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Exploring the barriers in penetration of crop insurance scheme in agriculture sector: Evidence from State of Haryana

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Abstract: This article aims to exploring the barriers in penetration of crop insurance scheme in agriculture sector, particularly in state of Haryana. To full the objective of this article, we collected the response of 480 farmers using a structure questionnaire on barriers in penetration of crop insurance scheme in agriculture sector. The results were analyzed using exploratory factor analysis methodology. Using the sample of 480 respondents, our findings indicate that five major barriers are emerged which influence the penetration of crop insurance scheme in agriculture sector, particularly in state of Haryana. These factors has emerged as follows: (i) process related barriers (PRB); (ii) financial factors (FF); (iii) lack of awareness (AWAR); (iv) personal barriers (PBAR); and (v) risk perceptions (RP). Therefore, the findings of this study provides several practical implications to policy makers, insurance companies and farmers. The findings facilitate in penetration of crop insurance in agriculture sector.

Keywords: Agriculture, Crop, Insurance, Barriers, Haryana.

I. INTRODUCTION

Agriculture is a significant monetary area in many non-industrial countries and is a wellspring of income and food security to families who dwell in rustic regions. Other than satisfying the food prerequisites of the country, horticultural area supplies fundamental crude fixings to numerous agrobased organizations and possesses a significant offer in total products. The agrarian area assumes a crucial part in the work of the rustic local area just as impacts the improvement of united areas and the whole economy (FAO, 2017). The early and late happening to rainstorm, changing precipitation and temperature designs, unfavorable climatic conditions, and climate vacillations have caused genuine monetary misfortunes as far as yield harms and crop disappointments (FICCI, 2018). Crop insurance arrangements can be characterized by various qualities. A few arrangements pay repayments in light of the event of homestead (or even sub-ranch) level misfortunes. Different approaches pay reimbursements in view of setbacks in a file (for example a region yield or climate measure) that fills in as an intermediary for ranch level misfortunes. A few strategies secure just against yield misfortunes while others ensure against setbacks in income (the result of yield and result cost) or edge (income short determined expenses). A few arrangements are item explicit while purported "entire homestead" strategies protect total ranch income or edge across numerous products. This study address the barriers in penetrations of crop insurance scheme in agricultural sector. The rest of article is organized as follows. Section 2 shows the relevant studies. In Section 3, we provides the research methodology. Section 4 provides the results. Section 5 discusses the findings of the study and provides effective implications to stakeholders.

II. LITERATURE REVIEW

There are different crop insurance schemes launched in India since its inception but each scheme has its own set of flaws and problems that are pointed out by various scholars. As per Chandrakanth and Rebello (1980), crop misfortune because of dry

spell, unnecessary downpours, irritations, and sicknesses might be remembered for the dangers to be protected. They additionally commented that assuming the whole yield is lost during the establishing stage, the repayment payable should take care of the expenses up to that stage. Another perception was that crop protection ought to be made obligatory essentially for all borrowers. For this situation the protection premium should be remembered for the crop finance. Dandekar (1985) noted that "the crop insurance scheme is based on the area approach and that a taluka/tehsil are taken to be the area". Indemnities payable to farmers in the area are assessed on the basis of the average yield for the area; the variations in the yield within the area are neglected. Therefore, this study provide that this method is considered unsatisfactory. Pathak (1986) contended that through crop insurance, the ranchers could buy the ideal for remuneration by paying just a modest quantity and that they are guaranteed of assurance against vulnerabilities. Raju and Chand (2008) concentrated on the inadequacies and extent of the agri insurance plot in India. The creators observed that a high level horticulture insurance scheme conspire helped the farmers in relieving the dangers. They recommended that administration needs to reconsider the arrangements pertinent to the protection conspire. Sadati et al. (2010) concentrated on the elements that influence the rancher's choices in regards to taking on the yield protection plot in Bahaman country. The review depended on the auxiliary information gathered using survey. Different measurable instrument procedures like connection and relapse were utilized in the review. The review tracked down a positive relationship between's age, insight in agribusiness exercises, proficiency, expansion support and protection fulfillment. Bhoi and Dadhich (2019) suggested a model of composite insurance scheme to cover the risk of market failure and crop failure. Ghosh et al. (2019) presented that farmers have more willingness to pay the premium for speedy claim settlement.

