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RESEARCH ARTICLE

IDENTIFICATION OF MAJOR INDEPENDENT VARIABLES RESPONSIBLE FOR PERFORMANCE LEVEL OF AGRICULTURAL INPUT RETAILERS

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ABSTRACT

With ever-increasing human population, there is an increasing demand to raise the production. Among the all measures to raise the productivity level, plant protection is playing a leading role. Specially in this field as well as for overall agricultural development in rural areas, the agricultural input retailers are playing an important role with their marketing environment and limitations. The present study was undertaken with the following objective- to identify the major independent variables affect on performance level of agricultural input retailers. The study was undertaken in the State of West Bengal. Multi-stage random sampling technique was adopted for the selection of area and the universe method was used for the selection of respondents. In the present study, 21 independent variables (factors) were considered important. The study reveals that experience (r=0.273**), investment (r=0.266**), retailing ability (r=0.346**) and communication skill (r=0.313**) had positive and highly significant association (at 0.01 level of probability) with retailing performance level of the respondents whereas education (r=0.197*), mode of accessing information (r=0.216*), agricultural training (r=0.208*), supply of products in proper time and in required quantity (r=0.212*), information seeking behavior about cultivation in field (r=0.199*), general knowledge of agriculture except plant protection(r=0.209*) and knowledge about plant protection(r=0.221*) had positive and significant relation (at 0.05 level of probability) with retailing performance level of the respondents in the study area. Selected socio-personal traits of retailers was fitted in the multiple regression equation and it is clear from the study that experience, investment, agricultural training, supply of products in proper time and in required quantity, retailing ability, communication skill and knowledge about plant protection were found to be positively significant at 0.05 level of probability. Considering the fact, public and private extension agencies should focus on this category of people carefully, because farmers' development upto a great extent hidden behind development of agricultural input retailers of our country.

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INTRODUCTION

Agriculture is the backbone of Indian economy. It has a critical role to play in the country's economic development. With ever-increasing human population, there is an increasing demand to raise the production. There are two basic ways of augmenting the production, first enlarging the area cultivated by expanding agricultural operations to virgin areas and secondly to increase the productivity of land already under cultivation. As there is no scope to expand the cultivated area because the average size of operational holding is decreasing day by day due to pressure of population, therefore, the ultimate way of increasing production is to raise the productivity level. Among the all measures to raise the productivity level, plant protection is playing a leading role. Basic exercise of any crop for control of insect-pests, diseases, weeds etc. to avoid economic losses is plant protection. Especially in this field as well as for overall agricultural development in rural areas, the agricultural input retailers are playing an important role with their marketing environment and limitations were the main points of interest. Considering the importance of agricultural input retailers in boosting agricultural development, the present study was undertaken with the following objective- to identify the major

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independent variables affect on performance level of agricultural input retailers.

MATERIALS AND METHODS

The study was undertaken in the State of West Bengal. Multi-stage random sampling technique was adopted for the selection of area and the universe method was used for the selection of respondents. At the first stage of sampling, Midnapur (East) district was purposely selected (one of leading agricultural districts in the State) from among all 19 agricultural districts of the State, West Bengal. The district has four sub-division (i.e. Tamluk, Haldia, Contai and Egra), out of these, Tamluk sub-division was selected randomly at the second stage of sampling. The selected sub-division has 7 agricultural blocks (i.e. Tamluk, Shahid Matangini, Panskura-I, Panskura-II, Nandakumar, Chandipur and Moyna), out of these, the 5 blocks were selected randomly at the third stage of sampling. The selected blocks were Moyna, Nandakumar, Tamluk, Shahid Matangini and Panskura-I. Under the 5 selected blocks, all the pesticides markets were identified. Among these markets a total number of 46 markets were selected as those were connected by metal roads.

All the agricultural input retailers belonging to those markets were enlisted and total 119 agricultural input retailers formed the universe. Among the agricultural input retailers a few of them have just closed the retailing shop and 11 of them declined to give information, thus the finally 100 respondents were retained for the study. The date were collected by personal interview method through a well-structured interview schedule using local language (Bengali) for getting their response exactly and analysis of data was done statistically to reach at meaningful results and conclusion.

