Potentials of Insurance Market Development in Jizzak region

Master's Thesis

Blekinge Institute of Technology

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Abstract

Title: Potentials of Insurance Market Development in Jizzak region
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Background and Problem Discussion: The main reasons why we have chosen this topic "Potentials of insurance market development in Jizzak region" for our thesis are the followings:
1) Strong and Competitive insurance market is one of the essential parts of well-developed market economy. How to reach well-developed insurance market is a complex problem that the economy of Uzbekistan is facing now.
2) Having studied previous researches regarding insurance market of Uzbekistan and the role of marketing in development of companies we concluded that there are huge potentials for growing in insurance market which have not learned yet.

Purpose: The purpose of this thesis is to find the answers to following questions:
How is the current situation in the insurance market of Uzbekistan?
What kind of insurance services are there and what is the demand for them?
The determination of main clientele of insurance companies;
The determination of factors that can affect on insurance services
The analysis of proportion of population who do not apply for insurance services and the reasons;
The role of marketing research in companies' growth;

Method: This research used Quantitative method. Survey technique used to conduct a quantitative study. Primary data collected through questionnaire. Secondary data collected from banks and department of Statistics of the local government. This research can be seen as deductive research since it begins by examining theories related to insurance and consumer behavior to insurance services. Following hypothesis were developed by the assumption that
  - Person's insurance expenditure dependent of their annual income
  - Person's positive opinion about insurance dependent of their gender
  - Person's positive opinion about insurance dependent of their age
  - Person's positive opinion about insurance dependent of their education
  - Person's who is insured dependent of their income

Theory: The theory section contains a review of theories concerning in economic nature and functions of insurance, marketing in insurance, insurance market in Uzbekistan.
Analysis: Statistical program SPSS 14v.(Statistical Package for the Social Sciences) - is used to compute the correlation values and the regression coefficients. The results presented in appropriate table and graph. We divided our analysis into three parts:
1) Using the secondary data, we analyzed accidents that happened during the last two years, obligatory insurance, insurance companies in Jizzak.
2) We analyzed dependence of respondents' annual insurance expenditure on their annual income using the multiple regression analysis.
3) Based on the primary data and using Chi-square statistical test, we analyzed consumer behavior to insurance service interviewing people individually. **Conclusion:** Analysis

showed that insurance premiums mostly come from obligatory insurance. We discovered that banks are the main clients of insurance agencies at the present and insurance market undeveloped yet, the main reasons are low level of insurance culture, low level of citizens income, lack of understanding by the population and legal entities the need in insurance services; undeveloped economy of country, which doesn't allow the insurance market to develop as a whole; lack of brokerage companies to work with insurance agencies; lack of skilled specialists and prepared insurance managers.

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INTRODUCTION

After becoming independent in 1991 Uzbekistan chose a market economy as a way to develop. Every market infrastructure is on the step of development today here, insurance is not exclusion. Government of Uzbekistan passes necessary laws and regulations and insurance companies' quantity is growing year by year.

The main reasons why we have chosen this topic "Potentials of insurance market development in Jizzak region" for our thesis are the followings:

Strong and Competitive insurance market is one of the essential parts of well-developed market economy. How to reach well-developed insurance market is a complex problem that the economy of Uzbekistan is facing now.

Having studied previous researches regarding insurance market of Uzbekistan and the role of marketing in development of companies we concluded that there are huge potentials for growing in insurance market which have not learned yet.

To analyze deeply the current insurance market and to learn potentials to grow we tried to find the answers to following questions:

How is the current situation in the insurance market of Uzbekistan?

What kind of insurance services are there and what is the demand for them?

The determination of main clientele of insurance companies;

The determination of factors that can affect on insurance services

The analysis of proportion of population who do not apply for insurance services and the reasons;

The role of marketing research in companies' growth;

Why did we decide to choose Jizzak region? Because Jizzak is situated in the center of Uzbekistan geographically, the population lives not only in urban area but also in rural area as well, the competition among insurance companies is not tough yet and there is huge potential to grow.

We looked through several foreign and local scientific literatures to write this thesis.

There is a little information of marketing researches on insurance market of Uzbekistan.

The secondary information was gathered according to Statistic department's and analytical department's data of Jizzak region.

The primary information was gathered by questionnaires and interviews with the local population and officials of local banks.

Chapter 1. Literature Review

1.1. Economic nature and functions of insurance

The insurance is the way to provide protection against financial losses resulting from a variety of perils. By purchasing insurance policies, individuals and businesses can receive reimbursement for losses due to car accidents, theft of property, and fire and storm damage; medical expenses; and loss of income due to disability or death. Indemnifying the losses is produced from facilities of insurance fund. The Insurance is reasonable when insurance events (risks) cause significant need for money.

As an economic category an insurance presents the system of economic relations, including forms and methods of creating insurance fund and its use on indemnifying the insurance events and helping to people when certain events happens in their life.

Alexandrov A. (1998) describes following characters of the economic category of insurance:

- presence of redistribution relations;
- presence of insurance risk (and criterion of its estimation);
- organizing of insurance community from underwriters and insurers;
- combination individual and group insurance interests;
- united liability of all underwriters for damage;
- closed spreading of damage;
- redistribution of damage in space and time;
- returning of insurance payments;
- self-sufficiency of insurance activity.

Transition to market economy provides essential growth of interest to insurance, increases the sphere of insurance services and development of alternatives to state insurance. Changes touch also sphere of property and the personal insurance of people that is directly connected with economic interests of population. Offers of insurance

service increase with transition to market economy and gradual shaping of insurance market occurs. Voluntary types of insurance will be preferable.

Biryuchev O. notes (2000) that on the one hand insurance plays as a protection of business and well-being of people in market economy, on other hand it is an activity which brings income. The main sources of income are insurance activity, investment of temporarily free facilities to production and non-production spheres, share in companies, bank deposits, securities and etc.

He divides main functions of economic category of insurance to three parts:

1. Shaping specialized insurance fund.
2. Indemnifying the damage and the personal material provision ensuring the people.
3. Warning of insurance event and minimization of damage.

The First function is creation of specialized insurance fund to indemnify risks, which insurance companies take as liability. This fund can be formed both obligatorily and voluntarily. Government depending on economic and social situation adjusts the development of insurance in country. With development of insurance market the mechanism of using temporarily free facilities will improve.

The Second function is indemnifying the damage and the personal material provision of people. Only individuals and organizations who are participants in forming of insurance fund have right on indemnifying. The order of indemnifying the damage is defined on contract between insurance companies and clients is adjusted the state (licensing of insurance activity).

The Third function of insurance is warning of insurance event and minimization of damage - expects the broad complex of measures, including financing the actions on reduction of negative consequences of accidents, natural disasters. Insurance company forms the special fund of preventive actions to realize this function.

A risk-averse person is willing to pay money – a risk premium- to avoid risk. The demand for risk reduction is met by insurance companies, which bear the risk for anyone who buys an insurance policy. Many risk-averse individuals and firms buy insurance.

To clarify "How much Insurance Individuals Want" Jeffrey M. Perloff (2004) notes that the way insurance works is that a risk-averse person or firm gives money to the insurance company in the good state of nature, and the insurance company transfers money to the policyholder in the bad state of nature. The transaction allows the risk-averse person or firm to shift some or all if the risk to the insurance company.

For example, Mr. X is risk-averse person. He wants to insure his house, which is worth $80 (thousand). There is a 25% probability that his house will burn next year. If a fire occurs, the house will be worth only 40$.

