

RISK MITIGATING INSURANCE PRODUCT FOR SEASONAL PADDY FARMERS

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ABSTRACT

Through insurance is a flexible contract designed to mitigate risk, insurance companies are less interested in farmer, crop and livestock insurance because of low benefits. Furthermore, the insurance scheme implemented by the Crop Insurance Board of Sri Lanka is not beneficial for the farmers and the majority of farmers obviously said that it was an unrewarding policy. As a result, appropriate life insurance policy to insure seasonal paddy farmer has not emerged despite they face high risk. Hence, the main objective of this study was to develop a suitable life insurance policy to seasonal paddy farmers identifying the factors motivating farmers to purchase an insurance policy and expected attributes of an insurance policy. This study used primary data collected from a randomly selected sample of hundred paddy farmers in Gampaha district through a questioner survey. Data were analyzed with binary logistic regression and cluster analysis. Results revealed that, 87% of the respondents were aware of the life insurance while 71% of them were preferred to purchase a life insurance policy. Thus, 25% of the total sample had life insurance policies. Binary logistic regression results revealed that farmers' age, cultivating season, irrigation type, crop diversification, paddy income, premium interval ($p < 0.05$) education and number of dependents ($p < 0.1$) increased the likelihood of having an insurance policy. The cluster analysis resulted waiver of premium and dividend (100%) as the most preferred attributes of a life insurance policy followed by a pension fund (94%), a premium-holiday feature (97%), hospitalization (99%) and life cover with fund building (99%) respectively.

Emergency withdrawal and loyalty reward were preferred by 88% and 90% respectively while spouse and child (82%) and accident cover (77%) were preferred respectively by respondents. Adult surgery benefit (66%) and critical illness benefit (71%) were found to be least preferred attributes. Thus 99% of paddy farmers preferred to enjoy risk payment while they are alive. Hence, any life insurance policy design to cover paddy farmers should be prioritized the attributes identified above.

Keywords: Seasonal, Mitigate, Insurance, Farmers, Risk, Policy

INTRODUCTION

Risk can be defined as the potential loss of equity capital. It has two components: uncertainty and exposure and if both are absent, there is no risk (Parihar 2003). For risk to materialize there should be exposure to the uncertainty. Risk and uncertainty are easy to mix up since they are similar to each other and hard to interpret (Boehlje *et al.* 1988). Risk in the agricultural sector has traditionally been classified into production risk, financial risk, market risk and institutional risk. Another classification into which risk and uncertainty can be categorized are strategic and tactical risk. Tactical risk includes business risk and financial risk, which are the traditional risks perceived by agribusiness firms and farmers. Business risk is defined as the inherent uncertainty in the performance of the firm independent of the way it is financed (Iturrioz 2009). Tools for risk management in agriculture are distinguished in strategies concerning on-farm measures (diversification of the production programs) or risk sharing strategies like marketing contracts, production contracts, hedging on futures markets, or the participation in mutual funds and insurances. Agricultural insurance is a special line of

property insurance applied to agricultural firms. Basically, agricultural insurance is designed to provide cover for financial losses incurred due to reduction in expected outputs from agricultural products including crops, livestock, fisheries and forestry (Iturrioz 2009).

