



## ECONOMETRIC ANALYSIS OF FACTORS AFFECTING DEMAND FOR LIFE INSURANCE

### HAYOT SUG'URTASIGA BO'LGAN TALABGA TA'SIR ETUVCHI OMILLARNING EKONOMETRIK TAHLILI

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#### Annotation Annotatsiya

**Eng** - The article examines the impact of socio-demographic, economic and psychological factors on the demand for life insurance. The study used the results of a survey of insurers of the life insurance companies in the country. The collected statistics were analyzed econometrically using the Chi-square goodness-of-fit test and arithmetic methodology. Based on the obtained scientific and practical results, scientific conclusions were drawn and recommendations were developed.

**Uzb** - Maqolada hayot sug'urtasiga bo'lgan talabga ijtimoiy-demografik, iqtisodiy va psixologik omillarning ta'siri o'rganilgan. Tadqiqotni amalga oshirishda mamlakatimizdagi hayot sug'urtasi kompaniyalarining sug'urta qildiruvchilaridan o'tkazilgan so'rovnoma natijalaridan foydalanilgan. To'plangan statistik ma'lumotlar Ka-skyuver muvofiqlik testi va o'rta arifmetik metodologiyalari orqali ekonometrik tahlil qilingan. Olingan ilmiy va amaliy natijalar asosida ilmiy xulosalar shakllantirilgan va tavsiyalar ishlab chiqilgan.

#### Keywords: Kalit so'zlar:

❖ *life insurance, demand for life insurance, micro life insurance, sociodemographic factors, psychological factors, satisfaction with life insurance.*

❖ *hayot sug'urtasi, hayot sug'urtasiga bo'lgan talab, hayotni mikrosug'urtalash, ijtimoiy-demografik omillar, psixologik omillar, hayot sug'urtasidan qoniqish.*

#### Introduction.

At the current stage of reforms in our country, the active development of insurance services aimed at ensuring sustainable economic growth and improving the quality and standard of living of the population, requires strengthening the role of life insurance in the national insurance market.

In today's conditions, it is especially important to increase the insurance literacy and confidence of the population in insurance, popularize life insurance, expand the range of life insurance services, ensure the level of consumer satisfaction with the quality of life insurance services. Therefore, promising

measures are being taken in the national insurance market. At the same time, the adoption of the Resolution of the President of the Republic of Uzbekistan dated October 23, 2021 "On additional measures for the digitization of the insurance market and the development of life insurance" PP-5265 was also relevant.

Studies have shown that many potential insurers lack knowledge of life insurance and low confidence in insurance companies, as well as consumers' dissatisfaction with the quality of insurance services, leading them to abandon their life insurance decisions. Therefore, monitoring the life insurance market through

social surveys, econometric study of social, demographic, economic, psychological and emotional factors affecting the demand for life insurance<sup>1</sup> services, identifying and assessing their impact is a very important process. This will allow us to develop recommendations to improve the quality and competitiveness of life insurance products.

### Literature review.

Analysis of the factors influencing the demand for life insurance services is a research topic that has been studied in international insurance practice for many years. For this reason, the theoretical and empirical study of the demand for life insurance has been widely discussed in the literature.

In particular, J. Hammond studied the effects of economic and demographic factors on demand for life insurance through regression analysis. They found that factors such as income, personal assets, life expectancy, education, and employment had a significant impact on life insurance consumption [2].

P.Fort, on the other hand, studied the factors influencing life insurance consumption between 1964 and 1971 using multivariate regression analysis. The multi-factor regression analysis revealed a positive effect of variables such as wage, discount rate, and consumer confidence [3].

Analyzing the impact of demographic and psychological variables on life insurance demand, J. Burnett and B. Palmer argue that psychological variables such as work ethic, fatalism, socialist preference, religious affiliation, and self-confidence are the most important factors influencing life insurance consumption. In addition, education, number of children, and income were found to be the best demographic factors [4].