With no insurance, the expected value of his house is

$$(1/4*\$40) + (3/4*\$80) = \$70.$$

Mr. X faces a good deal of risk. The variance of the value of his house is

$$(1/4*(\$40-\$70)*(\$40-\$70) + (3/4*(\$80-\$70)2) = \$300$$

Now suppose that an insurance company offers a fair bet, or fair insurance; a bet between an insurer and a policyholder in which the value of the bet to the policyholder is zero. The insurance company offers to let Mr. X trade $1 in the good state of nature (no fire) for $3 in the bad state of nature (fire). This insurance is fair because the expected value of this insurance to Mr. X is zero:

$$(1/4*\$3) + (3/4*(-\$1)) = \$0$$

Because Mr. X is risk averse, he fully insures by buying enough insurance to eliminate his risk altogether. With this amount of insurance, he has the same amount of wealth in either state of nature.

Mr. X pays the insurance company $10 in the good state of nature and receives $30 in the bad state. In the good state, he has a house worth $80 less the $10 he pays the insurance company, for a net wealth of $70. If the fire occurs, he has a house worth $40 plus a payment from the insurance company of $30, for a net wealth, again, of $70.

Mr. X's expected value with fair insurance, $70, is the same as his expected value without insurance. The variance he faces drops from $300 without insurance to $0 with insurance. Mr. X is better off with insurance because he has the same expected value and faces no risk.

Jeffrey M.Perloff (2004) describes when fair insurance is offered, risk-averse people fully insure. If insurance companies charge more than the fair-insurance price, individuals buy less insurance.

Because insurance companies do not offer fair insurance, most people do not fully insure. An insurance company could not stay in business if I offered fair insurance. With fair insurance the insurance company's expected payments would equal the amount the insurance company collects. Because the insurance company ha operating expenses-costs of maintaining offices, printing forms, hiring sales agents, an so forth- an insurance firm providing fair insurance would lose money. Insurance companies' rates must be high enough to cover their operating expenses, so the insurance is less than fair to policyholder.

How much can insurance companies charge for insurance? A monopoly insurance company could charge an amount up to the risk premium a person is willing to pay to

avoid risk. The more risk averse an individual is, the more a monopoly insurance company can charge. If there are many insurance companies competing for business, the price of an insurance policy is less than the maximum that risk-averse individuals are willing to pay-but sill high enough that firms cover their operating expenses.

1.2. Marketing and marketing research in insurance.

Marketing starts with human needs and wants. People need food, air, water, clothing, and shelter to survive. Beyond this, people have a strong desire for recreation, education, and other services. They have strong preferences for particular versions and brands of basic goods and services.

Marketing has been defined in various ways. Kotler (1997) describes marketing as follows:

Marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering, and exchanging products of value with others.

The American Marketing Association's definition of marketing provides a more specific, yet broader, definition:

Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that will satisfy individual and organizational objectives.

This definition stresses that marketing requires the business to conceive of a good, service, or idea and then develop it. In other words, marketers must have ideas for products that may be brought to market and purchased by buyers. How do marketers learn what the customer wants? Marketing research fulfills the marketing manager's need for information about the market. The emphasis of marketing research is to shift decision makers from risky decisions to decisions based on carefully planned investigations.

Zikmund, D. Middlemist and R.Middlemist (1995) describes as follows:

Marketing research is the systematic and objective process of gathering information for aid in making decisions. This research information should be objective, not intuitive or haphazardly gathered. Marketing research involves analysis of primary data or secondary data. Primary data are data gathered and assembled specifically for the project at hand. Secondary data are data previously collected and assembled for some purpose other than the project at hand.

In accordance with specified principles of insurance marketing is orientated on achievement of high quantitative, qualitative and social factors such as amount of the concluded agreements, amount of the profit, share of the insurance field, covered by insurer, amount of the dues and amount of the agreements, amounts and degree of client's request on volume, structure and quality of the services, provided insurance company, as well as ability of the provision by insurer to safety of information.

As Zubes states (1999) the purpose of marketing in insurance company can be:

- Maximization of company's profit.
- Earning by insurance company sufficient profit alongside with execution some additional function.

He confirms that marketing in insurance is enough powerful to differ from marketing, existing in the field of commodities production. At first this is connected with particularity with the insurance business, surrounded by which main are:

- long period life of the insured product, long-term character of interaction insurer and consumer, determined by validity of the contract (for example, legality contract of insurance life can reach 50 and more years), therefore in a number of cases profitability, the properties and characteristic of the insurance product become to be comprehensible through many years after its sale.
- The most important part for client of his contact with insurance company (investigation and settlement of an insurance case) can be delayed behind for many years from the moment of the conclusion and agreement, insurer can refuse or the other reason to refuse in payment of the indemnity. In step of buying the insurance product, client can not sufficiently value its quality.

- Inseparable insurance facilities from insurer, which undertakes the permanent obligations on indemnifying the damage in consequence which quality of the insurance service can change on subjective reason in the course of time.

- Strong risking component typical of insurance that traditional marketing in sphere of production does not provide. In detailed analysis different risks are available in process life cycle of goods (thus risk its estimation and management to it) are main component of insurance product.

- a strong state regulation of the insurance business, in particular, presence of the hard requirements to properties of the insurance product (the tariffs, obligatory insurance covering, accommodation of insurance reserves), that greatly reduces the marketing independence in the actions of the insurer (for instance, he can not essentially cut prices for the services, as it causes respond reaction of state bodies who is responsible for provision of solvency to the insurer.

- Undesirable changes of a social-economic environment in insurance market.

- Absence of the patenting the insurance products that automatically entails quick copying of the original developments and insurance programs by competitors.

- Weak understanding the essences of the insurance by majority client, particularly population, in result it becomes hard to contact the insurer with potential consumer.

- Remarkably big importance of the segmenting market in activity of insurer.

1.3. Insurance market in Uzbekistan

24 insurance and 1 reinsurance companies function in Uzbekistan's insurance market today. 10 of them have more than 1 million USD of authorized capital. Recently there was accepted by Uzbekistan's Government a project of development of insurance sector until 2010. Insurance companies are increasing their authorized capital year by year, medical and mortgage insurance becomes more popular. Several Laws are planned to accept by Government in 2007-2010. Some of them are: Mandatory auto civil liability insurance, insurance of employer's responsibility, obligatory medical insurance, insurance of business, export credit, export-import cargo transportations insurance.

Very small number of magazines about business is edited here in Uzbekistan. "Economic survey", "Taxpayers", "Market, Money, and Credit" ("MMC"), and "Business Messenger" are widespread ones.

Main information concerning to "The potential of insurance market in Jizzak" can be found in the journals of "Market, Money, and Credit". The articles about banking, finance, insurance and tax are issued in these journals. There is not any special journal edited specifically for marketing and insurance.

We think that life insurance should be one of the main insurance products in any country. Historically formed that life insurance in country with developed market economy is one of the important instruments of social policy, that helps to satisfy such public needs, as financial protection of person when accident happens in his life, maintenance of stable living level after retiring, financial savings for children education, loan reception under guarantee of insurance policy and many others.

In Uzbekistan, like in many other former Soviet Union countries, life insurance is in behind of insurance of other risks. The starting point for development of life insurance in Uzbekistan was an acceptance of the Law "About insurance activity" at April 2002, in which it is provided that insurance companies, functioning in sphere of general risks insurance, are not allowed to function in life insurance. It means that for the first time life insurance is distinguished as a separate direction in insurance market. Not only insurance companies but also population and government should be interested in organizing good conditions for functioning in life insurance sphere. Population are potential consumers of the broad spectrum of insurance services on such type of the insurance, as insurance on event of the deaths, on living till determined by agreement age or period, insurance of expenses for education, insurance for pensions and life insurance of loan borrower.

