Farmers' Awareness and Purchase Behaviour Towards Crop, Cattle and Life Insurance: A Review Study in Haryana

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Abstract

India being an agriculture abundant country, highly depends on monsoon which is highly volatile and results into some operating risk in the agriculture of numerous crops. Therefore, it is indispensable to adopt Crop insurance in India to cover the risk associated with crops. Crop insurance means an insurance which insures farmers and crop products against their losses of crops due to natural calamities, such as drought, storm & overflows of river water. Crop insurance is very helpful to the farmers in protecting all such losses as it provides certain income to the farmers. Against these backdrops, the present study aims to extensively review the existing literature available on crop insurance in India. Based on the available review of literature, it can be said that limited studies have been conducted related to the farmers' awareness and purchase behaviour related to crop insurance, cattle insurance and life insurance in India. Further, the variables that affect the farmers' awareness and purchase behaviour related to crop insurance, cattle insurance and life insurance have not been clearly identified in a comparative manner so far. The findings of the study offer various useful insights to the policymakers. Crop insurance is a very emergent field in India, that is also an emerging profit making are for corporates as well. Therefore, policymakers should emphasis on farmer's awareness about crop insurance and its adoption.

Keywords: - *Crop Insurance, Awareness, Purchase Behaviour, Crop, Cattle and Life Insurance*

Introduction

Insurance is the most widely used tool to compensate the small numbers out of the funds collected from large no. of people as a premium. Insurance acts as a protection against uncertain and unexpected events that may occur in the future and cause losses. Insurance is a tool which is used to arrange the losses of a few people to extend over several people exposed to face parallel risk. It is a protection against financial loss arises due to unexpected events.

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Insurance companies collect premium to provide security for the purpose. The premium collected from the people is used to paid out of the losses by the insurance company. Insurance companies acts as trustee to the collected sum (Deshmukh *et al.* 2014). Insurance was started in 1666 in the world after the great fire of London which nearly destroyed the city. A society named as The Amicable Society for Perpetual Assurance Office, founded in 1706, was the world's first life insurance firm. The Amicable Society for Perpetual Assurance Office, the world's first life insurance company, was founded in 1706.

Life Insurance

A contract between two parties insured and the insurance company in which the company is liable to pay a certain sum of money to the nominee or the person assured on the happening of a particular event is called life insurance. The insured amount is paid during the date of maturity of the contract, on periodic intervals or unfortunate date, which occurs earlier. Also, a portion of amount known as premium is paid by the policyholder to the corporation. The Oriental Life Insurance Firm was the first life insurance company in India, founded in Calcutta in 1818.

General Insurance

General insurance generally means all the non-life Insurance (T. V, 2006). However, General Insurance in India is bifurcated as fire, engineering, marine, health, travel, motor, home, cattle, crop and miscellaneous insurance. It is a contract in which the corporation is obligated to pay a sum of money if a specific event occurs.

Crop Insurance

India is an agriculture abundant country as it accounts 18 per cent of the Gross Domestic Product (GDP) of India. India is the world's leading producer of pulses, wheat, rice, spices & spice product (Pandey 2009). Agriculture in India is highly depending on monsoon which is highly volatile and leads to some operating risk in the cultivation of various crops. The yield of agriculture in India is adversely affected by the natural calamities. Crop insurance and some certain provisions are needed to cover the risk associated with crops. Crop insurance can be a powerful tool which can fulfil our need.

Crop insurance means an insurance which insures farmers and crop products against their losses of crops due to natural calamities, such as drought, hail and floods. Agricultural risk runs with negative outcomes that arise from imperfectly predictable variables such as crop diseases and adverse climate factors like floods, storm & drought resource risk like non-availability or

poor quality of inputs, and price risks, which together are not under the control of the farmers. Crop insurance covers damages due to local calamities like hailstorm, landslide, and risk related to planting/ sowing/ of crops, loss to the standing crop and damages to post harvest crop. Crop insurance is very helpful to the farmers in protecting the all such losses as it provides certain income to the farmers.

Under such a situation crop insurance helps to protect the investment made by the farmers in the crop production & improves the risk behaviour dimensions of the farmers. It is also helpful to adopt new and improved technologies in their fields to increase the production. Crop credit insurance also reduce the risk of farmers to become defaulter of official credit. The compensation of insurances in crop failure enables farmers to reimburse their loans therefore he/she has not to seek loan from a private money lender such as Saahukars, relatives etc (Mani et al. 2012).