M. Brown and K. Kim studied the factors influencing changes in the demand for life

insurance by state, based on regression analysis for the period from 1980 to 1987. At the same time, it was observed that the coefficient of dependence, income and government social protection expenditures have a positive impact on life insurance consumption, inflation, insurance prices and religion have a negative impact. However, the impact of education and life expectancy variables was statistically insignificant [5].

Based on time data for 31 European countries, S.Chelik and M.Kayali, who studied the impact of income, education, population and inflation on demand for life insurance between 2000 and 2006, found that income was the most important variable affecting life insurance.

However, according to their research, the results related to the level of education showed that there was a negative relationship, unlike previous studies. In addition, the demand for life insurance has declined during periods of inflation, as confirmed by other general literature [6].

N.Makhdzan and S.Victorians studied the factors determining the demand for life insurance among insurers of major life insurance companies in Malaysia into three groups (socio-demographic, savings motives, financial literacy). The results of the regression analysis found that socio-demographic and savings (prudence, wealth accumulation, inheritance, life cycle) motives were significantly related to the demand for life insurance, but the impact of financial literacy was insignificant [7].

I.Song filled a gap in existing research by studying the impact of psychological factors such as "self-esteem", "accepting risks" and "experiencing family death" on the demand for life insurance. In their econometric model, they achieved better results when examining the effects of psychological factors in conjunction

<sup>1</sup> In economics, the concept of "demand" is defined as the willingness and ability of individuals to consume a particular product or service. Accordingly, the demand for life insurance under this study is

measured by the sum insured in the national currency under a life insurance contract that the respondents are willing and able to implement.

with situational factors (household income, savings, marital status, and number of family members). That is, a positive correlation was found between family mortality and the demand for life insurance [8].

The results of these studies may differ depending on the research questions in them, the data set, or the methodology used. The effect of the variables, on the other hand, represents a positive, negative, or insignificant relationship.

### Methodology.

This study used the results of a survey of insurers of life insurance companies in Uzbekistan. A total of 560 respondents took part in the survey, however, 535 results were found to be valid. There are 10 questions in the questionnaire, the first three of which clarify the social data about the insured.

In turn, the remaining questions focus on the main factors influencing the purpose of life insurance use of insurers, the level of satisfaction with insurance services and re-use of life insurance (or insurance company) services. We can see the full form of the survey through Appendix 1.

The resolution of a person's internal and psychological state often depends on dispositional factors [9]. In this regard, the demand for life insurance is also influenced by psychological and emotional factors [10]. Although various demographic and economic

factors were used in the initial studies to determine the demand for life insurance, later studies also focused on social and psychological factors [11, 12, 13]. For example, G. Kroy includes emotional factors influencing the purchase of life insurance products, such as self-esteem, satisfaction with insurance services, regret, grief, and depression [14].

In this study, we identified a number of other factors that have been studied in previous studies that give a generalized result instead of the financial literacy, desire to save, psychological and emotional factors that affect life insurance consumption.

These are: the degree of satisfaction of the insured with the insurance service, the degree of choice of life insurance only among financial services when earning additional income, the degree of reuse of the services of the insurance company and the degree of recommendation of life insurance products to others. As a result, it is possible to draw conclusions about the purpose of insurers, conditions in relation to life insurance products and the impact of satisfaction with insurance services on their need for life insurance and re-use of insurance services.

To determine the correlation between the answers to the questions and the frequency of change in the indicators, the study used the chi-square goodness-of-fit test. In this case, the following formula (1) was used.

$$\chi^2 = \sum_i \frac{(n_i - E_i)^2}{E_i}, \quad (1)$$

Description:  $\chi^2$  - is the chi-square goodness-of-fit test;  $E_i$  - is the number of occurrences (expectations) of  $n\pi_{i0}$  under  $H_0$  (null hypothesis);  $i$  - is the number of observations.

Respondents in the survey were required to choose one answer to each question. Since the selected answers to the questions did not represent a value, they were converted to false variables and a zero hypothesis was adopted

when examining the asymptotic significance of the dependence (2-sided) with 5% accuracy, i.e., when the p-value was less than 0.05. In doing so, Stata-16 statistical software was used.

In addition, a one-way analysis of variance (One way ANOVA) was performed, and the answers to the questions were grouped, and the mean and standard deviation were determined.