Insurance companies accumulate financial resources and receive income investing them. On **"The impacts of the insurance market on the economy" Kh. Shennaev (MMC, №4, 1997**) tries to analyze impacts of accumulation resources of insurance on the economy in the experience of abroad are studied. The significance of free resources accumulated by insurance companies in the capital market is highlighted, but current condition of insurance market in Uzbekistan is not analyzed in details.

Government is interested in development of life insurance as well, because it is one of the forms of social protection of population, which leads to reduction of additional expenses in case accident happens.

In today's insurance sector commercial banks are main group of clientele for insurance companies. **M.Mirsodikov on** "**Banks' risks insurance" by (MMC, №12, 1998)** investigates banks' risks insurance according to public deposits in banks. As the author states, this type of insurance is the effective way to protect the public deposits. The exact problems and their solutions are not stated precisely. On his **"Collaborative work of banks and insurance companies" (MMC, №12, 1999**). M. Mirsodikov analyzed the problems of collaborative work of banks and insurance companies, the resources accumulated by insurance premium are also noted. The article chiefly consists of praised words and nothing more, the real facts and analyzes, financial data are not stated.

We think that one of the problems is people are not sure in stability of national currency. According to the Law of the Republic of Uzbekistan "About exchange regulation" insurance companies have right to realize insurance payments and get insurance indemnity in hard or national currency at present. Undoubtedly, insurance of bank deposits will help to increase deposit inflow to banks.

Good example of state support of the development of the certain sector of the economy can serve the practice of assistance to development of house construction by bank

structure, under which money, directed by people on buying houses, were free from income tax. The Possibility of using that tool in practice for long-term saving insurance products would be powerful stimulus for population in choosing insurance companies and excellent source for insurance companies to invest free facilities.

"**The development of insurance business in Uzbekistan**" **(MMC, №57, 2002) H.Kodirov** states that insurance sphere of Uzbekistan has following features: low share of market coverage, imperfection of legislative basis, low income of population and low insurance culture. One of the main problems in insurance sector of Uzbekistan is lack of specialists, possessing sufficient level of knowledge and working experience. The deficit of skilled personnel concerns practically all level of the production process, commencing from development of modern insurance products to organization of sale and realization of the all-round analysis of activity on insurance.

All above mentioned articles are written imprecisely. Quantitative and qualitative analyzes with real data are not given. There is not any analysis of compared parameters. The real problems are not raised. In fact, the situation around Uzbekistan is critical let alone in the region. Maybe scientists find out some solutions to the problems mentioned above but in literature and journals we couldn't find valuable information we needed. Perhaps, it's because the result of the policy or economy of Uzbekistan. As a matter of fact, the information about insurance business and marketing researches is not investigated. This fact informs us of the importance of investigating an insurance business and marketing problems of insurance.

So many articles about marketing and marketing researches are published in the foreign countries. Here, in Uzbekistan it's a dream which has not come true yet. The Study of insurance market is a central item of marketing. Without market information it is impossible to have a decision in improving company's activity (insurance products, territorial sales and etc.). The Study of consumer's needs is a basis to any marketing strategy. As soon as need and preferences are chosen, it is possible to start the

development of insurance products. The editorial office "MMC" on "Marketing of insurance market" (**"MMC" (№2, 1999)** tries to analyze the insurance sector of Uzbekistan, insurance companies and their clients, advertisements of insurance only theoretically. The special recommendations of how to organize insurance business and the special methods for analyzing them are not shown.   Therefore, in order to study the problem of the potential of the insurance market in Jizzak region, we tried to do this thesis based on the theories, the practical instructions of scientists such as Kotler, Zubes and some others.

1.4. Hypothesis

We will analyze insurance market potential and consumer behavior on example of insurance agency "Ishonch". What consumers think about the insurance, whether they are insured and which factors influence them to be insured? Which market segments must "Ishonch" choose to do insurance business? Who are competitors and what are their weaknesses and strength? According to our goals, we put following hypothesis:

1. H_0=Number of people and average annual income of respondents do not influence to annual insurance expenditure.

H_1=Number of people and average annual income of respondents both influence to annual insurance expenditure.

2. H_0-The proportion in the respondents who thinks that the insurance is reasonable *independent* of gender.

H_1- The proportion in the respondents who thinks that the insurance is reasonable *dependent* of gender.

3. H_0- The proportion in the respondents who thinks that the insurance is reasonable *independent* of age.

H_1- The proportion in the respondents who thinks that the insurance is reasonable *dependent* of age.

4. H_0- The proportion in the respondents who thinks that the insurance is reasonable *independent* of education.

H_1- The proportion in the respondents who thinks that the insurance is reasonable *dependent* of education.

5. H_0-The proportion in the respondents who is insured *independent* of respondent's sufficient income.

H_1- The proportion in the respondents who is insured *dependent* of respondent's sufficient income.

1.5. Marketing research tools

Kotler (1997) describes the major statistical tools which are used in marketing research:

1. *Multiple regressions*. A statistical tool for estimating a "best fitting" equation showing how the value of a dependent variable varies with changing values in a number of independent variables.

2. *Discriminates analysis*. A statistical technique for classifying an object or persons into two or more categories.

Techniques for displaying and examining distributions.

Donald R. Cooper and C. William Emory (1995) notes that marketing research should use scientific methods. For example statistical tools and models.

They state several useful techniques are essential to any preliminary examination of the data, for example, frequency table, and histograms.

As they note the histogram is a conventional solution for the display of internal-ratio data. Histograms are used when it is possible to group the variable's values into intervals.

The authors find histograms useful for

- Displaying all intervals in a distribution, even those without observed values,
- Examining the shape of the distribution for skew ness (a measure of a distribution deviation from symmetry), kurtosis (a measure of a distribution's peaked ness) deviation from symmetry, and the model pattern.

The authors also note that Frequency table is a simple device for arraying data. Frequency tables are used for tabulating counts or percentages, and also exploratory data analysis techniques are recommended for graphical display and examination of distributions. Many studies would be content to conclude data analysis at this point. Other studies, particularly those with variables composed of category data (frequency counts of nominally scaled variables), may need to inspect the relationships between and among those variables. This analysis is commonly done with cross tabulation.

According to them cross tabulation is a technique for comparing two classification variables. The technique uses tables having rows and columns that correspond to the levels or values of each variable's categories.

If the measurement scale is nominal (classification only), as they state it is possible to use χ^2 test. Chi-Square (χ^2) test probably the most widely used nonparametric test of significance is the chi-Square test. It is particularly useful in test involving nominal data but can be used for higher scales. Typical are cases where persons, events, or objects are grouped in two or more nominal categories such as "yes-no," or class "A,B,C, or D."

Using this technique the authors test for significant differences between the *observed* distribution of data among categories and the *expected* distribution based upon the null hypothesis. Chi-Square is useful in cases of one-sample analysis, two independent samples, or κ independent samples. It must be calculated with actual counts rather than percentages.

In the one-sample case, as they assert we should choose a null hypothesis based on the expected frequency of objects in each category. Then the deviations of the actual frequencies in each category are compared with the hypothesized frequencies. The greater the difference between them, the less the probability that these differences can be attributed to chance. The value of χ^2 is the measure that expresses the extent of this difference. The larger the divergence, the larger the χ^2 value.

The formula given by authors to which the χ^2 test is calculated is:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

O_i= Observed number of cases categorized in the *i*th category.