Seasonal paddy farmers play a key role in Sri Lankan agriculture. Any unexpected event such as death, disability or disease can lead farmers to poverty if unsecured. Hence, in Sri Lanka it is a responsibility to protect the paddy farmer and his/her dependents through a risk management tool as citizens of an agricultural country. Several studies argued that insurance in agriculture sector is less attractive to providers since they are less reverting to the provider. In country smallholder paddy farmers are less aware of strategies available to mitigate risk even they face different risk. Smallholder paddy farmers are exposed to risk over to several reasons, they involved irregularity of income, seasonality of production, unpredictable weather pest and diseases. On the other hand farmers are unable to pay regular insurance premium devoted by providers as a result of irregularity of income. A very few researches have been done on agriculture insurance product preferred by smallholder paddy farmers. Indeed, there are many government interventions to protect local paddy farmers and to mitigate the risk. Farmers' pension scheme and crop insurance scheme are some examples. But, those things do not practically help to the farmers. In my pre-research problem identification session, it has been noted. Farmers were really disappointed on government interventions. When something bad happened to them, they all need a hand to overcome their difficulties. Otherwise, titular government interventions are not helpful for them. For instance, if the farmer died accidentally while paying second premium, how will the dead farmer's dependents be treated according to the insurance scheme implemented by the Crop Insurance Board of SL? Does the Crop Insurance Board pay all the other premiums themselves until the insurance policy becomes matured? But in case of my insurance policy, there will be a special benefit called iW aiver of Premium to help dead farmer's dependents in that kind of a situation. Consequently, the study was conducted to develop a suitable life Insurance product that fulfills the specific needs of seasonal paddy farmers with two specific objectives; i). to determine the factors affecting on having an insurance product ii). to identify the attributes of an Insurance product preferred by paddy farmers.

METHODOLOGY

The study was conducted in Gampaha district of Sri Lanka during 2015 covering both yala and maha seasons. Gampaha district has achieved tremendous development in repairing of roads, irrigation, agriculture, education, water supply, housing, electricity supply, fisheries industry, upgrading of welfare activities as well as raising the economic standards of the community, improving the tourism industry and government service. The Government has renovated 703 irrigation projects at a cost of Rs. 208.33 million, during the past five years. Government has implemented 89 agricultural development projects in 2007 at a cost of Rs. 54.1 million. In 2008, another 104 projects were implemented at a cost of Rs. 83 million and 69 projects at a cost of Rs. 122 million in 2009. With these developments, the farmers were able to cultivate 4000 acres of abandoned paddy fields during this period. Apart from paddy cultivation; fruits comprise a major portion in the agriculture sector (Performance report 2012).

A randomized sample of 100 respondents from 10 Grama Niladhari (GN) divisions are which highly contributed to paddy production (228A-Thiththalapitigoda, 229-Aluthgama-Bogamuwa-North, 228-Keselwathugoda, 224-Ihalagama, 230-A Morenna, 230-Mahipalagoda, 34-Keppetiwalana, 223-Medagama2, 231Yakkala-West, 28E-Webodamulla) were used for the questioner survey. Using the Agrarian Service Centers records in Gampaha district, 10 paddy farmers were randomly selected from each GN division. In additions to the survey, group discussions with relevant parties in insurance companies and case studies were conducted to fill the gaps in available information. Both qualitative and quantitative methods were used in data analysis ensure that the data were effectively interpreted. The data obtained from the questionnaires were grouped based on the research questions and analyzed using descriptive statistical methods such as percentages and frequencies. Binary-Logistic regression and Cluster analysis were the quantitative techniques which were utilized in data analysis.

Logistic regression was used to determine the factors that had effect on having an insurance product. The binary dependent variables were; either buying (0) or not buying (1) an insurance product. Accordingly the independent variables are shown in Table 1.

Table 1: The independent variables used to analyze the purchasing decision of paddy farmers on an insurance product

Independent variable	Description	Measurement
Age	Age of the farmer to next year	19-35 years (0) 35-50 years (1) 50 < years (2)
Education	Education Level of the farmer	None (0) Primary Education (1) Secondary Education (2) Higher Education (3) Other (4)
Number of dependents	Farmer's Dependents	Number
Farming seasons	Farmer's cultivating seasons	Yala (0) Maha (1) Both (2)
Income	Farmer's total paddy income	Rupees per Season
Farm size	Farmer's farm size	Number of Acres
Irrigation type	Method of irrigation that farmer used	Rain-fed (0) Irrigated (1) Both (2)

Crop diversification	Farmer's crop cultivating behavior in paddy land	Only Paddy (0) Cultivates more crops other than Paddy (1)
Household expenditure	Farmer's total expenditure on household	Rupees per Month
Insurance awareness	Farmer's awareness about life insurances	Yes (0) No (1)
Premium interval	Farmer's preferred premium interval	Monthly (0) Seasonally (1) Annually (2)
Policy term	Farmer's preferred policy term	5-15 years (0) 15-25 years (1)

Cluster analysis was used to identify the attributes of an Insurance product preferred by seasonal paddy farmers. Table 2 shows the different insurance product attributes under different cluster groups.

