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The Effect of Insurance Knowledge on the Sales of Insurance

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Abstract

The world we live in is full of uncertainties and risks. Individuals, families, businesses, properties and assets are exposed to different types and levels of risks, so the importance of insurance is imperative for everyone.

As regards that there have been few investigations about the effect of education on the sales of insurance; the insurance market suffers from a lack of study about the effect of insurance knowledge on the sales of insurance. Hence, for the first time, this research investigates about the effect of insurance knowledge (individuals who have knowledge of insurance either their education or their occupation is related to insurance), as a substantial factor, on the sales of insurance in Iran. Our main hypothesis is that the insurance knowledge has the positive effect on the sales of insurance. In order to test this hypothesis, we consider travel insurance. In the

first step, we test the effect of risk avoidance along with other individual's characteristics such as gender, age, marital status, occupation, education, Individual travel, group travel, air travel, maritime trip and land trip on the sales for travel insurance. Then in the second step, for investigating about the effect of insurance knowledge, we divide the population of interest into two groups, one with insurance knowledge and another one without insurance knowledge and compare risk aversion level of these two groups. The methodology of use in this study, questionnaires that gathered from stratified random sampling and applying logistic regression model. The results indicate that risk avoidance has a positive relationship with travel insurance sales. In addition, risk avoidance level is higher in a group with insurance knowledge. Hence, insurance knowledge has a positive relationship with travel insurance sales.

Keywords: Travel insurance, Insurance knowledge, Risk avoidance, Insurance sales

1. Introduction

The world we live in is full of uncertainties and risks. Individuals, families, businesses, properties and assets are exposed to different types and levels of risks, so the importance of insurance is imperative for everyone. Today insurance industry plays important role for developing countries and developing insurance is seen as an indicator of the degree of development. Insurance along with other sectors of the economy, increases investment incentives. Hence, it has a significance role in the development process. With regard to the above, finding effective factors on the sales of insurance have important role in marketing, increasing sales of insurance and in general in developing insurance industry. For the very first time, current research has special look to individual insurance knowledge as one of the influential key factors on sales of insurance. In this research believe that insurance knowledge has substantial impact on the insurance industry's growth. By investigating the insurance information worldwide, we find some countries, despite the low level of national income per capita, show high insurance capitation which is not possible unless with developing the culture and knowledge of insurance. To investigate the effect of insurance knowledge on the sales of insurance, we use the concept of risk aversion that also it is an important factor for sales of insurance. In a manner that first, we investigate the effect of risk aversion on the sales of insurance, then, determine the risk aversion level in individuals with insurance knowledge and without insurance knowledge and consequently obtain the effect of insurance knowledge on the sales of insurance.

Since the risk avoidance plays a key role in this research, first we briefly discuss about it. Risk aversion can be defined as willing to pay more than expected loss in order to eliminate the risk. To investigate about the relationship between risk avoidance and travel sales of insurance, logistic regression model is used. In order to quantify the risk avoidance factor, questionnaire that consisted of twelve questions with yes or no answers, is used.

However, in determining the individuals' risk avoidance, some factors such as gender, age, marital status, occupation, education, Individual travel, group travel, air travel, maritime trip and land trip have influence on individuals' risk avoidance that must be include in model. Hence, these factors along with risk avoidance variable that its values are obtained from

questionnaire include in the regression model as explanatory variables and examine the relationship between risk avoidance and dependent variable, which is insurance demand. With examining the relationship between risk avoidance and sales of insurance, we can train individuals that their risk avoidance level is toward sales of insurance (It is expected individuals that their risk avoidance is completely toward sales of insurance, are those with insurance knowledge).

So the questions can be posed in this study are as follow:

Is the level of risk avoidance in individuals with insurance knowledge more than individuals without insurance knowledge?

Will the sales of insurance increase with increasing individuals' insurance knowledge?

The research hypotheses are as follow:

There is a positive statistically significant relationship between risk avoidance and the sales of travel insurance.

The level of risk avoidance in individuals with insurance knowledge is higher than individuals without insurance knowledge.

There is a positive statistically significant relationship between insurance knowledge and the sales of travel insurance.

2. Background

In this section we present such studies that are in field of impressible factors on the sales of insurance such as risk avoidance.