E_i= Expected number of cases in the *i*th category under Ho.

κ=The number of categories.

There is a different distribution for χ^2 for each number of degrees of freedom (d.f.), defined as (κ-1) or the number of categories in the classification minus one.

$$d.f. = \kappa - 1$$

With chi-square contingency tables of the two sample or κ-sample variety, we have both rows and columns in the cross-classification table. In that instance , d.f. is defined

as rows minus 1 (r - 1) times columns minus 1 (c - 1).

$$d.f. = (r - 1)(c - 1)$$

One author defines **Multivariate analysis** as "those statistical techniques which focus upon, and bring out in bold relief, the structure of simultaneous relationships among three or more phenomena."

According to authors**, multiple linear regression** describes the relationship between two or more (m) independent variables (X_1, X_2, ... , X_m) and a single dependent variable (Y), assuming a linear (straight line) relationship between the dependent variable and them independent variables. The relationship is described as

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + ... \beta_m X_m \pm \varepsilon, \text{ where}$$

α = a constant, the value of Y when all X values are zero

β_m = the slope of the regression surface(regression coefficients associated with each X_m

ε =an error term.

Based on author's definition the **F statistic for linear regression** indicates the statistical probability that the regression coefficient for a simple linear regression is equal to zero, or that all of the partial regression coefficients for a multiple linear regression are equal to zero. For linear regression, F is calculated as the regression mean square divided by the residual mean square *i.e.* MS_{reg}/MS_{res}. An F statistic can also be calculated for the significance of the additional sum of squares for any particular independent variable or combination of several independent variables in multiple linear regressions. The degrees of freedom for the F statistic are $df_1 = m$ (the number of X variables) and $df_2 = n - m - 1$ (sample size - m - 1); the total degrees of freedom is $df_{tot} = n - 1$.

B.E. Gmurman (1977) gave core rules to make the decision:

- If the calculated value is larger than the critical value, we reject the null hypothesis and conclude that the alternative hypothesis is supported.
- If the critical value is the larger than the critical value, we assume the null

hypothesis and conclude that the alternative hypothesis is not supported.

Chapter 2. Analyzes and Results

As we mentioned in the first chapter we divided our analysis into three parts:

1.   In the first part, using the secondary data, we analyzed accidents that happened during the last two years, obligatory insurance, competitors of "Ishonch" in Jizzak.

2.   In the second part we analyzed dependence of respondents' annual insurance expenditure on their annual income using the mathematical statistics methods.

3.   In the third part using the mathematical statistics methods we analyzed consumer behavior to insurance service interviewing people individually.

2.1. Factors that can affect to insurance services in Jizzak

According to information given by Statistic department, GDP of Jizzak in 2004 was equal to 370 247, 5 million uzbek sum, insurance premium share in GDP was equal to 267, 5 million sum or 0.07% of GDP. In 2005 GDP was equal to 453 054,1 million sum and insurance premium share in GDP was 380.6 million sum or 0.08% of GDP.

As M. Yuldoshev (2002) asserts, share of insurance premium in Uzbekistan is equal to 0.1% of annual GDP, but in well-developed countries it ranges from 8% to 12%. This fact shows that insurance services and market is not developed in Uzbekistan yet.

2.1.1 Natural disasters

We were not able to take any clear statistical information regarding natural disasters from Statistic Department because of confidentiality. When we interviewed local people we found out that there were a lot of damages and ruined fields where the cotton and grain were planted in 2004-2005. Natural disasters brought too many difficulties in the sphere of agriculture like traumas, damages and financial problems. We analyzed that it happens slightly very often in spring.

We got information from the Department of Emergency situations excluding agriculture for 2004-2005.

Table 2.1 Natural disasters in Jizzak region 2004 - 2005 years

№	Years	Natural disasters				Trauma		Death	
		Number	%	Damage (uzb..sum)	%	Number	%	Number	%
	2004	26		600 500		51		40	
	2005	24	-7.7%	-		54	5.9%	48	20%

Source: Department of Emergency situations of Jizzak region

In 2005 the emergency situation happened approximately -7.7% rather less than it was in 2004. But the trauma and death is increased into 5.9% and 20% a year.

The explosion of gas balloon in Gallaorol brought a lot of damages and financial losses in 600 500 sum. As the manager of Department told none of objects, buildings and man were insured from those accidents.

On interview with Department representatives it was discussed the insurance problems and come to decision of organization seminars and meetings.

Fires in Jizzak region

On the following table there is information on fire accidents in 2004-2005.

Table 2.2 Fires in 2004-2005 years

	Year	fires				trauma		Death	
		number	%	damage (uzb.sum)	%	number	%	Number	%
	2004	500		32588753		46		6	
	2005	476	-4,8%	38426281	18%	34	-26%	5	-16,6%

Source: Fire department

According to the information above the number of fires became less -4.8%, injures -26% and death -16.6% in 2005 but damage increased to 18%.

As the chief of the department said none of the objects, buildings and people were insured against those accidents. As he noticed there is no belief on insurance service among the population.

On interview with Fire Department representatives it was discussed the insurance problems and come to decision of organization seminars and meetings.

From the tables it is seen that in 2005 the quantity of fires and natural disasters are increased. That's why the insurance services must be developed in the region.

2.1.2 Obligatory insurance: Banks and Credit unions

Decree №632 "Obligatory Insurance of the means of transport and Obligatory Insurance of civil responsibility of motor transport owners" was issued by Cabinet of Ministry of Uzbekistan in 1994.

According to the decree rates of obligatory insurance are:

Table 2.3 Rates of obligatory transport insurance

Type of transport	Insurance rate for legal entity	Insurance rate for people
Passenger car, bus and microbus	1.5%	1%
Truck (Lorry)	2%	1.5%
Tram and trolley bus	1%	-
Motorcycles	0.5%	0.5%

In this part of analysis we interviewed representatives of banks and credit unions. It is very important to study what they think about the insurance and insurance agencies.

Table 2.4 Credit portfolio (Jizzak regional banks) for 2003-2004

In thousand uzb.sum

	01.01.2004	01.01.2005	Difference
Total Loans	42 618 375.9	32 417 882.4	-10 200 493.5
Total loan collateral	57 183 922.5	44 835 118.2	-12 348 804.3
Property as collateral	6 278 763.7	7 862 461.1	1 583 697.4

Source: Jizzak departmentof the Central bank of Uzbekistan

Table 2.5 Credit portfolio (Jizzak regional banks) for 2004-2005

In thousand uzb.sum

	01.01.2005	01.01.2006	Difference
Total Loans	32 417 882.4	33 584 005.1	1 166 122.7
Total ensure	44 835 118.2	46 376 392.3	1 541 274.1
Property as collateral	7 862 461.1	13 390 609.3	5 528 148.2

Source: Jizzak departmentof the Central bank of Uzbekistan

A special personal interview was held among nine banks' branches out of ten and two credit unions. They are "National bank", "Pakhta bank", "Ipoteka bank", "Tadbirkor bank", "Savdogar bank", "Gallabank", "Asaka bank", "Turon bank", "Halq bank",

"Inom" and "Ishonch" credit unions. The private bank "Universal", which was newly organized didn't take part in this interview.

Having taken a special interview among the officials of the banks and credit unions we have found out followings:

The properties as collateral belong to obligatory insurance. They are mainly insured by "Uzbekinvest" or "Kafolat". Branches of "Asaka bank" and "National bank" are ordered to deal with the "Uzbekinvest" by their head office. The reason is they are stockholders of the "Uzbekinvest". The other seven banks deal with both of them simultaneously.