Table 2: The insurance product attributes under different cluster groups

Clusters in group 1	Clusters in group 2	Clusters in group 3
Waiver of premium (WOP)	Living benefits	Hospitalization
Additional life cover	Maturity benefits	Accident cover
Emergency withdrawal	Death benefits	Spouse cover
Deviants		Child cover
Premium holiday		Adult surgery benefit
		Critical illness benefit

feature

Top-ups

Loyalty reward

Fund building

Without fund

building

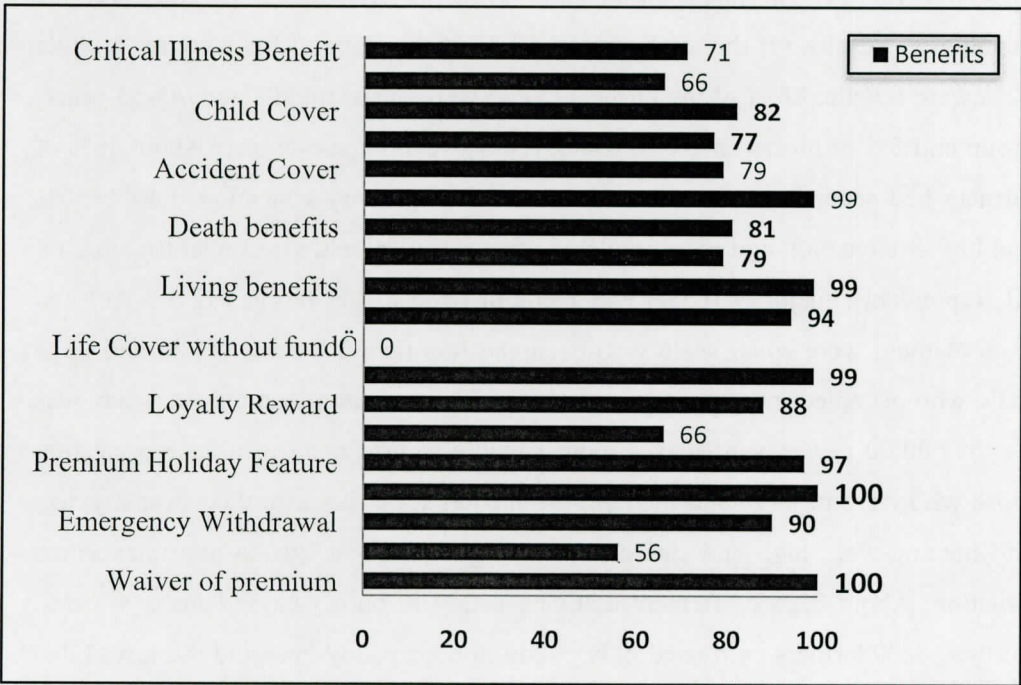
Pension plan

RESULTS AND DISCUSSION

The descriptive results provide more information for better development of life insurance product for paddy farmers in order to understand and interpret the quantitative results. Of the total sample, 88 % of the respondents were male while 12% were female. Most of the farmers (57%) were in the middle age (45-55 years) group and 5% of farmers were in young (20-35 years) age category. About 46% of farmers had secondary education while 42% had primary education. Further, 5% had higher education and 6% completed other technical and vocational training. Of all respondents, majority (65%) was medium scale paddy farmers (2.5-5 Ac) and rests of them were small scale who occupied less than 2.5 acres (19%) and large scale who occupied more than 5 acres (16%). The average income from paddy was Rs. 65,600.00 per season. It was more suitable to go for an insurance protection those who were in large and medium production scale, because their property size and income were high and risk also very high for a loss due to any unexpected situation. About 82% of farmers cultivate paddy in both yala and maha seasons. Further, 88% farmers cultivated only paddy in their paddy land and the rest (12%) cultivated vegetables and fruits other than the paddy. It implied that, most of the farmers were specified in to single crop (paddy) rather than diversified the cultivable land. That is more risky, because unfavorable weather and climatic conditions might be affecting to the final production. When consider about the use