III. METHODOLOGY

Our study is based on primary data collected from suvery. Before to collect the data from respondents, it is necessary to identify the target population. Therefore, target population for this article was farmers who have capacity and willingness to buy crop insurance. These individuals are perfect target population to exploring the barriers in penetration of crop insurance in agriculture sector in Haryana. According to MacCallum et al. (1999) "a sample size of between 100 and 200 observations is acceptable provided communalities are high, factors are well determined, and convergence to a proper solution is achieved". Hence, this study involve the individual farmers who live in boundary of state of Haryana. To collect the data, more than 600 questionnaires were distributed among famers in the boundary of Haryana. 480 questionnaires were returned by respondents. All responses corresponding to items were recorded on five point Likert's scale from strongly disagree to strongly agree. In this article, we deployed exploratory factor analysis to exploring the barriers in penetration of crop insurance scheme in agriculture sector.

IV. EMPIRICAL RESULTS

4.1 Demographical features

Table 1 shows the gender of respondents. Our results show that 62.1% of respondents are male farmers followed by 37.9% of respondents are female farmers. Therefore, our findings provide that majority of respondents are male farmers.

Table 1: Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	298	62.1	62.1	62.1
	Female	182	37.9	37.9	100.0
	Total	480	100.0	100.0	

Table 2 shows the age group of respondents. Our results show that 8.3% of respondents are less than 30 years old, 42.3% of respondents belong to 30-40 years age group. In addition, 37.5% of respondents belong to 40-50 years age group. In last, our findings provide that 11.9% of respondents are above the 50 years age group.

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Table 2: Age group of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 30	40	8.3	8.3	8.3
	30 to 40	203	42.3	42.3	50.6
	40 to 50	180	37.5	37.5	88.1
	Above 50	57	11.9	11.9	100.0
	Total	480	100.0	100.0	

Table 3 shows the education level of respondents. Our results show that 16.7% of respondents hold high school certificates and 26.3% of respondents hold matriculation certificates. In addition, our results show that 34.4% of respondents hold senior secondary school certificates and 9.2% of respondents are graduates. In last, our findings also show that 13.5% of respondents are illiterate.

Table 3: Education level of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school	80	16.7	16.7	16.7
	Matriculation	126	26.3	26.3	42.9
	Senior secondary	165	34.4	34.4	77.3
	Graduate	44	9.2	9.2	86.5
	Illiterate	65	13.5	13.5	100.0
	Total	480	100.0	100.0	

Table 4 shows the marital status of respondents. Our results show that 47.1% of respondents are married followed by 26.3% of respondents are unmarried. In addition, results show that 26.7% of respondents are widow/divorced.

Table 4: Marital Status of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	226	47.1	47.1	47.1
	Unmarried	126	26.3	26.3	73.3
	Widow/Divorced	128	26.7	26.7	100.0
	Total	480	100.0	100.0	

Table 5 shows the family type of respondents. Our results show that 63.3% of respondents belong to nuclear family followed by 36.7% of respondents belong to joint family. Therefore, our findings provide that majority of respondents belong to nuclear family.

Table 5: Family type respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nuclear	304	63.3	63.3	63.3
	Joint	176	36.7	36.7	100.0
	Total	480	100.0	100.0	

4.2 Exploring the barriers in the penetration of crop insurance in agriculture sector

Before dismantled the information, it was fundamental to really look at the testing ampleness for additional evaluation. To exploring barriers in the penetration of crop insurance in agriculture sector, 36 statements were adapted from previous literature. It is general partiality that model size should be in wealth of various periods of things and analysts taken the model size 480 respondents that was the more unmistakable fundamental of test size. Thus, Table 6 presents the findings of KMO and Bartlett's Test. KMO encounters which was 0.925 affirmed the surveying ampleness of examination. Bartlett's Test of Sphericity that is utilized to check to relationship among inert factors likewise bore witness to the fundamental relationship among latent components. By the Table 6, we could likewise dissect the instructive rundown and exploring barriers in the penetration of crop insurance in agriculture sector.

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Table 6: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi-Square	23779.019
	df	465
	Sig.	.000

After examining the sample adequacy, we compute the total variance explained by extracted variables. Therefore, Table 7 shows total variance explained by extracted factors. This study has used 36 items to exploring barriers in the penetration of crop insurance in agriculture sector. In this article, we used the components extraction eigenvalues greater than 1. Then, the results of factor analysis show that 36 items were categorized into 5 factors. In addition, the results of Table 7 provide that identified total 5 factors explained total 87.725 variance. Further, the exploratory component strategy was used with help of Principal Component Analysis and pivot was done by Varimax with Kaiser Normalization and and rotation was completed in 6 iterations.