Only "Asaka bank" requires complex car insurance. Complex insurance includes insurance of motor transport owners' civil responsibility, life insurance, and insurance from accidents, natural disasters insurance, and car insurance. The main reason for this is increasing rate of crimes connecting with cars and drivers. In spite of trying to get valuable information concerning to this issue from Regional internal affairs we couldn't get necessary information.

The officials of banks inform that they have some kinds of emergent protests against insurance agencies. They can not get in touch with them immediately owing follow speed service of the insurance agencies.

They consider "Kafolat" has one advantage over the others because they always offer flexible percentage rate.

One of the drawbacks of the "Uzbekinvest" is using insurance contract forms in Russian though the Uzbek language is a state language officially. It creates some difficulties to clients. That creates some disagreements among agencies, banks and clients.

"Ishonch" credit union works with "Uzbekinvest". As the chief manager of "Ishonch" says, "Uzbekinvest" has planned to open a branch of the agency in the building of the credit union. Both companies hope to mutually reliable service during some years of corporative work.

CU "Inom" usually works with "Kafolat". "Ishonch" negotiate with that union to work with.

Banks and unions appreciate the reliability, high quality service and flexibility, low price and fast speed of the insurance service.

2.1.3 Obligatory insurance: Construction companies

We interviewed with representatives of fourteen construction companies. We tried to choose of winner companies of tender to build the schools, colleges, hospital and army buildings planned to be built in 2006 year by the budgetary found. The budget size for these objects for 2006 is 16500 million sum (date from Regional Governance Financial department).

According to the decree №532 by the Cabinet of Ministry of Uzbekistan issued in 1999 year these companies should use insurance service in the construction. Though during the interviews companies showed that they are not eager to work with insurance agencies and they have lack of substantial knowledge about insurance. They wanted to insure fewer than 30% of the risks in the construction works with a low price as little as possible. It is mentioned in the decree that fewer than 80% of the building construction must be insured obligatory. However, the minimum degree of percent of the obligatory insurance was not mentioned in the decree of the Cabinet of Ministry.

As the managers of the construction companies said that the loss comes from natural disasters and accidents are not perceptible. According to them insurance is nothing except bureaucracy.

In conclusion you can guess that they are not interested in insurance.

When we studied the volume of this type of insurance premium in the region we found out that it consists of 4990.8 thousand sum. We can simply calculate that if 50% of all building constructions will be insured averagely at 0.25% rate (in the decree it's adopted as 0.4%) it becomes 20625.0 thousand sum. We think the reason for this is weakness of the decree and lack of exact requirements.

2.1.4 Competitors

Four insurance agencies function in Jizzak region except "Ishonch". They are "Uzagrosugurta" (established in 1994), "Uzbekinvest" (established in 1997), "Kafolat" (established in 1997) and "Madad" (established in 1995). We didn't work on analyzing the balance sheet of these agencies as we only intended to investigate the market of insurance, consumers and competitors of the agencies in our region. If we'd investigated them around Uzbekistan the thesis would have widened and extended.

"Ishonch", "Uzagrosugurta", "Uzbekinvest" and "Kafolat" are in the top ten insurance companies in Uzbekistan. "Uzbekinvest" takes the top position among all insurance companies in Uzbekistan.

Table 2.6 Market share and types of insurance service

№	Agency name	Types of insurance services		Insurance premium		Premium /number of employees	
		2004 (unit)	2005 (unit)	2004	2005	2004	2005
	Uzbekinvest	9	9	20 218	24 204	10 109	8 068
	Uzagrosugurta	5	5	207 657.7	297 131.2	1 702.1	2 803.1
	Madad	10	10	1 100	604	550	151
	Kafolat	14	10	38 501.3	58 702.9	4 278	7 337.8

Source: Regional analytical department.

In this information you can learn:

- The premium of insurance company "Agrosugurta" has increased by 43% comparing that of 2004 with 2005. The companies closed some sectors giving a low income and lessen the number of the officials. The premium per official has increased by 64% comparing with the result gained in 2004. The main premium was acquired through obligatory insuring agricultural sectors.

- The premium of "Uzbekinvest' has increased by 19.7% comparing with the result gained in 2004. Unfortunately, the premium per official has decreased by 20.2%. The main premium was acquired through insuring the property of a legal entity and a population. While we were having a questionnaire with the leaders of both companies and banks, we noticed that they have much confidence for the future. In short, the main profit came from insuring the pledge and property which were taken as pledges for loans in banks.

- The premium of "Kafolat" has increased to 52.5% comparing with the result of 2004. The premium per official has increased to 71.5%. More than 80% of the premium was gained through insuring the pledge and civil responsibilities of transport owners. As the officials of the bank state the main reason for choosing "Kafolat" is a low tariff rate.

- The activity of "Madad" insurance company went down in 2004.

Analyzing the premium insurance, we found out that premium was mainly gained through insuring crops and harvests against natural disasters, insuring the pledge which deposited in the bank and insuring building constructions obligatorily.

Officials of "Ishonch" said: "Although there are four insurance companies in the region we regarded "Kafolat" and "Uzbekinvest" as our main competitors because these two agencies can be competitors to us with lots of parameters such as the number of officials, the premium, business area and types of insurance. The fact is that they work in the banking sector and insure the objects that we also focus on".

For analyzing the competitiveness of "Ishonch", we used the estimation list offered by N. Paley, 1989. As he notes each factor is estimated from "0" to "5" on which "0" means weaknesses and "5" means strength of the position. As he states if you have lack of information you can leave it out.

In practice, for that kind of analysis qualified specialists are hired. So, we analyzed it with the help of the specialists of the "Association of the Jizzak Banks". We think that we were able to submit a conclusion close to a reality.

We marked the competitors as following:

A: Uzagrosugurta

B: Uzbekinvest

C: Kafolat

D: Madad

Table 2.7 Our score for insurance companies

Factors of competitiveness	«Ishonch»	A	B	C	D
Service quality	3	2	4	3	1
Price	2	2	3	4	2
Promotion	2	3	4	3	2
Total score	7	7	11	10	5

We put to "Uzbekinvest" high rate, because only this agency has got license to insure import-export objects while others are not capable to carry out these types of insurances. The service quality is high. They use up to date technology. They have good trained employees. As the prices are high we marked averagely 3. Advertising service is

organized properly. For example, brochures and calendars are designed very contemporarily.

The main advantages of "Kafolat" are a low price, flexibility of rates and high payment for agencies.

2.2 Analysis of people's annual expenditures

We analyzed influence of population's average annual income to their annual insurance expenditure in Jizzak region.

H_0=*Regression coefficients are not statistically significant. (Number of people and average annual income of respondents do not influence to annual insurance expenditure).*

H_1=*Regression coefficients are statistically significant. (Number of people and average annual income of respondents both influence to annual insurance expenditure).*

Statistical program SPSS (14 v.- special program recognized worldwide for working with statistical numbers -) is used to compute the correlation values and the regression coefficients.

The sample data-set is part of a study on insurance consumption in the 12 districts and 1 town of Jizzak region. The independent variables are the number of population (Number of people = X1), average annual income in sums (Average annual income of people= X2); the dependent variable is annual insurance expenditures in sums per person (Annual insurance expenditures=Y).