of an insurance product by paddy farmers, 87% were aware on insurance products at least basic knowledge about insurances attributes. As well as, 25% of respondents were already insured by different insurance companies in Sri Lanka. Considering the paddy farmers' premium paying ability most of the respondents (83%) preferred seasonal premium intervals because they receive their income seasonally and their income is not regular and 89% of the farmers were preferred the minimum policy terms which was 5-15 years for the insurance product maturity. Therefore they can have maturity benefits within a short time period. Simply, the paddy farmers would like to have a life insurance product that reaches to the maturity in short time and gives living benefits for a long time. Farmer perceived insurance benefits are categorized in the figure 1 below.

Figure 1: Farmer preferred insurance benefits



Source: Survey data 2016

Table 3 summarized the regression results, the factors affected on having crop insurance product by paddy farmers.

Variable	Z value	P value
Age	2.74	0.006*
Education	1.76	0.079**
Number of dependents	-1.64	0.101**
Farm size	-1.07	0.286
Farming seasons	2.02	0.043*
Household expenditure	-1.12	0.261
Paddy income	-2.30	0.021*
Insurance awareness	0.04	0.965
Premium interval	2.22	0.026*
Irrigation type	-2.18	0.029*
Crop diversification	2.24	0.025*
Policy term	-0.05	0.957

Table 3: Significance of the factors affecting on having an insurance product by paddy

*Significant at 5% ** Significant at 10% Log-Likelihood = -39.292

Source: Survey data 2016

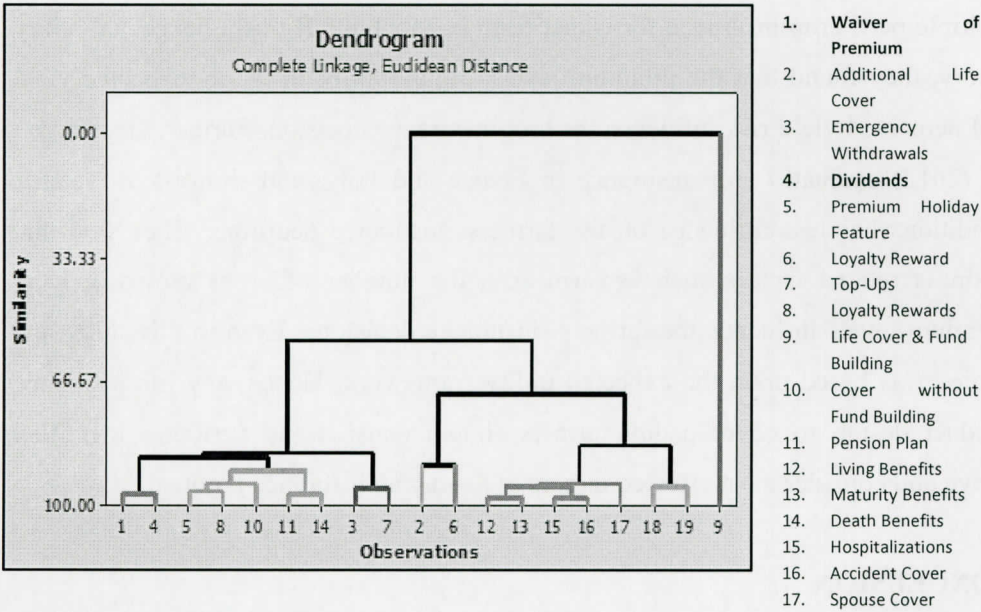
The results indicate that the age of the paddy farmer was a significant factor with having an insurance product. Early ages people have high willingness to buy insurance product. Because they have more years to live, more goals to achieve as well as they have to touch wide risky area in upcoming ages. On the other hand, the cultivating season and paddy income were significant with having an insurance product. When they cultivating both seasons they can have high income and it causes for the ability of paying premiums for the insurance without financial