RESULTS AND DISCUSSION

Agricultural input retailers and agricultural input dealers both equally contains same meaning, only the difference in amount of selling, dealers sell more amount to retailers and farmers whereas retailers sell less amount to farmers only. Agricultural input retailers in rural areas though apparently they are doing their business, but in actual sense they are also assisting farmers in various aspects of agriculture in our country. Hence, their retailing performance level reflects on the farmers' performance level in agriculture.

Table 1. Variables ($X_1 - X_6$) (N=100)

S. No.	Variable	Categories	Percentage
1.	Age	Young (upto 29 years)	14
		Middle (30-49 years)	71
		Old (above 49 years)	15
2.	Experience	Low (upto 6 years)	5
		Medium (7-18 years)	79
		High (above 18 years)	16
3.	Education	Upto primary (Lower level)	4
		Upto higher secondary (Medium level)	68
		Above higher secondary (Higher level)	28
4..	Social participation	Member of no organization	63
		Member of one organization	36
		Member of more than one organization	0
		Office holder	0
		Public leader	1
5.	Investment	Lowest level (upto Rs. 10,000)	40
		Medium level (Rs. 11,00-33,000)	30
		Higher level (above Rs. 33,000)	30
6.	Area of coverage	Lower level (upto 3 km)	5
		Medium level (4 to 12 km)	79
		Higher level (above 12km)	16

Table 2. Variables ($X_7 - X_{11}$) (N=100)

S.No.	Variable	Categories	Percentage
7.	Contact with agricultural department	Always	27
		Sometimes	45
		Seldom	24
		Never	4
8.	Mode of accessing information	Leaflet	100
		Booklet	11
		Magazine	0
		Demonstration	17
		Phone	3
		Company personnel	17
9.	Agricultural training	Company	15
		Agricultural Development Office	0
		Agricultural University	9
		NGO	0
10.	Supply of products in proper time and in required quantity	Always	68
		Sometimes	17
		Seldom	10
		Never	5
11.	Supply of products of companies having proper weight and quantity	Always	62
		Sometimes	22
		Seldom	9
		Never	7

Table 3. Variables (X_{12} –X_{17}) (N=100)

Sl.	Variable	Categories	Percentage
12.	Mode of payment to distributor	Cash	28
		Installment	60
		Fixed time	7
		No fixed time	5
13.	Familiarity with customer	Upto 25%	4
		26-50%	13
		51-75%	31
		76-100%	52
14.	Information seeking behavior about cultivation in field	Field visit	26
		Farmers organization	0
		Demonstration	17
		Experienced village farmers	29
		Company personnel	43
		Customer	100
		Krishi Prayukti Sahayak	8
15.	Cooperation of distributor	Products offer in credit	100
		Maintain quality of products	72
		Supply products according to need of customers	95
		Extra discount on price of product	33
16.	Good relation with customer	Field visit	26
		Sale in credit	95
		Information about their existing condition	100
		Maintain sociableness	100
17.	Adhering to regulatory norms	Check the weights every 3-4 years	100
		Maintain register for buying and selling	39

Table 4. Variables (X_{18} –X_{21}) (N=100)

Sl.	Variable	Categories	Percentage
18.	Retailing ability	Lower level (score upto 28)	13
		Medium level (29 to 45)	69
		Higher level (above 45)	18
19.	Communication skill	Lower level (score upto 10)	13
		Medium level (11 to 20)	65
		Higher level (above 20)	22
20.	General knowledge of agriculture except plant protection	Lower level (score upto 5)	13
		Medium level (6 to 10)	78
		Higher level (above 10)	9
21..	Knowledge about plant protection	Lower level (score upto 5)	15
		Medium level (6 to 12)	70
		Higher level (above 12)	15
Dependent variable			
	Retailing performance	Lower level (sale upto Rs. 1,50,000)	26
		Medium level (Rs. 1,51,000 to 2,40,000)	62
		Higher level (above Rs. 2,40,000)	12