Table 2.8. Multiple regression analysis of Number of Population, and Average Annual Income, on Population Insurance Expenditures

№	Districts	X1	X2	Y
1	Arnasoy	12400	501600	349,9
2	Bahmal	32600	433200	213,7
3	Gallaorol	37700	614400	302,9

4	Jizzak	43500	368400	320,3
5	Dustlik	16300	723600	336,3
6	Zomin	37300	506400	235,7
7	Zarbdor	15100	517200	287,4
8	Zafarobod	13400	277200	221,6
9	Mirzachul	15700	825600	312,8
10	Pahtakor	18000	753600	310,9
11	Forish	22700	643200	208,8
12	Yangiobod	7200	452400	95,2
13	Jizzak town	52600	3004800	766,3

Source: Analytical department of Jizzak

We used the data from the program SPSS.

Table 2.9 Descriptive Statistics

Variable	Mean	Std Dev.	N
Y	304.740	155.423	13
X1	24961.538	14139.103	13
X2	740123.077	698355.180	13

This is followed by the descriptive statistics (since we selected this option) for the dependent Y variable (listed first) then all independent X variables in order of columns of entry.

Table 2.10 Pearson Correlations

Pearson Correlations			
	Y	X1	X2
Y	1,000	0,591	0,910
X1	0,591	1,000	0,540
X2	0,910	0,540	1,000

Then, the matrix of correlation coefficients is given (since we selected this option) between the Y variable and all X variables.

Table 2.11 Significance for Pearson Correlations

Significance for Pearson Correlations			
	Y	X1	X2
Y	-	0,033	0,000
X1	0,033	-	0,057
X2	0,000	0,057	-

The probability levels for the correlations are given. We can see from this output that there is a significant correlation between the independent variable X2 and the dependent Y variable at $P = 0.000$, but not between the independent variable X1 and the dependent Y variable at $P = 0.033$, or the independent variable X1 and the independent X2 variable at $P = 0.057$.

Table 2.12 Summary

Summary			
R^2	R	Adj. R^2	S.E. of Estimate
0,842	0,918	0,811	67,620

The summary section first gives the r^2 (0.842) which indicates that 84% of the variation in Y is explained by variation in the independent X variables, and the r value (0.918) which is the square root of r^2 and indicates a strong correlation between Y and the X variables. The adjusted r^2 value is r^2 corrected for bias in sample size, and adjusts for overestimation by r^2 in the strength of the regression model, especially for complex regressions with numerous independent variables; it adjusts the degrees of freedom for the r^2 and is not necessarily increased by adding a further predictor (X), whereas r^2 can increase by adding another even poorly related predictor (X). The standard error of the estimate (67.620) is small compared to the mean Y value of 304,740, indicating that the

multiple regression model is explaining a large amount of the variance in the dependent Y variable.

Table 2.13 ANOVA

ANOVA					
Source	Sum Sq.	D.F.	Mean Sq.	F	Prob.
Regression	244152,048	2	122076,024	26,698	0,000
Residual	45724,214	10	4572,421		
Total	289876,262	12			

The ANOVA section for the first step indicates the significance of the multiple regression models. The much larger mean square for the regression (122076.024) than the residual error (4572.421) indicates that the model is highly significant, as the F test from this ratio shows, with $F_{(2,10)}$(Appendix 3) of 26.698 being significant at P = 0.000 (*i.e.* P is less than 0.001).

Table 2.14 Regression Coefficients

Regression Coefficients							
Source	Coefficient	Std Error	Std Beta	-95% C.I.	+95% C.I.	t	Prob.
Intercept	128,760	39,311		41,169	216,351	3,275	0,008
X1	0,002	0,002	0,141	-0,002	0,005	0,942	0,368
X2	0,000	0,000	0,834	0,000	0,000	5,589	0,000

The final part of this section gives the regression coefficients *i.e.* the equation is

$$Y=128.760+0.002X_1+0.000X_2$$

This equation can be used to calculate the predicted Y value for each case. The standard errors of the regression coefficients are also given, from which the 95% confidence limits can be calculated, and the significance of the regression coefficient is determined by a t-

test. For example, for X1 the multiple regression coefficient is -0.002 ± 0.002 and ranges from its -95% confidence limit of -0.002 to its +95% confidence limit of +0.005; the t-value for this coefficient of 0.942 is significant, with P = 0.368. In contrast, the coefficient for X2 of 0.000 (0.000) ranges from -0.000 to + 0.000 and is significant since t = 5.589 with P = 0.000. Note also that the constant term 128.760 (± 39311) is only just significant (t = 3.275 with P=0.008).

This section also gives the standardized partial regression coefficients (beta's), which indicate the relative importance of each independent variable; variables with a high standardized partial regression coefficient are relatively more important than variables with a lower standardized partial regression coefficient. For example, the standardized partial regression coefficient for X2 is the highest (0.834) and that of X1 is the lowest (0.141) which, as we have just seen corresponds well with the probability levels for X1 (0.000) and X1 (0.368).

The inclusion of the two independent variables correlates well with population's insurance expenditures(R=0,842). The R^2 of 0.842 indicates that about 84 percent of the variation in population annual insurance expenditures for this sample is explained by population's annual income, and population size.

Decision: We reject the Ho hypothesis because we found out that independent variables influence annual insurance expenditure. We conclude that annual insurance expenditures of people strongly depend on their annual income.

2.3 Analysis of consumer behavior to insurance service

Data collection

There are 12 districts in Jizzak. We divided these 12 districts into two groups. The reason why we divided into two is because their geographical location, the number of population, telecommunication, production, local business and the average salary of population.

We put the regions with more population, higher average salary, more developed telecommunication system and business infrastructure into the first group. They are Jizzak town, Zomin and Gallaorol regions. According to statistic information, JIzzak region has 1047.3 million people and almost 70% of them live in rural areas and they heavily depend on Agriculture. About 550 thousand people live in Jizzak town, Gallaorol and Zomin regions. The centre of these districts is close to international M39 road and telecommunication and business infrastructure is well developed. According to information given by department of statistics the average monthly income is 77 917.7 sum per whole region and about 100 000 sum per group ones' districts.

We put the rest of districts to group two (Yangiobod, Baxmal, Forish, Dustlik, Paxtakor, Arnasoy, Zarbdor, Zafarobod and Mirzachul) with population about 500 thousand whole together. The average monthly income in these regions is equal to 45 000 sum. Of course, there are exceptions in statistic information, because it's hardly possible to live with this income.

We chose first group as good places to do insurance business.
According to the statistic information we preferred not to analyze the second segment of our thesis. In our opinion it won't bring foundation to do insurance business in the near future.

Attendance in this research from Jizzak city consisted of 400 people, 378 of them gave complete answers to the question, and 22 of them didn't want to answer. The

respondents' ages were 18 and up. The number of questions was 8 and they were all open-end. The questions in the application were about applicants' information as his age, gender, and education, the average of the income, their opinion about insurance services. With that information we would be able to find out what part of the population know about insurance companies and the factors why they are against about insurance services? These are the reasons why we have chosen this topic and our purpose is to learn the information from gathered documents. We analyzed the client's relations to insurance services in our first group. We consider that the more participants in application procedure the closer the result to reality. But as Kotler (1997) described in his theory it is possible to get a good result even the number of participants is less than 1% of whole population.

We communicated with participants by talking on the phone in districts where telecommunication is developed. As Kotler (1997) said an advantage of telecommunication in that it is fast & cheap, but disadvantages are to have a short interview and it's hard to get an answer for your complicated questions. For instance, it's difficult to interview about income of the company, clients, and directors as well.

As Kotler states survey research methods bets suited for descriptive research.

Companies undertake surveys to learn about people's knowledge, preferences, and to measure these magnitudes in the general population.

We created application form (Appendix 1) to collect information.