Cattle Insurance

The livestock insurance scheme is a scheme sponsored by the Central Government which was implemented on a pilot basis during the period of 2005-07 in the 10^{th} & 11^{th} 5-year plan in selected 100 districts. On a regular basis since 2008-09 the scheme has been implemented in 100 newly particular districts of our country. Under this scheme, the insurance of high yielding and crossbred buffaloes and cattle was done at their current maximum price. 50% of the premium of the insurance was subsidized. The Central Government borne the entire cost of the subsidy.

Literature Review

Quiggin *et al.* (1993) conducted an empirical analysis of the ethical hazards and hostile selection of crop insurance. The data set for the study was derived from the return survey conducted by the National Agriculture Statistical Service. The data were collected from more than 4000 farmers. The Cob-Douglas function of production, mean and estimated co-efficient values were calculated. The study concluded that insurance of production is based on specified production function.

Glauber and Collins (2000) examined the Effects of the Federal Crop Insurance Act (1980) being replaced with disaster programmes that farmers may rely on in the event of crop losses. The rating methodology was used in the study. They concluded that despite of considerable growth in the program, while replacing the other disaster programs, the crop insurance programs was proved fail.

Gupta (2000) examined the current status of the life insurance in rural areas in India and also tried to find the reasons for poor situation of life insurance markets in rural areas in India. To test the perception of the rural people about the life insurance, the data from 2000 rural customers has been collected. The study revealed interesting facts like rural people who have less income prefers life insurance for better social security. The study concluded that insurance penetration can be successful in rural areas with the help of accessibility, reasonable price, good communication and after sale services etc.

Mishra and Hisham (2002) investigated those factors which influences the use of hedging methods & crop insurance to manage the risk. The results of the study indicated that the farmer's decision to purchase crop insurance is positively influenced by education level, participation in other strategies to manage risk and debt control. The data has been collected from the 1994 Agricultural Resource Management Study (ARMS). The mean value analyses technique was used in the study. The study concluded that there are many options available for the farmers to manage agricultural risk with the help of various tools like hedging and insurance.

Irwin *et al*. (2003) evaluated the impact of alternative products of crop insurance on different coverage levels and locations with various yield risks. It has been observed that the premium costs exceed average payments have been resulted by group policies. The simulation parameter and correlation methods were used to analyses the data. It was found that risk is reduced more from individual revenue products than group policies but it results great decrease in mean proceeds. Revenue products has been favored by certainty equivalent returns and low frequency.

Serra *et al*. (2003) analysed the purchase decision related to crop insurance of a particular group of Kansas farmers by taking the data from the 1990s (a period that faced numerous variations on the central programs of crop insurance). The data used in the study was drawn from annual data for individual farms in the Kansas Farm Management Association from 1993 to 2000. The results indicated that the significant increase in government subsidies has been corresponded by the decrease in the elasticity of the demand of crop insurance.

Mishra and Goodwin (2003) examined the factors determining the purchase of revenue and crop insurance. The results indicated that a significant difference has been found in selecting each insurance plan. The study also revealed that the probability to adopt the insurance plan

has been determined by many explanatory variables such as education level of the operator, other income, productivity of the soil etc.

Featherstone *et al.* (2003) explored the purchase behaviour of the group of farmers of Kansas. The standard probit model was used to analyse the data. The results indicated by the end of the decade, with respect to the premium of the crop insurance there has been reduction in the elasticity of demand of crop insurance. Also, due to decrease in elasticity of demand for crop insurance, a significant increase in government subsidies can be seen. The results reflected the producers will be less sensitive for changes in premium due to attractiveness of new revenue insurance products.

Vedenow *et al.* (2004) shed some light on the Standard Reinsurance Agreements (SRA) which are helpful to deliver crop insurance products to the farmers. The study highlighted the methodology behind the SRA simulator and the provisions related to SRA. The simulator parameters were used to analyse the effect of returning of the SRA effects from underwriting crop insurance.

McPeak *et al.* (2010) shed some light on the importance and current status of livestock insurance schemes in Kenya and analysed the patterns of game play with the help of regression analysis. The study represented the summary background of the matter and gave explanation of game design of the area. It had limited use in a wide-ranging extension programme.

Thomas *et al.* (2010) explored the components of heterogeneity of producers in selection of crop insurance schemes among US corn manufacturers and recognizes neighbourhood spill over or agents on these decisions. The ordinary least squares regression was used to analyse the data. The consistent risk variables were proven to be very influential in theory. The study also indicated that when it comes to insurance product selection, producers are more likely to depend on the recommendations of other producers or agents.