Li (2008) examined cash value life insurance demand and term life insurance demand. Based on their findings, households that did not purchase any kind of insurance have lower education level, they were risk aversion, they had no incentive to leaving bequest and they were relatively young. Education level, positive attitude toward leaving bequest and spouse employment have positive relationship with term life insurance demand. Variables such as age of head of household, number of children and income have positive relationship with cash value life insurance demand. Although variables such as spouse employment status and health status of head of household have not significant relationship with term life insurance demand, but they impressed the demand for term life insurance.

Daifeng (2009) in their study found a significant and positive correlation between the decision to purchase life insurance and subsequent mortality, conditional on risk classification. Individuals who died within a 12-year time window after a base year were 19% more likely to have taken up life insurance in that base year than were those who survived the time window. Moreover, as might be expected when individuals have residual private information, we find that the earlier an individual died, the more likely she was to have initially bought insurance.

Ioncica, Petrescu and Constantinescu (2012) conducted a study about clients' attitudes toward

insurance services and the role education plays in this field. In Romania insurance market, there is a discrepancy between the high potential demand and the rather low real demand. This discrepancy can be explained by a series of economic reasons, as well as by the lack of education in the field. They showed that education has an extremely important role as it influences the insurance purchase decision.

Vanessa B. Sheppard., et al. (2015) examined that factors that are associated with higher endorsement of screening, they conducted a cross-sectional study of 200 women of African origin recruited via community-based outreach activities in Washington, DC. Endorsement of screening was assessed via self-report. The primary independent variables were cancer knowledge and English-language proficiency. Information was also collected about access, cancer-related beliefs, and prior breast screening behaviour. The showed result of highlight the importance of improving cancer knowledge and reducing barriers related to language and insurance.

Jing Caia, and Changcheng Song (2017) studied that examined the effect of experience and knowledge on weather insurance adoption. They conducted insurance games with farmers, and find that the treatment improves real insurance take-up by 46%. The effect is not driven by changes in risk attitudes and perceived probability of disasters, or by learning of insurance benefits, but is driven by the experience acquired in the game. They find that provide information about the pay-out probability has a strong positive effect on insurance take-up, then shows that s, the probability information has a greater impact on take-up than does the disaster experience.

3. Data

This research is conducted through stratified random sampling in Tehran and Gorgan cities in 2017 using questionnaire. The sample of interest consists of drivers and has two strata, first one with insurance knowledge and second one without insurance knowledge. As mentioned earlier, in this study individuals who have knowledge of insurance either their education or their occupation is related to insurance. With applying stratified random sampling and using Neyman allocation, the sample size is 650, the size of first stratum (with insurance knowledge) is 250 and second stratum (without insurance knowledge) is 400. Then, questionnaire was distributed among them.

Reliability is a technical characteristic of questionnaire measurement tool. Reliability is used to describe the overall consistency of a measure. A measure is said to have a high reliability if it produces similar results under consistent conditions. Also the reliability of a research instrument concerns the extent to which the instrument yields the same results on repeated trials. In this study, reliability coefficient calculated using Cronbach's alpha. The closer Cronbach's alpha is to one, the more homogeneous questions are. Cronbach suggested that 45% coefficient is low, 75% coefficient is moderate and acceptable and 95% coefficient is high. The low alpha value must be considered and searching with removal of which questions can increase the amount of it.

The questionnaire reliability coefficient for two groups of interest and total observations is

summarized in Table 1.

Table 1. Cronbach's alpha

Group	Cronbach's alpha
Individuals with insurance knowledge	78%
Individuals without insurance knowledge	72%
Total	75%

4. Methodology

The model has been estimated by logistic regression models. Often in regression texts the discussion is finding a relationship between response variable y and a set of explanatory variables X_1,X_2 ,$X_{3,.....}$, Xn that can be expressed as y= f (X_1, X_2,X_3,…..,Xn). The simplest form of such a relationship can be written as a linear equation as follows:

$$Y=\beta_0+\beta_1X_1+\beta_2X_2+\ldots\ldots+\beta_n\ X_n \quad (1)$$

Where β_1,β_2,…. ,βn usually are estimated by a random sample error least square method. But this estimate involves some assumptions as follows: 1. linear model, 2. independent observations, 3. normal distribution of the response variable y, and 4. constant variance of the response variable y.

Obviously all the above assumptions are not always clearly established and these constraints cause that the linear model does not work in many practical problems and we need to look for a better model. For example, in many studies the response variable is essentially a discrete variable that in these cases, the parameter estimation requires the use of a qualitative regression. There are many types of regressions with discrete dependent variables which determine by the nature of depend variable.