Frequencies
A=Gender
B= Age
C=Education
D=Monthly income of respondent's
E=Are you insured?
F=Do you have sufficient income to be insured?
G=Is insurance reasonable
H= Do you believe in insurance?

Table 2.15 Statistics

		A	B	C	D	E	F	G	H
N	Valid	378	378	378	378	378	378	378	378
	Missing	0	0	0	0	0	0	0	0
Mean		1,34	1,86	1,40	1,16	1,94	1,85	1,82	1,99
Std. Error of Mean		,024	,035	,025	,019	,012	,018	,036	,033
Median		1,00	2,00	1,00	1,00	2,00	2,00	2,00	2,00
Mode		1	2	1	1	2	2	2	2
Std. Deviation		,476	,675	,490	,366	,239	,358	,701	,635
Variance		,226	,455	,240	,134	,057	,128	,491	,403
Skewness		,660	,176	,423	1,875	-3,689	-1,959	,260	,009
Std. Error of Skewness		,125	,125	,125	,125	,125	,125	,125	,125
Kurtosis		-1,573	-,812	-1,830	1,525	11,669	1,849	-,951	-,504
Std. Error of Kurtosis		,250	,250	,250	,250	,250	,250	,250	,250
Range		1	2	1	1	1	1	2	2
Minimum		1	1	1	1	1	1	1	1
Maximum		2	3	2	2	2	2	3	3
Sum		508	703	528	438	733	699	689	752
Percentiles	10	1,00	1,00	1,00	1,00	2,00	1,00	1,00	1,00
	20	1,00	1,00	1,00	1,00	2,00	2,00	1,00	1,00
	25	1,00	1,00	1,00	1,00	2,00	2,00	1,00	2,00
	30	1,00	1,00	1,00	1,00	2,00	2,00	1,00	2,00
	40	1,00	2,00	1,00	1,00	2,00	2,00	2,00	2,00
	50	1,00	2,00	1,00	1,00	2,00	2,00	2,00	2,00
	60	1,00	2,00	1,00	1,00	2,00	2,00	2,00	2,00
	70	2,00	2,00	2,00	1,00	2,00	2,00	2,00	2,00
	75	2,00	2,00	2,00	1,00	2,00	2,00	2,00	2,00
	80	2,00	2,00	2,00	1,00	2,00	2,00	2,00	2,00
	90	2,00	3,00	2,00	2,00	2,00	2,00	3,00	3,00

Table 2.16 Respondents' gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	248	65,6	65,6	65,6
	female	130	34,4	34,4	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes of gender classification of respondents. As Table 2.16 shows, males participate in survey more than female. The male percentage is 65.6% and the female percentage is 34.4%.

Figure 1 Respondents' gender
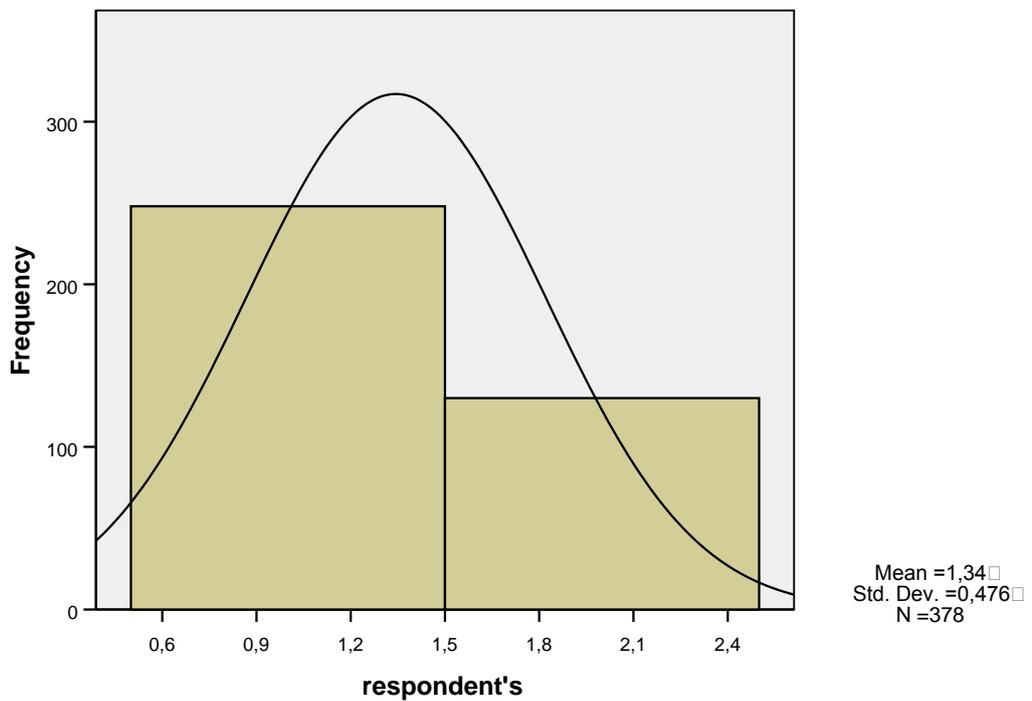
A histogram of respondents' classification by gender is shown in Figure 1. The first column lists the number of males within interval. The second column lists the number of females within interval. A normal curve on the histogram provides an indication of respondents from normality.

Table 2.17 Age of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	under 25	116	30,7	30,7	30,7
	26-45	199	52,6	52,6	83,3
	46-over	63	16,7	16,7	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes of age classification of respondents. The respondent's percentage, whose age is under 25, is 30.7%, whose age is between 26-45, is 52.6%, and whose age is over 46 is 16.7%. As Table 2.17 shows, whose age is between 26-45 participate in survey more than others.

Figure 2 Age of respondents
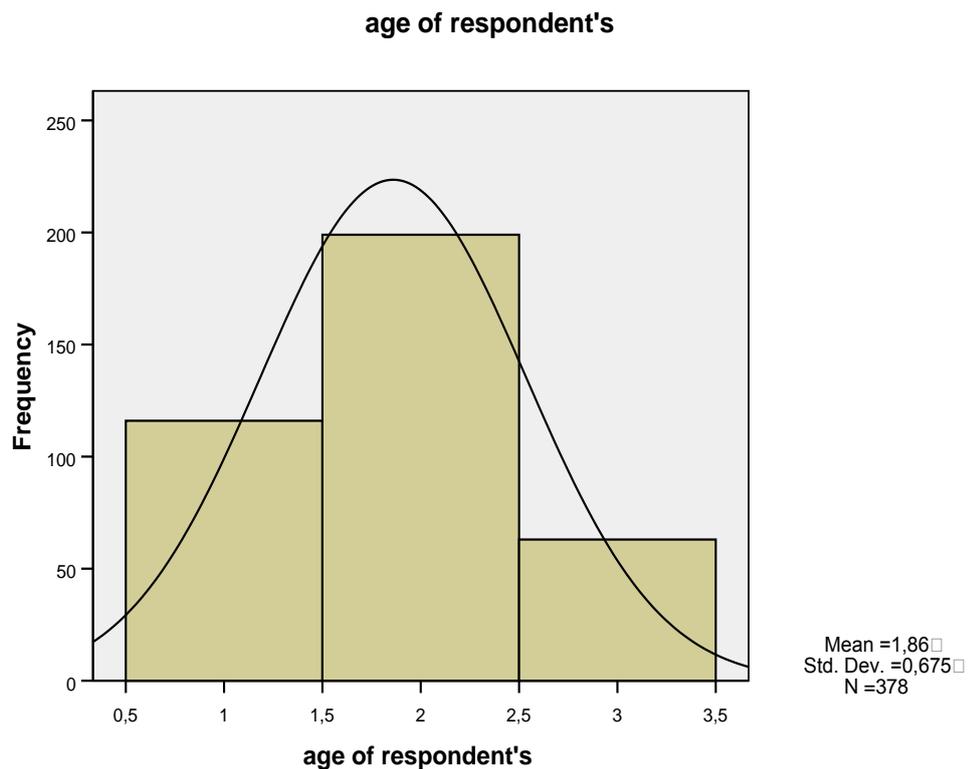
A histogram of respondents' classification by age is shown in Figure 2. The first column lists the number of respondents whose age is under 25 within interval. The second column lists the number of respondents whose age is 26-45 within interval. The third column lists the number of respondents whose age is over 46 within interval. A normal curve on the histogram provides an indication of respondents from normality.