Rao (2010) analyzed the challenges faced by insurance companies to frame the needs insurance products for comprehensive growth of the country. It was a conceptual study. The study concluded that policies introduced that many life insurance businesses are still not rural-centric and do not respond to the special needs of residents in rural areas. The study also suggested that, in order to popularise life insurance, consumers should research the rural market, assess the individual demands of each sector, and develop creative products to meet the needs of the people in order to achieve the goal of inclusive growth.

Gera (2011) analysed that in India's life insurance service, significant conceptual and empirical interrelationships between service encounter factors of perceived agent service quality, perceived value, and their link to behavioural outcomes of purchase, referral, and complaint intention were discovered. The data was collected from 258 customers of life insurance and was analysed through AMOS version 4.0. The core agent service quality traits of product knowledge, empathy, and dependability and trust were revealed to be critical antecedents of favourable behaviour outcome in the study.

Kumar *et al.* (2011) analysed the Farmers' perceptions and awareness about crop insurance. The study reported that the findings of a poll of 600 farmers to gauge their opinions on various aspects of crop insurance plans Farmers' risk-adjustment mechanisms were investigated using the Crop Diversification Index. The study employed the Probit and Logit models to assess farmers' knowledge of crop insurance. Tabular analysis, index numbers, ranking procedure, and functional analysis were used to analyse the study's findings. The crop insurance policy has been proven to be popular among paddy growers in Tamil Nadu.

Hoag and Mu (2011) in Miyun County, Northern China, the efficiency of existing subsidised crop insurance products (SCIP) was investigated. Non parametric tests and a logit regression model were employed to test the data. According to the study, producers who are more at risk should be more likely to seek crop insurance in order to realise the benefits of SCIPs due to crop insurance's adverse selection. The study also looks at the benefits and drawbacks of an increasing interest in weather index insurance.

Finger (2012) tested the impacts of the effect of data aggregation and farm-level crop acreage on the degree of the natural hedge, i.e., price-yield correlations, an important topic in risk modelling and management, was explored. The data was gathered from Swiss farm-level bookkeeping records from 2002 to 2009 in order to assess price-yield correlations on a farm- and aggregated-level. The study also discovered that a 1% increase in maize and intensive barley acreage causes a 20.02 and 20.08 change in the correlation, respectively.

Boyd et al. (2013) looked at the history of livestock mortality insurance and the issues it faces in order to have a better grasp of the topic. It was a side-by-side comparison of cattle and crop insurance. The research included history and development information on animal mortality insurance, as well as the key contrasts between livestock mortality and crop insurance. Multistage production, consequential losses, occasional large event losses, animal health management, moral hazards, and adverse selection were all cited as obstacles and complications in livestock insurance.

Bharti *et al.* (2014) studied the Crop insurance uptake in Bihar is influenced by a number of factors. By selecting two villages from each of Bihar's three Agro-Climate Zones, a multistage stratified random selection method was applied. A total of 100 farmers were questioned in each village. The collected data was analysed by using multiple regression method. The variables such as age, education and category contributed significantly on adaptation of crop insurance. The study found that all the districts that were selected for study shows that casts, age, education, income and category of farmers have significant effect on adaptation of crop insurance.

Paulson and Babcock (2014) examined the expansion and rising costs of centralised crop insurance in the United States The study's data came from the Risk Management Agency, and it was used to show historical trends in crop insurance programmes and to see how a per-acre cap would affect premium assistance. It was discovered that establishing a per-acre cap on premium assistance could result in significant savings. The study also concluded that the expenditures of premium subsidy has reduced 40 % by the $20 per acre cap.

Liesivaara and Myyra (2014) investigated the demand and factors affecting the demand of crop insurance in northern EU. The choice experiment (CE) data was analysed with the help of mixed logit models & the distribution of the farmer’s willingness to pay (WTP) for crop insurance has been derived. To test the effect of price anchoring, a split sample approach with fluctuating premium vectors has been used. The demand for products of crop insurance in Finland was found increasing. The demand for crop insurance products was found higher among the young farmers and the farms with more arable agricultural land. The willingness to pay for crop insurance products varies from farmer to farmer.

Hungerford and Goodwin (2014) investigated the effect of premium of crop insurance which is determined by the small samples of yields and both are correlated. The study was based on US agriculture policy data. The Iman- Conover technique and Gaussian copula technique were applied to analyse the collected data. The study concluded that there is great variation among the estimates of copula parameter and the premium rates derived from the estimates of the parameter.