Table 5. Correlation between independent variables with retailing performance level (N=100)

Sl.	Independent variables	Correlation coefficient ('r' values)
1.	Age	0.045
2.	Experience	0.273**
3.	Education	0.197*
4.	Social participation	0.023
5.	Investment	0.266**
6.	Area of coverage	0.145
7.	Contact with Agril. Department	0.166
8.	Mode of accessing information	0.216*
9.	Agricultural training	0.208*
10.	Supply of products in proper time and in required quantity	0.212*
11.	Supply of products of companies having proper weight and quantity	0.179
12.	Mode of payment to distributor	0.106
13.	Familiarity with customer	0.047
14.	Information seeking behavior about cultivation in field	0.199*
15.	Cooperation of distributor	0.026
16.	Good relation with customer	0.068
17.	Adhering to regulatory norms	0.145
18.	Retailing ability	0.346**
19.	Communication skill	0.313**
20.	General knowledge of agriculture except plant protection	0.209*
21.	Knowledge about plant protection	0.221*

(*Significant at 0.05 level of probability. ** Significant at 0.01 level of probability)

Table 6. Multiple regression analysis of independent variables with retailing performance level (N=100)

Sl.	Independent variables	Regression coefficient	't' values
1.	Age	0.216	0.129
2.	Experience	1.310	2.598*
3.	Education	0.499	0.513
4.	Social participation	1.415	0.910
5.	Investment	0.452	2.201*
6.	Area of coverage	3.457	1.791
7.	Contact with Agril. Department	1.672	1.488
8.	Mode of accessing information	0.625	1.863
9.	Agricultural training	0.644	2.120*
10	Supply of products in proper time and in required quantity	1.517	2.303*
11	Supply of products of companies having proper weight and quantity	1.706	0.733
12	Mode of payment to distributor	0.811	0.427
13	Familiarity with customer	0.802	0.778
14	Information seeking behavior about cultivation in field	0.049	0.121
15	Cooperation of distributor	0.603	1.399
16	Good relation with customer	0.026	0.060
17	Adhering to regulatory norms	0.590	1.042
18	Retailing ability	0.498	2.378*
19	Communication skill	0.474	2.555*
20	General knowledge of agriculture except plant protection	0.127	1.983
21	Knowledge about plant protection	0.186	2.610*

(*Significant at 0.05 level of probability. R^2 =0.523)

Therefore, central objective of the study was to identify the factors those influence the performance level of agricultural input retailers mostly. At the first stage of the present study, 21 independent variables (factors) were considered important according to consulting various available literatures, experts' views and pilot study conducted on agricultural input retailers in a small scale. At second stage, the relation between these factors with performance level was determined. At the third stage, through multiple regression analysis, it was tried to find out most related factors among the all factors. First stage (independent variables):-The table-1 indicates that majority of respondents (71%) were middle aged group, majority of respondents (79%) had medium level of experience, more than half of respondents (68%) had upto higher secondary level of education, majority of respondents (63%) were not involved themselves as a member of any organization, at the most 40 percent of respondents had lower level of investment and majority of respondents (79%) area of coverage was medium level. The Table-2 indicates that at the most 45 percent of respondents sometimes contacted with agricultural department, cent percent of respondents (100%) main mode of accessing information was leaflet, only 15 percent of respondents got training and those trainings were conducted by company personnel, at the most 68 percent of respondents reported that they always got supply of products in proper time and in required quantity from distributor/company and at the most 62 per cent of respondents replied that they always got supply of products of companies having proper weight and quantity.

It is clear from the Table-3 that majority of the respondents (60%) in the study area paid for their purchasing products to distributor in installment basis, more than half of respondents (52%) reported that the customers (76-100%) came in their shop for purchasing products were well known to them because they were the local people. All the retailers (100%) reported that they mainly collected information about existing crop cultivation in field from the customers, cent percent of respondents (100%) reported that distributors cooperated with them by offering the products in credit when they requested, all the retailers (100%) maintained a good relation with customers by asking them their existing condition and maintaining social courtesy and all of them (100%) mainly followed the regulatory norm of checking the weights in every 3-4 years interval.