difficulties. As well as paddy farmers always requires comfortable premium intervals when they have ability to pay for insurance from paddy income. It directly causes for the positive significance of premium intervals with having an insurance product. Irrigation and crop diversification also have positive significance because when using only rain water, it has a big risk to face any unexpected issues because they totally depend on rain water and it effects to the yield and final paddy income. So it creates the need of an insurance protection. But if they have other irrigation options the risk area may decreases. As well as, farmers cultivates other crops the farmers can have external income while having paddy income. That extra income also leads paddy farmer to invest money for future security and protection through insurance plan.

Further, education and number of dependents also shows positive significance with go for an insurance. A good education background helps farmers to select suitable financial protection plan wisely. When the number of dependents increases the risk area also expands. Hence, it makes the insurance protection for the dependent in an emergency issue.

The study was further extended to find out the attributes of an insurance product according to seasonal paddy farmers' preferences. Every insurance product has its own attributes that helps to get the customer attraction. Likewise, it depends on the target customer's preference.

Figure 2: Attributes of an insurance product according to seasonal paddy farmers' preference



According to the cluster analysis results (Figure 2), the waiver of premium and dividend (100%) grouped as the most preferred attributes of a life insurance product followed by pension plan (94%), premium-holiday feature (97%), hospitalization (99%) and life cover with fund building (99%) respectively. Emergency withdrawal and Loyalty reward were preferred by 88% and 90% respectively while spouse and child (82%) and accident cover (77%) were preferred respectively by respondents. Adult surgery benefit (66%) and critical illness benefit (71%) were found to be least preferred. Based on the results, it can be concluded that 99% paddy farmers prefer having benefits when they are alive. The choice to purchase insurance also depends on the premium level, expected indemnity, risk level and availability of alternative risk management tools (Makki *et al.* 2001). Ginder & Aslihan (2006) shows that the price of the insurance is the most influential factor determining the farmers decision to have insurance or not and what type of insurance product that is chosen. In a study made by Shaik (2008), the farmersí demand for insurance is analyzed by estimating the price elasticity for demand. The choice to purchase insurance or not

is based upon the expected utility theory and the farmers' risk preferences. The findings revealed that the farmers that perceive a greater yield risk are more interested to buy insurance. Smith & Baquet *et al.* (1996) evaluate the demand for multiple peril crop insurance for wheat farm in Montana. By using expected utility theory, they found that the premium levels, high level of debt use, expected yield and perceived yield risk influence the crop insurance decision. Further, Geoffrey *et al.* (2012) evaluates crop insurance in France and Italy, and shows that weather conditions has less influence on the farmers' insurance decisions. They find that business related factors such as farm size, the number of crops grown and the premium levels influence the farmers' insurance decisions. Even in this study, the choice was based upon the expected utility framework. Hence, any life insurance product design to cover paddy farmers should consists the attributes identified above and consider most affected factors of having an insurance product.

CONCLUSION

In conclusion to this study, it should be paid more attention to the affecting factors and most preferred attributes when design the life insurance product for paddy farmer to mitigate the risk. More living benefits with pension fund and seasonal premium intervals should be highlighted through the product when it introduce to the farmers. And it will cause for the success of the product marketing.

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