Woodward *et al.* (2014) studied the past loss experience of crop insurance programs of USA. It was a conceptual study which based on Risk Management Agency data. The study concluded that the dominant share of the aggregate policy premiums & liability has been represented by corn & soyabeans. The study also revealed the important measures and means to assess and

isolate the implications of the rate changes and to link the causes of loss with the changes in the rates.

Osipenko and Odening (2014) explored the to discuss the market dynamics for multi-year crop insurances and to aggregate demand for single-year and multi-year crop insurance contracts. Many year-based insurance contracts will be given to the heterogeneous risk averse farmers. The insurance choices of the farmers have been based on intertemporal utilities. The study found that simultaneous demand for insurance contracts have been found in the competitive insurance markets. The study also highlighted that the market penetration of the insurance products has been enhanced by the introduction of the multi-year contracts.

Bulut and Collins (2014) examined the options proposed at the time of the act for agriculture, 2014 related to the choice of the farmers between crop insurance & other revenue options. The influence of the selected programmes' risk-reduction effectiveness on farm revenue distribution has been studied. The Copula technique was used on historical data to assess the relationship between yield and prices. There was no effect of farm supplemental revenue schemes on crop insurance options. A crop insurance plan paired with supplemental revenue insurance plans can be used as a substitute for mandatory area for crop insurance plans.

Selvaraj (2015) analysed the awareness and satisfactory level of farmers about the schemes of crop insurance. In this research study convenience sampling method was used. The study was carried out by adopting the formal interview technique. The interview was taken of 600 farmers. The study revealed that the implementation of crop insurance is the need of hour as observed by the forecasting analysis. Despite of launching of various agricultural insurance schemes is serving a very limited purpose because 44% of the sample respondents are still having low awareness about the crop insurance.

Bhardwaj (2015) explored that if the proper support mechanisms was available to the farmers so that they can adopt the new technology, what will be the impact of the seeds. In addition, government reports and newspaper articles were reviewed and interviews were conducted in Maharashtra and Delhi. The study was conducted in Vidarbha, Eastern Maharashtra. It was found that the problems faced by farmers are much deeper than what technology can solve or which have been addressed in the GM debate. The study also revealed that the cotton farmers face persistent problems in the agricultural production process that increase their production costs.

Patnaik and Narayan (2015) shed some light on the the people living in disaster prone areas of the rural India and what mechanisms they adopt to cope up with climatic changes, their

consumption behavior and effectiveness. The probit and multivariate model was used to analyse the data. The study is based on the empirical analysis. The study concluded that the consumption of households can be smooth by liquidating their assets or reducing their consumption. The limitations of the study were that the measures adopted for coping the ex-post risk were less successful.

Wang *et al.* (2016) analysed Crop insurance buying decisions are influenced by a number of factors. China's Inner Mongolia region. The survey method was utilised to gather the information for the investigation. The probit regression model was used to analyse the collected data. Higher agricultural yields and output are the outcome of increased crop input use, according to the research. Crop insurance can also help small farmers in China get out of poverty by increasing their use of it. The study's limitation was that it was limited to a single geographical location, Inner Mongolia, China.

Sarangi and Panigrahi (2016) studied the crop insurance issue and challenges in India for which secondary data was used. The regression model was used to analyse the data. The study found the various issues in crop insurance such as technical problems and geographic risk. Also, area yield data was not collected for all crops and time-series aria yield data is insufficient for a given region. The limitation of the study was that it was limited reach, compulsory coverage, lack of transparency etc.

Zhao *et al.* (2016) conducted a research in which the effect of crop insurance on farmers' income has been assessed in the inner-mongolia region of China. The data used for the study was collected with the help of the survey method. The study found that crop insurance does not have much effect on farmer's income under the current Chines policy. The limitation of the study is that it includes data of a specific area of China.

Glauber (2016) examined the programs in the context of WTO disciplines relating to domestic support, the United States provides crop insurance (WTO). The study focused on a thorough evaluation of the Uruguay Round Agreement on Agriculture's green box provisions, with a special focus on eligibility requirements for crop yield and revenue insurance programmes. The study concluded that agricultural insurance policies. The study found that the WTO rules have reduced green box policies and agricultural insurance policies were notified by a few developed countries. In recent cases in WTO dispute settlement and investigations in domestic countervailing duty, programs for crop insurance have been challenged.