The Table-4 indicates that majority of respondents (69%) had medium level of retailing ability, 65 percent of respondents had medium level of communication skill, at the most 78 percent of respondents had medium level of general knowledge of agriculture except plant protection and majority of respondents (70%) had medium level of knowledge about plant protection. The dependent variable was retailing performance level and it was seen that more than half of respondents (62%) had medium level of retailing performance.

Prajapati *et al*. (2012) reported that overall pesticide dealers had medium level of knowledge. The personal attributes like age, caste, experience in pesticide dealing, information source used and training received by them had found associated with their knowledge level regarding general and specific areas of plant protection. Patel *et al*. (2011) reported that more than 90.00 percent of the respondents had knowledge about major pests of the crop growing in the area and receiving information about pesticides from the pesticide dealers. At the most 90.00 percent of the respondents were spraying the pesticide on the crop and giving treatment to seed.

Second stage (correlation between independent variables with retailing performance level):-The Table-5 shows that the nature and extent of association of retailers' socio-personal traits with their retailing performance level in terms of the values of correlation coefficient. The table reveals that experience (r=0.273**), investment (r=0.266**), retailing ability (r=0.346**) and communication skill (r=0.313**) had positive and highly significant association (at 0.01 level of probability) with retailing performance level of the respondents whereas education (r=0.197*), mode of accessing information (r=0.216*), agricultural training (r=0.208*), supply of products

in proper time and in required quantity (r=0.212*), information seeking behavior about cultivation in field (r=0.199*), general knowledge of agriculture except plant protection (r=0.209*) and knowledge about plant protection (r=0.221*) had positive and significant relation (at 0.05 level of probability) with retailing performance level of the respondents in the study area. This implies that retailers having higher level of experience, higher level of investment, higher level of retailing ability, higher level of communication skill, better education, suitable mode of accessing information, need based agricultural training, timely supply of products in required quantity of retailers by distributors or companies, better information seeking behavior about cultivation in field, higher level of knowledge on general agriculture except plant protection and higher level of knowledge about plant protection had higher level of retailing performance level in retailing various agricultural inputs.

Age, social participation, area of coverage, contact with agricultural department, supply of products by companies in proper weight and quantity, mode of payment to distributor, familiarity with customer, cooperation of distributor, good relation with customer and adhering to regulatory norms did not show significant relationship with the retailing performance level of retailers. It implies that these socio-personal traits were not affecting the retailers' level of performance in retailing various agricultural inputs. Waghmode *et al*. (2014) reported that agricultural input dealers are playing an important role. Indeed an input dealer forms an important bridge between the farmers and the agricultural development agencies, and is often regarded by the farmers as a "friend, philosopher and guide" and is truly a change agent. Therefore, if he is trained and sincere in his dealings with the farmers, he could definitely prove to be a valuable resource to contribute towards the goal of last mile delivery in the field of agriculture. Sharma and Sharma (2014) reported that invention of agricultural technology and its transfer and adoption by farmers requires modernization of agriculture. For transferring agricultural technologies public service plays an important role. But the public extension services by itself is not enough to handle the multifarious demands of the farming community and being supplemented by private extension, though on a limited scale by the krishi input dealers, NGO, farmers organization etc. Bhunwal *et al*. (2012) reported that independent variables i.e. education, extension contact, training received, economic motivation, risk orientation, scientific orientation and knowledge level of farmers had positive and significant connection with the attitude of farmers towards bio-control measures of plant protection.