In many studies, the response variable is dichotomous. That is, the responses contain only two states, such as the presence or absence, buy or not buy, and est. (which show them with zero and one). On the other hand, the explanatory variables that can affect the response variable may be quantitative. In such a case, if we note the linear model (1), we see that the left-hand side of equality (the response variable) can only be either zero or one. While right-hand side will be extensive from minus infinity to positive infinity. One solution to this problem is to transform the left-hand side of equality to a continuous variable. We do this in three steps:

In equation (1) in lieu of y we use the probability of y. In this case, if p is the probability of y=1, 1-p is the probability of y=0 and thus the values of left-hand side are between zero and one.

In lieu of using directly the probability p, we use odds Ratio as OR=$\frac{P}{1-P}$. In this case, the value of OR is from zero to infinity.

From new variable OR, we take the natural logarithm (ln(P/(1-P)) because as right- hand side, its values locate between minus infinity to positive infinity. It should be noted that we call ln(P/1-P) as logit(P).

With these changes the previous model will change as follows:

$$\ln(P/(1-P)) = \beta_0+\beta_1X_1+\beta_2X_2+\ldots\ldots+\beta nXn \quad (2)$$

It is known as logistic regression model.

In logistic regression we do not need linear regression assumption. Also for estimate the parameters β1,β2,…. ,βn in lieu of using least square method in linear regression, we use maximum likelihood method. So in logistic regression we have:

We can express the probability of occurring y=1 as follows:

$$P=\frac{e^{\beta 0+\beta 1X1+\beta 2X2+\cdots\ldots+\beta nXn}}{1+e\text{^}(\beta 0+\beta 1X1+\beta 2X2+\cdots\ldots+\beta nXn)}$$

Each β_i shows odds ratio deviations in response per unit increase in i^{th} factor.

From the values of βi we can calculate the odds ratio related to the i^{th} factor as $e^{\beta i}$.

Using the estimated value of parameters $\beta_1,\beta_2,\ldots,\beta n$ and a random sample of factors, we can predict response variable by putting them on regression equation (2).

Since in this research the response variable is dichotomous (buying or not buying insurance), logistic model is a useful model for estimating parameters βi. As we have seen, the form of the logistic model is as follows:

$$Y_i = \text{logit}(P_i) = \log(P_i/1-P_i) = \beta_0+\beta_1X_{i1}+\beta_2X_{i2}+\ldots\ldots+\beta n\, X_{in} \qquad i=1,2,3,\ldots\ldots,K$$

This model shows a regression relationship between the dependent variable Yi (travel sales of insurance) and individuals' characteristics Xij.

Y_i indicates the sales of insurance that can be dichotomous.

Y_i=0 if the individual has not travel insurance.

Y_i=1 if the individual has travel insurance.

P_i indicates the probability of sales of travel insurance.

B_0 is the equation intercept.

B_j is the coefficient of Xij variables that indicates the correlation between individuals' characteristics Xij and Yi.

Since the data follow a binomial distribution (as individuals demand insurance or not), the log likelihood function is as follows and with respect to the maximum likelihood method, estimate parameters:

$$\text{Ln } P_i = \beta_0 + \sum_{i=1}^{k} \{Yi \log(Pi/1 - Pi) + n_i \log(1-P_i)\}$$

The aim is to test the following hypothesis:

$$\begin{cases} Ho: \beta j = 0 \\ H1: \beta j = 1 \end{cases}$$

The null hypothesis states that Yi (depend variable) is independent of Xij in other words there is not a significance relationship between the sales of travel insurance and j^{th} character (Xij). If the p-value is less than the significance level (α), we reject H0.

5. Result

The regression model can effect on the statistically significant and coefficient of other variables. The hypotheses of the study indicate that the variable of interest is the only risk avoidance variable. Science factors such as gender, age, marital status, occupation, education, Individual travel, group travel, air travel, maritime trip and land trip, Influence on risk avoidance, their existence in regression model is essential, because as mentioned, absence of these variables in model can effect on the statistically significant and coefficient of risk avoidance variable. The model we use Eviews 9 software. First, we run the logistic regression model for all observations without separating groups in order to test the first hypothesis. The estimated model is summarized in table 2. As mentioned, if the p-value of a variable is less than the significance level, that is =5%, it is a significant variable and enter in regression model.

