thus 14 villages were selected from two blocks. At the third stage, a sample of 10 farmers from each selected village were selected by adopting probability proportion to size method, thereby a sample of 140 farmers was selected for the study. Simple mathematical and statistical analysis was used which includes arithmetic mean, standard deviation, coefficient of variation, Likert scale, total weightage score method was employed to satisfy the objectives with a view of keeping the analysis simple and easy to understand. The farmers adoption behaviour towards farm business management practices was analysed using a Likert-type scale having 5-point continuum consisting of strongly agree (SA), agree (A), undecided (UD) disagree (DA), and strongly disagree (SDA) disagree with a rating of 5, 4, 3, 2 and 1, respectively. To study the constraints, total weightage score method was used (Devegowda *et al.* 2021). Different weights that are high, moderate, and low according to their importance and multiply the values of the items (X) by the weights (W) as provided. Then all the values added to obtain the total weights of all the items and the one which gets the highest score gets the first rank while the item with the lowest score gets the lowest rank (Thakur *et al.* 2020).

RESULTS AND DISCUSSION

Farmers' awareness on various factors for practicing farm business management practices

Table 1 has depicted a farmers awareness on various factors consider while practicing farm business practices in vegetable farming in order to analyse the farmers' opinion using a Likert scale followed by total weighted score rank mean and standard deviation was used to analyse the data various factors were considered where largely training placed at rank I with highest total weighted score 634 (mean 1.47 and standard deviation 0.673) followed by knowledge is rank II with TWS 622 and budget placed at rank III were the key factors as perceived and learned by the farmers. Since these three factors plays a crucial role in the implementation of farm business management practices largely in the area of vegetable farming. Therefore, considering its insensibility, these were commonly preferred by the farming community. However, factors like organic practices, hybrid seed, tools and equipment cleanliness, and hygienic practices for cultivation were largely shown a very least attitude of learning by the farmers while adopting FBM practices (Alam Khan and Nazeer, 2019). It was also observed that uniformity of opinion was largely found as indicated by the coefficient of variation analysis that receiving and storage of quality input material have been the most preferred attitude statement among the sample group farmers in the given research area. Therefore, it may have been suggested that agencies mainly government institutions shall come forward to highlight these factors and built a FBM practices program and package of practices on these given factors since these factors would undoubtedly help in bringing up the success rate of the implementation in reference to farm management practices in vegetable crops.

Farmers' status of constraints faced while adopting farm business management practices

The most empirical aspect of the research presented in Table 2, where farmers have critically analyzed and have represented their key constraints while coming across FBM practices. The relevant data was analyzed with total weighted score method further the rank, mean, standard deviation, and coefficient of variation were also calculated the result noted that the key problem was lack of quality raw material placed at rank I with highest total weighted score 392 [mean 1.20, standard deviation 0.401 and coefficient of variation (CV) 33.41%] which was very rarely available for actual implementing of farm practices followed by pest and disease control and ineffective market condition since these three constraints have the larger impact on the comprehensive practice of FBM practices. These results are in conformity with the findings of Eistrup *et al.* (2019). Therefore, these three constraints were

Table 1: Farmers' awareness level for practicing farm business management practices

Statements	SA	A	UD	DA	SDA	Total Weighted Score	Rank	Mean	Standard Deviation	Coefficient of Variation %
	5	4	3	2	1					
Budget	94	18	24	0	4	618	III	1.59	0.967	60.81
Knowledge	84	38	14	4	0	622	II	1.56	0.789	50.57
Employees hygiene	50	52	18	16	4	548	V	2.09	1.096	52.44
Water safety	66	34	24	12	4	590	IV	1.96	1.118	57.04
Organic Practices	22	34	42	20	22	434	X	2.90	1.282	44.20
Tools and equipment cleanliness	50	18	46	18	8	504	VIII	2.40	1.251	52.12
Hygienic practices for cultivation	56	28	44	8	4	544	VII	2.11	1.093	51.81
Receiving and storage of quality input material	44	48	40	8	0	548	VI	2.09	0.909	43.49
Hybrid Seeds	40	44	28	16	12	504	IX	2.40	1.251	52.12
Training on Farm management Practices in Vegetable farm business and others	88	38	14	0	0	634	I	1.47	0.673	45.78

Abbreviations: *SA; Strongly agree, A; Agree, UD; Undecided, DA; Disagree, SDA; Strongly disagree.*

Table 2: Farmers' level of constraints faced by sample respondents

Constraints	Level of constraints			Total Weighted Score	Rank	Mean	Standard Deviation	Coefficient of Variation %
	High (3)	Moderate (2)	Low (1)					
Lack of Budget	74	52	14	340	IX	1.57	0.669	42.61
Lack Quality raw material availability	112	28	0	392	I	1.20	0.401	33.41
Pest and disease control	116	16	8	388	II	1.23	0.541	43.98
Non-Availability of Skilled labour	58	46	36	302	XII	1.84	0.807	43.85
Lack of proper soil treatment	60	70	10	330	X	1.64	0.612	37.31
Lack of irrigation facilities	64	50	26	318	XI	1.73	0.757	43.75
Lack of farm Machinery	80	42	18	342	VIII	1.56	0.712	45.64
Lack of Transport Facilities	58	46	36	302	XIII	1.84	0.807	43.85
Lack of Consultancy services	98	32	10	368	VI	1.37	0.616	44.96
Lack of extension services	120	6	4	376	V	1.24	0.622	50.16
Lack of technical know how	110	22	8	382	IV	1.27	0.561	44.17
Lack of experience	94	28	18	356	VII	1.46	0.713	48.83
Ineffective market conditions and others	114	18	8	386	III	1.24	0.548	44.19