Table 7: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.984	48.334	48.334	14.984	48.334	48.334	7.237	23.346	23.346
2	4.668	15.058	63.392	4.668	15.058	63.392	5.545	17.888	41.234
3	3.733	12.041	75.433	3.733	12.041	75.433	5.449	17.579	58.812
4	2.146	6.921	82.354	2.146	6.921	82.354	5.369	17.321	76.133
5	1.665	5.370	87.725	1.665	5.370	87.725	3.593	11.592	87.725
6	.404	1.303	89.028						
7	.375	1.209	90.237						
8	.320	1.031	91.268						
9	.311	1.005	92.273						
10	.282	.909	93.182						
11	.243	.783	93.964						
12	.213	.686	94.650						
13	.186	.599	95.249						
14	.183	.590	95.839						
15	.177	.572	96.411						
16	.126	.407	96.818						
17	.121	.391	97.209						
18	.109	.351	97.560						
19	.101	.325	97.885						
20	.083	.268	98.153						
21	.078	.253	98.405						
22	.067	.217	98.623						
23	.066	.211	98.834						
24	.059	.192	99.026						
25	.056	.181	99.207						
26	.052	.166	99.373						
27	.048	.154	99.527						
28	.045	.144	99.671						
29	.038	.123	99.794						
30	.033	.105	99.899						
31	.031	.101	100.000						

Extraction Method: Principal Component Analysis.

Figure 1 shows the scree plot. We used eigenvalues greater than 1 to extract the components. Therefore, Figure 1 shows that 5 factors were extracted which have eigenvalues greater than 1.
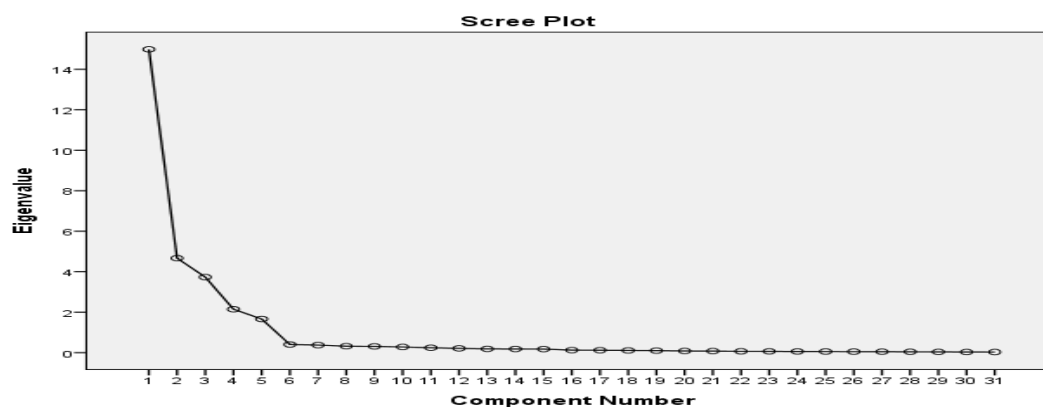
Figure 1: Scree Plot

Table 8 shows the results of rotated component matrix. Our results shows that the first factor is emerged as process related barriers (PRB) which explained 23.346% variance. Thenafter, the second factor is emerged as financial factors (FF) which explained 17.888% variance. Then, our results show that the third factor is emerged as lack of awareness (AWAR) which explained 17.579% variance. In addition, the fourth factor emerged as personal barriers (PBAR), which explained 17.321% variance. In last, fifth factor is emerged as risk perceptions (RP). Therefore, our results provide that total 5 factors emerged which exploring barriers in the penetration of crop insurance in agriculture sector and explained total 87.725 variance.

Table 8: Rotated Component Matrix[a]

	Component					Variance explained
	1	2	3	4	5	
PRB5	.925					23.346%
PRB4	.913					
PRB3	.908					
PRB8	.907					
PRB7	.894					
PRB2	.887					
PRB6	.881					
PRB1	.859					
FF7		.809				17.888%
FF3		.804				
FF4		.800				
FF6		.795				
FF5		.793				
FF2		.791				
FF1		.778				
AWAR3			.921			17.579%
AWAR4			.919			
AWAR6			.902			
AWAR5			.889			
AWAR2			.871			
AWAR1			.862			
PBAR4				.867		17.321%
PBAR3				.859		
PBAR2				.849		
PBAR5				.840		
PBAR6				.831		
PBAR1				.830		
RP2					.916	11.592%
RP3					.911	
RP4					.865	
RP1					.839	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 6 iterations.						