## Analysis and results.

Through our calculations based on the selected methodology, we try to assess the

correlation between the answers to the above questions (Table 1).

**Table 1**

### Correlation between the answers to the questions (p-value)<sup>2</sup>

| Question        | Asymptotic significance (2-sided) |        |        |         |
|-----------------|-----------------------------------|--------|--------|---------|
|                 | 4 (Q4)                            | 7 (Q7) | 9 (Q9) | 10(Q10) |
| 5-question (Q5) | 0,000                             | 0,025  | 0,701  | 0,006   |
| 6-question(Q6)  | 0,955                             | 0,030  | 0,097  | 0,000   |
| 8-question(Q8)  | 0,009                             | 0,016  | 0,000  | 0,000   |
| 9-question(Q9)  | 0,392                             | 0,039  | x      | 0,000   |

The asymptotic significance shown in Table 1 is estimated with a p-value limit of 0.05. Looking at the results, the respondents' responses to the purpose of life insurance are consistent with their responses to the demand for insurance services, the reinsurance of the life insurance company, and the extent to which they recommend the life insurance products they use to others.

On the contrary, it seems that the purpose for which respondents carry out life insurance does not depend on whether they are satisfied with their insurance services or not. At the same time, respondents' satisfaction with life insurance does not depend on their answers to questions about their preferences in purchasing life insurance products, the purpose of implementing life insurance, and their demand for life insurance.

Another interesting aspect of the question was "Which form of savings do you choose when you receive additional income?", "How often do you use the insurance service of a life insurance company?" and "How often do you recommend a life insurance product to your acquaintances?" the answers to the questions are correlated with the answers to all the other questions in the questionnaire, and this is fully confirmed by the Ka-square compatibility test in the 95 percent confidence interval of asymptotic significance.

This means that respondents' re-use of life insurance services is directly related to their satisfaction with these insurance services and their tendency to save money through life insurance. This can be seen from the cross-sectional analysis of the answers to the following questions (Table 2).

**Table 2**

### Life insurance companies' re-use of insurance services depends on satisfaction with insurance services and propensity for life insurance

| "How often do you use the insurance service of a life insurance company?" answers to the question | "Are you satisfied with your life insurance products?" answers to the question |              | "10 mln. If you earn more than UZS, which form of savings will you choose?" answers to the question |       | Total (100%) |
|---|--|--------------|---|-------|--------------|
|   | satisfied (% da)   | dissatisfied | Life insurance (% da)   | other |              |
|   | 158<br>(77,1)  | 47           | 148 (72,2)  | 57    | 205          |
| for the first time  | 63 (75,9)  | 20           | 65 (78,3)   | 18    | 83           |
| the second time   | 211<br>(85,4)  | 36           | 206 (83,4)  | 41    | 247          |
| several times   |  |              |   |       | 7            |
| Total   | 432<br>(80,7)  | 103          | 419 (78,3)  | 116   | 535          |

<sup>2</sup> All tables in this article are based on the calculations of the survey results in the statistical software Stata-16 by the author

According to Table 2, 38.3% of respondents use life insurance for the first time, 15.5% for the second time and 46.2% for repeated use. Although life insurance reuse is not evenly distributed, respondents' satisfaction and propensity for life insurance also increased as the rate of reuse increased.

For example, 77.1% of respondents who used life insurance for the first time were satisfied with this insurance service, while 85.4% of respondents who used it several times were satisfied. Similarly, 72.2% of respondents who used life insurance for the first time,

78.3% of respondents who used it for the second time and 83.4% of respondents who used it several times were prone to life insurance.

However, logically, it can also be noted that respondents who were more satisfied with and more prone to life insurance had a higher rate of reuse of these insurance services.

In our opinion, the data presented in Table 3 are important in summarizing and finalizing the attitude of respondents to life insurance and the state of its use.