There is a significant and positive relationship between risk avoidance and sales of travel insurance.

It can be seen, because the risk avoidance variable is significant in the model, there is a statistically significant relationship between this variable and dependent variable and since the coefficient of this variable is positive, their relationship is positive. Consequently the first hypothesis is accepted.

Table 2. Estimated Model

Variables	Coefficient	Std. Error	P-Value
Gender	-0.891	0.249	0.000
Age	0.063	0.021	0.787
Material Status	2.923	0.279	0.000
Occupation	1.519	0.923	0.042
Education	1.499	0.869	0.608
Individual Travel	1.165	0.881	0.156
Group Travel	0.052	0.027	0.006
Air Travel	1.040	0.281	0.633
Maritime trip	0.001	0.001	0.864
Land trip	0.160	0.042	0.005
Risk avoidance	0.913	0.244	0.000
Coefficient of determination		0.670	
LR statistics		456.411	
P- value (LR statistics)		0.000	

The second hypothesis of interest is as follows:

The level of risk avoidance in individuals with insurance knowledge is higher than individuals without insurance knowledge.

With regard to Figures 1 and 2, it is obvious that in group with insurance knowledge more individuals are risk-averse.

Table 3. Estimated Model for group without insurance knowledge

Variables	Coefficient	Std.Error	P-Value
Gender	-0.829	0.317	0.001
Age	0.065	0.027	0.450
Material Status	3.337	0.331	0.000
Occupation	0.439	1.734	0.174
Education	0.425	1.672	0.735
Individual Travel	0.300	1.701	0.367
Group Travel	0.049	0.034	0.046
Air Travel	0.781	0.345	0.050
Maritime trip	0.049	0.034	0.330
Land trip	0.161	0.053	0.046
Risk avoidance	0.502	0.304	0.030
Coefficient of determination		0.755	
LR statistics		296.087	
P- value (LR statistics)		0.000	

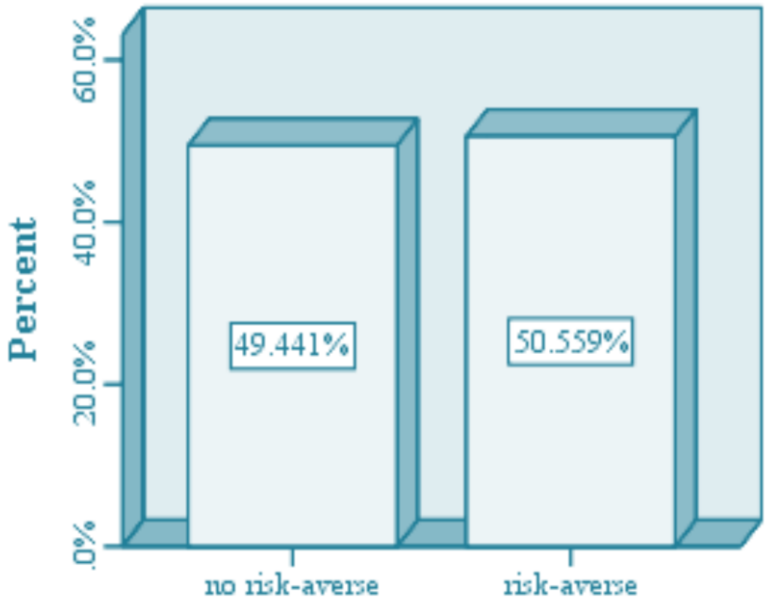

Figure 1. The percentage of risk aversion in group without insurance knowledge

Now to test the third hypothesis, there is a positive statistically significant relationship between insurance knowledge and the sales of travel insurance.

We run regression model separately by considering the observations of each group and the same explanatory variables. Two estimated models are summarized in table 4.