Third stage (multiple regression analysis of independent variables with retailing performance level):- Selected socio-personal traits of retailers was fitted in the multiple regression equation for ascertaining the type and magnitude of variation caused by these traits as independent variables over the dependent variable, that is retailing performance of agricultural input retailers. In this aspect, step-wise multiple regression analysis was followed for the selection of only those traits which mostly affected the retailing performance level of retailers. The results are presented in table-6. The table also indicates that all the twenty one independent variables fitted in multiple regression equation jointly contributed 52.3 per cent (R^2=0.523) variation in retailing performance level of retailers. This means that all these independent variables explained the variation upto 52.3 per cent in the retailing performance level of retailers, taken a dependent variable. It is clear from the table under reference that experience, investment, agricultural training, supply of products in proper time and in required quantity, retailing ability, communication skill and knowledge about plant protection were found to be positively significant at 0.05 level of probability. It means that one unit change in these variables will result in a corresponding change of 0.523 unit in the level of retailing performance of retailers. Other variables i.e. age, education, social participation, area of coverage, contact with agricultural departments, mode of accessing information, supply of products of companies in proper weight and quantity, mode of payment to distributor, familiarity with customers, information seeking behaviour about cultivation in field, cooperation of distributor, good relation with customer, adhering to regulatory norms and general knowledge of agriculture except plant protection, did not cause any significant variation in the retailing performance level. Salunkhe (2009) reported that the age, size of family, social participation, land holding, farming experience, economic orientation, risk orientation, management orientation, information input and processing behaviour were found to be positively significant with performance level of agro-service providers and beneficiaries. Waghmode *et al*. (2014) revealed in their study that the agricultural input dealers play an important role in providing the farm input to the farmers. While trading the farm inputs, the dealers advise the farmers about their use and application in the field. So, imparting to them is necessary training to increase the performance of the agricultural input dealers. This would help in increasing crop production and economic status of the agriculturists.

Conclusion

Agriculture has a crucial role to play in the country's economic development. The place of agriculture in the Indian economy is such that India can as well be described as an agricultural country par excellence. Its people and their entire totality are so much bound with the fortunes of agriculture that the pace of life and the pattern of activities do no more than mirror all that happens in this sector. It is therefore, necessary that agricultural inputs should be made available to them at the right place, at right time, in adequate quantity, of proper quality and at right prices. Obviously, in this vital direction, the leading role is played by agricultural input retailers. Therefore, the main emphasis of this present study was to identify various factors those influence the retailers' performance level. At first correlation was identified. Second consideration was to identify the major factors among the all factors those influence mostly the retailing performance level. Therefore, several measures are to be taken in favour of agricultural input retailers so they can perform their activity efficiently. In this way farmers will get better assistance and cooperation from agricultural input retailers. The measures are the –(1) Training should be provided to them to enhance their knowledge level and skill level (2) Bank should provide financial assistance to this category of people and serving them will be one of their essential activities. (3) In various agricultural training

programme, agricultural input retailers will be included as participants considering their importance in agriculture. In this respect, public and private extension agencies should come forward equally. (4) Various agricultural input companies should supply products to retailers in proper time and in required quantity of retailers considering the hidden benefit of farmers of our country as well as their own business survival. (5) Company personnel should conduct various short –term programmes for enhancing retailers retailing ability (6) Especially company personnel in their training programme will point out on several techniques to deal customers. Similarly, public extension agencies will also provide various tips to retailers for enhancing communication skill during agricultural training programme (7) In crop cultivation, majority of aspects, farmers have more or less idea to deal those activities in a particular way, but, in case of plant protection, they have least knowledge or having lack of comprehensive knowledge on it or due to complexity of this technology farmers become unable to adopt as recommended. It is the general observation that in this respect farmers have incomplete and confused knowledge. It is clear from the study that agricultural input retailers are directly dealing farmers, therefore in various agricultural training programmes where retailers are participating, plant protection will be considered as an essential component of those training programmes. So, retailers' perception will provide farmers a clear idea on various units of plant protection upto a certain extent. In rural areas, retailers are the friend, philosopher and guide to farmers and farmers consider them more reliable because, they are local people. Considering the fact, public and private extension agencies should focus on this category of people carefully, because farmers' development upto a great extent hidden behind the development of agricultural input retailers of our country.

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