**Table 3**

**Level of satisfaction, propensity and reuse of life insurance of respondents with different conditions for life insurance products**

| "What do you prefer when choosing life insurance products?" answers to the question | Satisfaction rate with life insurance, | Level of propensity for life insurance in savings, in% | Life insurance reuse rate, in% | The average monthly salary is one thousand soums | Demand for life insurance (Average insurance amount), in thousand soums |
|---|--|--|--------------------------------|--|---|
| clarity and clarity of contract terms (136)   | 77,2                                   | 80,9   | 52,6                           | 6441   | 34658   |
| high profitability (256)  | 84,7                                   | 77,3   | 57,4                           | 6536   | 30971   |
| taking into account inflation or exchange rate fluctuations (121)                   | 75,8                                   | 76,7   | 46,2                           | 6545   | 31512   |
| the reputation of the insurance company (17)  | 94,1                                   | 88,2   | 82,3                           | 6559   | 21675   |
| investment portfolio content (5)  | 80,0                                   | 80,0   | 20,0                           | 5400   | 13600   |
| Total -535 individuals  | 80,9                                   | 78,4   | 53,9                           | 6504   | 31576   |

As a result of the analysis of the data in Table 3, in our opinion, there are sufficient grounds to note the following: a) the average monthly income of the respondents is 6.5 mln. soums, while the demand for life insurance averaged 31.6 mln. soums; b) 78.4% of respondents choose only life insurance from financial services, even if they have additional income, 80.9% are satisfied with insurance services, 53.9% are re-using life insurance; c) 25.4% of respondents prefer clear and understandable insurance contracts in the implementation of life insurance, their need for

life insurance (34,658 thousand soums) is the highest compared to other groups; g) the vast majority of respondents (47.9%) prefer a high level of income in this type of insurance, all indicators of their attitude to life insurance are of average value; d) 22.6% of respondents who want inflation or exchange rate fluctuations to be taken into account in the amount of life insurance, their average demand for life insurance is higher than other groups; e) 3.2% of respondents prefer the reputation of insurance companies, although the level of satisfaction, propensity and reuse of life

insurance reflects the highest rates compared to other groups, the demand for life insurance is low.

Now, in order to further deepen the analysis of demographic factors affecting the demand for life insurance and to provide logic

in it, we will conduct a variance analysis of the relationship between the variables. In this regard, we first clarify that the demand for life insurance depends on the level of income (Table 4).

**Table 4**

**One-way analysis of variance (One way ANOVA): demand for income and life insurance**

| Monthly income       | Insurance amount, in thousand soums |                    | Total (N) |
|----------------------|-------------------------------------|--------------------|-----------|
|                      | Average value                       | Standard deviation |           |
|                      | 12622                               | 8167               | 69        |
| 3 mln. up to UZS     | 17636                               | 10793              | 199       |
| 3-5 mln. up to UZS   | 34265                               | 24711              | 200       |
| 5-10 mln. up to UZS  | 84843                               | 45735              | 67        |
| More than 10 mln UZS |                                     |                    |           |
| Total                | 31622                               | 20033              | 535       |

$F = 157.18$ ,  $Sig = .000$

Bartlett test for equal variance:  $\chi^2(3) = 331.4554$  Prob>  $\chi^2 = 0.000$

This table shows the relationship between income level and life insurance consumption. The results of the Analysis Of variance show that there are significant differences between income groups and their demand for life insurance ( $F = 157.18$ ,  $Sig = .000$ ). Regardless of which income group the respondents belonged to, the demand for life insurance also increased accordingly as income

increased. This shows that the demand for life insurance is positively and strongly related to the level of income.

The survey included respondents aged 19 to 60 years, whose average age was 36 years, and 64% of the total respondents were men. The data used to determine the effect of the age of the respondents on their life insurance requirements are given in Table 5.