largely preferred to be least available and had the largest challenge been faced by the farming community. Since these three constraints have not only associated with production operation but even the marketing which can derive the real performance of the FBM practices. Consequently, considering the relevance these constraints are essentially required to be addressed effectively and prominently. Thus, it may have been suggested that public and private agencies that largely tend to take care of farm practices should intervene and devise a feasible solution or a model capable of eradicating these issues to the greatest extent possible. In order to create a favourable environment for the farming community to adopt FBM practices into their traditional farm culture (Nuthall, 2006).

Determinants of farmers' adoption behaviour towards farm business management practices

The determinants of farmer's adoption behaviour towards farm business management practices have been extensively demonstrated in Table 3. It was analysed using rank analysis, arithmetic mean standard deviation, and coefficient of variation that FBM practices are helping to save time and managing the labour and net worth (placed at rank I with the highest total weighted score 636) while pertaining to the cost incurred by farmers. Further, it was found that such practices have also hugely improvised the social-economic status of farmers rank II and even have provided better results to farmers than the old conventional practices. It was also realized that sample respondents also given opinion that FBM practices have resulted in farmers' indebtedness as indicated by CV 19.66 per cent. Farmers' attitude depicts a true inclination of farmer behaviour. The adoption of FBM practices are helping to save time, managing the labour and net worth pertain cost incurred by the farmers'. Such practices have also incredibly improvised the social-economic status of farmers and even have provided better result to farmers than the traditional practices. The present results concerning the farmers' behaviour towards FBM practices in vegetable farming are in accordance with those obtained by Al-Rimawi *et al.* (2006), in farmers' attitudes and skills of farm business management. Additionally, it was also realized that sample respondents also give the opinion that FBM practices have resulted in farmers' indebtedness as indicated. Thus, such behaviour statements are an indication that FBM practices have been hardly accepted and incline to be increased among the farmer community. However, due to a lack of awareness, farmers may not have been in a position to showcase their open attitude towards similar practices. Similar opinion reported by Meena *et al.* (2009), in post-harvest issues of horticultural crops. Thus, various agriculture extension service providers must contribute to the development of agribusiness scenario in the mid-hills area through better application of FBM practices and their usage in the field.

Table 3: Determinants of farmers' adoption behaviour towards farm business management practices

Statements	SA	A	UD	DA	SDA	Total Weighted Score	Rank	Mean	Stand. Deviation	Coefficient of Variation %
	5	4	3	2	1					
The use of FBM practices give better result to a farmer than old traditional practices	82	32	18	8	0	608	III	1.66	0.912	54.93
FBM practices helps in saving time, labour and Enhance Net Worth	76	64	0	0	0	636	I	1.46	0.500	34.25
Old agriculture practices /tools were better than modern ones	4	14	30	38	54	296	X	3.89	1.119	28.76
The use of FBM practices has adversely affected soil fertility	4	10	56	58	12	356	VIII	3.46	0.860	24.85
FBM Practices has improved the crop yield of farmers	62	44	34	0	0	588	IV	1.80	0.806	44.77
There is no effect of FBM practices on the income of farmers	8	26	14	60	32	338	IX	3.59	1.193	33.23
FBM practices has made most of the family members idle	12	40	62	16	10	448	VII	2.80	0.998	35.28
FBM practices has improved the socio economic status of farmers	68	62	10	0	0	618	II	1.59	0.623	39.18
Lack of incentives by the government has resulted in less use of mechanization	66	14	46	10	4	548	V	2.09	1.160	55.50
It is difficult for the farmers to make good profits without FBM practices	14	42	80	4	0	486	VI	2.53	0.714	28.22
FBM is nothing but just a waste of money	4	0	22	48	66	248	XIII	4.23	0.916	21.65
FBM practices has resulted in farmers indebtedness	0	8	14	70	48	262	XI	4.13	0.812	19.66

Abbreviations: *SA; Strongly agree, A; Agree, UD; Undecided, DA; Disagree, SDA; Strongly disagree.*

CONCLUSION

The present study concludes that farmers' adoption behaviour toward farm business management practices were influenced by training, knowledge, and good budget planning. Additionally, a lack of quality raw material, pest and disease control, and an ineffective market condition were the key constraints encountered while adopting the farm business management practices in vegetable farming. Thus, considering the relevance of these problems are essentially required to be effectively and prominently addressed. Moreover, farm business management practices are helping in saving time besides managing the labor and net worth pertain cost incurred by the farmers. The major economic motivation for the farming community should be work towards higher yields and economic benefits. This study puts for a template which future studies could use to analyze determinants of farmers adoption behaviour and constraints while adopting FBM practices in mid-hills region of Himachal Pradesh and other part of north-western Himalaya.

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