Table 4. Estimated model for group with insurance knowledge

Variables	Coefficient	Std.Error	P-Value
Gender	-1.138	0.464	0.041
Age	0.019	0.043	0.469
Material Status	0.279	1.244	0.038
Occupation	1.551	1.386	0.005
Education	1.369	1.295	0.269
Individual Travel	0.878	1.279	0.220
Group Travel	0.176	0.081	0.046
Air Travel	1.141	1.220	0.023
Maritime trip	0.070	0.052	0.290
Land trip	0.176	0.081	0.039
Risk avoidance	1.645	0.471	0.000
Coefficient of determination		0.710	
LR statistics		137.614	
P- value (LR statistics)		0.000	

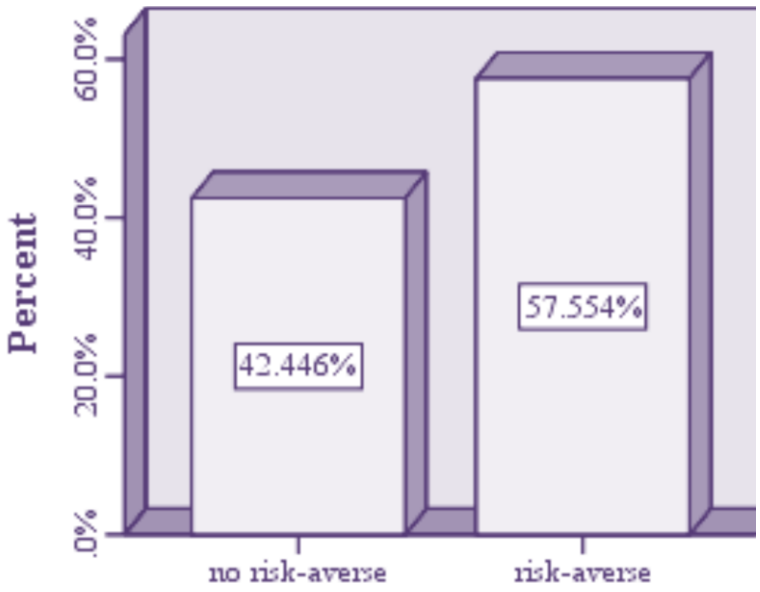

Figure 2. The percentage of risk aversion in group with insurance knowledge

The third hypothesis of interest is as follows:

There is a significant and positive relationship between insurance knowledge and the sales of travel insurance.

To review this speculation, we can utilize the coefficient related to hazard evasion in two assessed display. This evaluated coefficient in the gathering without protection information is 0.502 and in a gathering with protection, learning is 1.645. We see that the measure of this coefficient in assembling with protection learning is more than gather without protection information, which suggests that the hazard avoidance variety in aggregate with protection learning has more impact on the sales of travel insurance than amass without protection learning. Since in the first hypothesis we showed that there is a significant and positive relationship between risk avoidance and the sales of travel insurance, so there is a significant and positive relationship between insurance knowledge and the sales of travel insurance.

6. Conclusion

To gauge the model in this examination, a logistic regression model was used. The population of interest consists of two groups, one with insurance knowledge and another one without insurance knowledge. In the first step, in order to investigate the effect of risk avoidance on the sales of travel insurance, we ran logistic regression model for all observations. The obtained result indicates that there is a significant and positive relationship between risk avoidance and the sales of travel insurance. This means that risk avoidance individuals needed more insurance. At that point, we demonstrated that hazard avoidance level in a gathering with protection learning is more than the gathering without protection information or at the end of the day, people with protection learning are more hazard disinclined.

At long last, we ran regression model independently by thinking about the perceptions of each gathering and the same logical factors. The got comes about show that the hazard avoidance variety in a gathering with protection learning has more impact on protection request than the gathering without protection information. Since in the first hypothesis we showed that there is a significant and positive relationship between risk avoidance and the sales of travel insurance, so there is a significant and positive relationship between insurance knowledge and the sales of travel insurance. Additionally, we can state, in light of the fact that by expanding hazard avoidance the interest for protection increment, and people with protection learning are more hazard opposed, subsequently people with protection information will request more protection. The critical factors on expanding insurance request are insurance learning, advancing society and eventually more different administration conveyance by guarantors. This review demonstrates that insurance learning causes a superior comprehension of insurance administrations and builds the insurance required, and more sales of insurance, Creating income and economic development.

In this way, the most vital proposal of this examination is that by growing protection information of the general public, we can build the protection request. Growing protection learning should be possible by making fields identified with protection and making new insurance agencies. Notwithstanding, we know protection industry has a place with a class of ventures that administrations depend vigorously on data and there is the unpredictability of data amongst inward and outer wellsprings of insurance agencies. Therefore, these organizations confront information administration difficulties and exchange this learning with individuals to build protection request. This learning exchange can be updated through particular offices and specialists.

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