**Table 5**

**One-sided analysis of variance: age groups and demand for life insurance**

| Age groups       | Insurance amount, in thousand soums |                    | Total (N) | Average monthly income | Average monthly consumption |
|------------------|-------------------------------------|--------------------|-----------|------------------------|-----------------------------|
|                  | Average value                       | Standart deviation |           |                        |                             |
| 18-30 years old  | 24229                               | 20891              | 152       | 5414                   | 3409                        |
| 31-40 years old  | 36109                               | 32774              | 255       | 6947                   | 3945                        |
| 41-50 years old  | 33278                               | 30057              | 109       | 7006                   | 4335                        |
| Age 51 and older | 21053                               | 18164              | 19        | 6216                   | 4205                        |
| Total            | 31622                               | 27864              | 535       | 6497                   | 3881                        |

$F = 5.34$ ,  $Sig = .001$  Bartlett test for equal dispersion:  $\chi^2(3) = 60.3455$  Prob>  $\chi^2 = 0.000$

According to Table 5, the variance analysis of the relationship between age groups and life insurance demand shows that there are

significant differences between them ( $F = 5.34$ ,  $Sig = .001$ ). The results show that respondents aged 31-40 years (48%) have the highest



demand for life insurance (36.1 million soums), although their monthly income and consumption expenditures are average. Also, although the average monthly income of respondents aged 18-30 is less than the average monthly income of respondents aged 51 and

older, the demand for life insurance is high. This is explained by the fact that the consumption rate of respondents aged 51 and older is higher than that of respondents aged 18-30 years.

**Table 6**

**The relationship between the purpose of life insurance and the demand for life insurance (sum insured)**

| "What is your purpose in life insurance?" answers to the question | Insurance amount, in thousand soums |                    | Total (N) |
|---|-------------------------------------|--------------------|-----------|
|   | Average value                       | Standart deviation |           |
| - financial planning  | 37459                               | 28274              | 136       |
| - obtaining investment income                                     | 32446                               | 23428              | 65        |
| - to have insurance protection                                    | 17944                               | 12900              | 18        |
| - use of tax benefits   | 28638                               | 20488              | 309       |
| - loan repayment  | 74429                               | 70230              | 7         |
| Total   | 31588                               | 23220              | 535       |

$F = 6.03$ ,  $Sig = .000$  Bartlett test for equal variance:  $\chi^2(4) = 56.1772$  Prob >  $\chi^2 = 0.000$

The results of the variance analysis in the table above show that there are significant differences between the purpose and demand for life insurance ( $F = 6.03$ ,  $Sig = .000$ ). Although there are few cases of life insurance for the purpose of loan repayment, the average sum insured is the largest (74,429 thousand soums). Then, in order to obtain financial planning (average 37,459 thousand soums) and investment income (average 32,446 thousand soums), as well as to obtain the minimum (average 17,944 thousand soums) insurance coverage, life insurance was provided.

Although 58% of respondents have taken out life insurance to save money using tax benefits, their average need is 28,638,000 soums.

### Conclusions.

In general, life insurance reduces the risks of accidents, provides additional financial assistance, improves the quality of life of people, allows them to invest by attracting long-term resources of the population and the establishment of long-term trust funds.

As a result of our research on the factors influencing the demand for life insurance

services, the following conclusions and recommendations were formed:

1. In order to diagnose the demand for life insurance, to collect and systematize information on the behavior of policyholders, it is necessary to effectively use the survey methods widely used in foreign insurance practice.

2. The analysis of aspects related to the preference of insurers for life insurance has allowed us to identify areas for the development of life insurance in Uzbekistan. In particular, it is necessary to effectively use the business model of life microinsurance in the national insurance market, to develop investment life insurance programs, to use the methodology of behavioral economics to identify ways to stimulate customer demand for life insurance and to systematically analyze consumer demand for life insurance.

3. Recommendations for stimulating the demand for life insurance:

- Development of life insurance product design (flexibility to consumer demand, anticipation and consideration of changes in demand over time, standardization of insurance rules, simplification of the

underwriting process through the use of digital technologies and Internet);

- Improving the sales process of life insurance products (providing information and knowledge about life insurance products to potential policyholders, increasing their literacy through advertising, effective use of the system "Online sales" through the development of the Internet platform).

- The life insurance contract must, of course, be based on an anti-inflationary

mechanism, either in the form of currency or in the form of a special bonus system.

In our opinion, the practical implementation of the above proposals will serve to expand the access of insurers to the consumer segment of life insurance, which is not covered, to stimulate consumer demand and increase the importance of life insurance for the population.

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