Mathew and Sivaraman (2016) analysed the macroeconomics factors determining the demand for life insurance in India. Due to the fall in life insurance activities in India, there is room for research into the factors that influence life insurance demand. The macroeconomic drivers for life insurance demand in India were studied using econometric approaches such as the ADF test, Granger Causality test and VECM models. A product-by-product examination of life insurance demand was not done due to a lack of unit-level data.

Walter and Preston (2017) focused on the collaboration between crop insurance & the hedging which was analysed through the Monte Carlo simulation model. Revenue protection and the greatest two levels of coverage are found on the efficient frontier, according to the study. On the efficient frontier, the level of hedging ranges from 0-55 percent of real production history. The study concluded that optimal hedging amount has been negatively impacted 26% by increment of 5 % in coverage level.

Kumbalep and Devaraju (2018) studied the awareness & perception of the farmers about the crop insurance in Kolar District of Karnataka. Primary and secondary data was used for analysing the awareness & perception of the farmers about the crop insurance and concluded that farmers in Kolar district are dependent on farming and other sources for their livelihood. The finding revealed that good awareness creation and providing crop insurance at their familiar places like gram panchayat, credit co-operative societies and post offices will increase the percentage of farmers using crop insurance.

Varadan and Kumar (2018) examined the impact of crop insurance and various schemes that were used for rice farming in Tamil Nadu. The study included 500 respondent's farmers. Simpson Index of Diversification (SID) was used to calculate the extent of the crop diversification used by the farmers. They concluded that the farmers face many problems such as monotonous & time-consuming procedure, non-availability of crop loan & information from officials etc.

Ampaw *et al.* (2018) investigated the determinants of life insurance agreements among male & female households in Ghana. The standard survey method was used to collect the data from 775 male & 233 female households from 6 rounds in Ghana. The study explored some determinants, with the help of these determinants, the insurers could better regulate and maximise their sales of their products by taking the benefit of gender differences. Gender dynamics was explored as the determinant of demand for life insurance in Ghana, a developing country.

Chattopadhyay *et al.* (2018) studied the association between weather change, climate & farmer migration in Bihar, India. The study shed some light on the influence of weather and climate circumstances on the migration decisions of the farmers and socio-economic characteristics of migrating & non-migrating farmers, households. Climate change and socio-economic factors are two major factors influencing farmer's perception. But a significant difference has been found among migrating and non-migrating farm households in the instruction's utilization, knowledge, agriculture extension services and technology-based climate.

Hazarika and Yasmin (2018) completed a study titled "Adaptability of Crop Insurance as a Risk Mitigation by the Farmers of Assam – An Analysis of Modified National Agriculture Insurance Scheme (MNAIS)" to know the key factors that influence the participation of farmers of Kamrup and Dhubri (Assam) District in adopting the crop insurance. Both primary & secondary data were used and the collected data were analysed by logit model. It was found that the factors influencing the purchase of crop insurance among the insured farmers under the MNAIS. Limitation of the study is that it has been completed on data of one state of India.

Balachandran and Dhal (2018) studied the association of money lenders and the farmers in the existence of trade loan tie with the help of logit regression model, descriptive statistics. The data was collected from farmers in a main potato manufacturing districts of West Bengal, India. The study explored that defaults on loans for agriculture has been increased by trade loan nexus through two channels. Growing loan requirement, reimbursement obligations with high input prices & interest rates were the part of first channel. Low prices of the agricultural outputs mean the low income of the farmers was the second channel. The practical implication of the study was to try to reduce the dependency of the farmers on the money lenders.

4. Research Gap

Based on the available review of literature, the important gap has been identified for the purpose of further study. It was found that the limited studies have been conducted related to the farmers' awareness and purchase behaviour related to crop insurance, cattle insurance and life insurance. The previous research studies related to crop insurance mostly discussed about the adoption of insurance and various schemes implemented by the Government. The research studies related to life insurance have been conducted on the other sample units like woman, educated people, government salaried people and private salaried people but not specifically

on the farmers of Haryana. The variables that affect the farmers' awareness and purchase behaviour related to crop insurance, cattle insurance and life insurance have not been clearly identified in a comparative manner so far. In the proposed research study, unexplored variables affecting the purchase of crop insurance, cattle insurance and life insurance would be studied. Most of the reviewed studies have been found conducted separately by taking the above-mentioned variables. Therefore, an endeavour has been made here to assess the "awareness and purchase behaviour of the farmers to crop, cattle and life insurance in Haryana''

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