V. CONCLUSION

The aim of this study is to exploring barriers in the penetration of crop insurance in agriculture sector. Using the sample of 480 respondents, our findings indicate that five major barriers are emerged which influence penetration of crop insurance in agriculture sector. These factors has emerged as follows: (i) process related barriers (PRB); (ii) financial factors (FF); (iii) lack of awareness (AWAR); (iv) personal barriers (PBAR); and (v) risk perceptions (RP). Therefore, our results indicate that farmers are facing the process related barriers in getting the benefits and enrolment for crop insurance scheme in agriculture sector. Then after, our results provide that financial factors are also major barrier which influence the speed the implementation of crop insurance. The lack of awareness about crop insurance scheme like benefits of the crop insurance, authorized person to contact for getting crops insured etc. also influence the penetration of crop insurance. Personal barriers like literacy of people, don't have trust on insurance companies or banks providing insurance etc. are barriers in penetration of crop insurance. In last, our results show that risk perception is also major barrier in penetration of crop insurance. Therefore, the findings of this study provides several practical implications to policy makers, insurance companies and farmers. The findings facilitate in penetration of crop insurance in agriculture sector.

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Annexure: Questionnaire

Demographical Profile

Gender:

Male …….   Female…….

Age group:

Less than 30……..   30 to 40 ……..   40 to 50……   Above 50….

Education Level:

High school…..   Matriculation……   Senior Secondary…..   Graduate….. Illiterate….

Marital Status:

Married……   Unmarried……   Widow/Separated…….

Family Type:

Nuclear………   Joint………….

Barriers in the penetration of crop insurance in the agriculture sector

Following are the barriers in opting for crop insurance scheme by the farmers. Up to how much extent these barriers have made you think twice before opting for crop insurance, based on your real-life experience? Please respond on a five-point scale from strongly agree to strongly disagree:

Items	Barriers	SA	A	N	D	SD
	Personal barriers					
PBAR1	I am illiterate					
PBAR2	No one in my family or relatives have ever taken any insurance					
PBAR3	I don't have trust on insurance companies or banks providing insurance					
PBAR4	I don't have too much land for farming to get it insured					
PBAR5	I have not taken any crop loan so it's not required for me					
PBAR6	Insurance companies interfere too much in your farming once you take the insurance					
	Lack of awareness					
AWAR1	I have never heard about the crop insurance					
AWAR2	I am not aware about the benefits of the crop insurance					
AWAR3	I don't have any information about the crop insurance schemes of the government					
AWAR4	I don't have knowledge about the crop insurance companies					
AWAR5	I don't know the authorized person to contact for getting crops insured					
AWAR6	I have no knowledge about the basic terminology, like sum assured, estimated loss, or compensation and various other terms					
	Process related barriers					
PRB1	The documentation process is very difficult					
PRB2	Too many documents required to get the crop insured					
PRB3	The process is very time consuming					
PRB4	It is difficult to get the insurance claim from companies in case of loss					
PRB5	Providing document required related to land ownership is very difficult					
PRB6	It takes time in getting the claim from Crop insurance companies					
PRB7	Providing evidences to the insurance companies is very difficult for the loss					
PRB8	Terms and conditions of the insurance are not user friendly or attractive to the farmers					
	Risk perceptions					
RP1	I believe in other strategies for hedging risk than insurance					
RP2	I am willing to take risk due to crop loss					
RP3	My area does not face much natural disaster so don't require crop insurance					
RP4	Agriculture is not my main profession so willing to take risk					
	Financial factors					
FF1	Estimating the loss for the crop is difficult					
FF2	Crop insurance companies estimate less loss than actual and pay less compensation than actual					
FF3	Sum assured is very less or not enough to cover the major portion of the loss to farmers					
FF4	Fees or insurance premium charges is too high for the famers to afford crop insurance					
FF5	Hidden charges are there to be paid by the famers to get crops insured					
FF6	I don't have money to pay for insurance amount					
FF7	Government subsidies is too less to pay a portion for the crop insurance					