Table 2.18 Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	graduated	228	60,3	60,3	60,3
	high school	150	39,7	39,7	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes of age classification of respondents. The respondent's percentage, who graduated is 60.3%, and who completed high school is 39.7%. As Table 2.18 shows, who graduated colleges in survey more than who completed high schools.

Figure 3 Education

A histogram of respondents' classification is shown in Figure 3. The first column lists the number of respondents who graduated within interval. The second column lists the number of respondents who completed high school within interval. A normal curve on the histogram provides an indication of respondents from normality.

Table 2.19 Monthly incomes of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	under 50000 sum	318	84,1	84,1	84,1
	over 50000 sum	60	15,9	15,9	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes of income classification of respondents. The respondents' percentage, who earned under 50000 sum is 84.1%, and who earned over 50000 sum is 15.9%. As Table 2.19 shows, who earned under 50000 sum in survey more than who earned over 50000 sum.

Figure 4. Monthly income of respondents
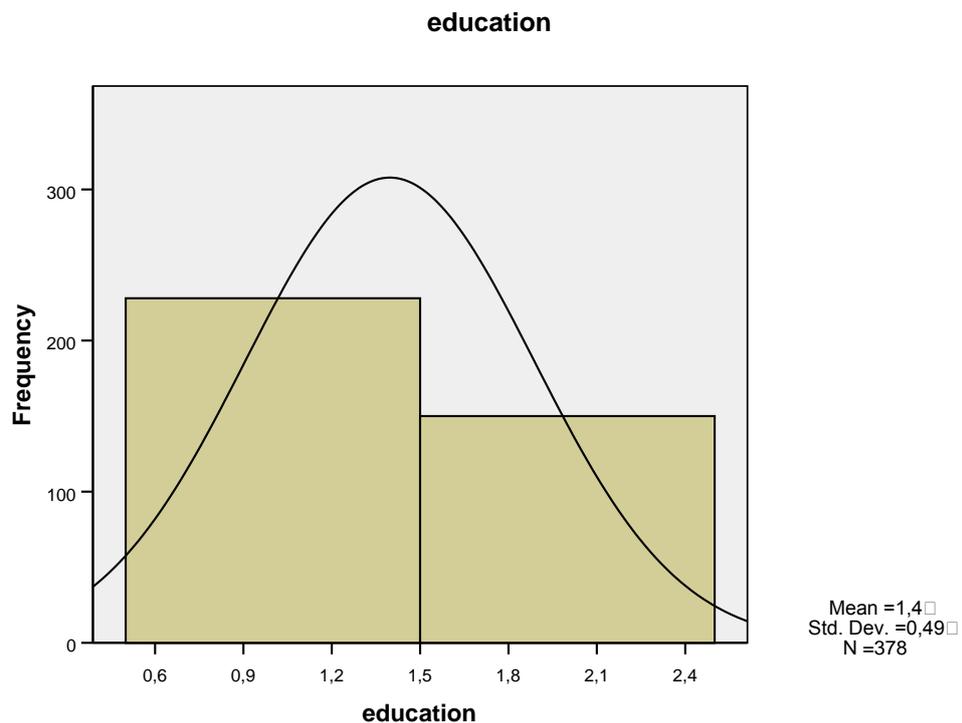

A histogram of respondents' classification by its income is shown in Figure 4. The first column lists the number of respondents who earned under 50000 sum within interval. The second column lists the number of respondents who earned over 50000 sum within interval. A normal curve on the histogram provides an indication of respondents from

normality.

Table 2.20 "Are you insured?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	23	6,1	6,1	6,1
	No	355	93,9	93,9	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes respondent's classification who is insured or not. The respondent's percentage, who is insured, is 6.1%, and who is not insured is 93.9%. As it is shown on the Table above, insured people in survey more than who is not insured.

Figure 5"Are you insured?"

are you insured?
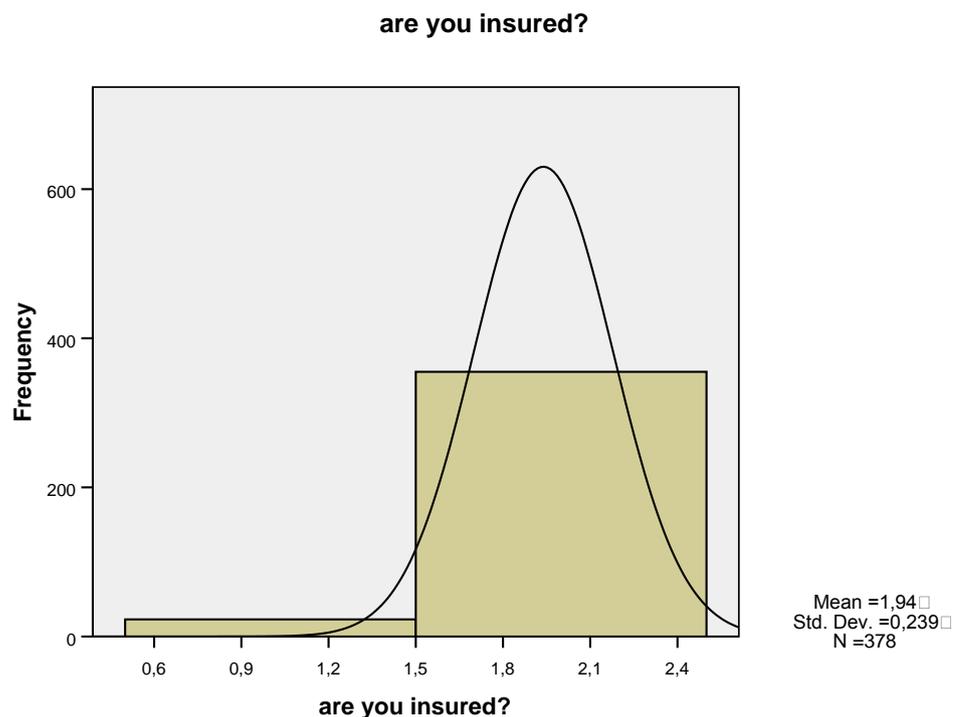
A histogram of respondents' classification is shown in Figure 5. The first column lists the number of insured respondents within interval. The second column lists the number of respondents who is not insured within interval. A normal curve on the histogram provides an indication of respondents from normality.

Table 2.21 "Do you have sufficient income to be insured?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	57	15,1	15,1	15,1
	No	321	84,9	84,9	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes respondent's classification that has sufficient income to be insured. The respondent's percentage, who has sufficient income to be insured, is 15.1%, and who has not sufficient income to be insured is 84.9%. As it is shown on the Table above, people who has not sufficient income to be insured in survey more than who has.

Figure 6 "Do you have sufficient income to be insured?"

do you have sufficient income?
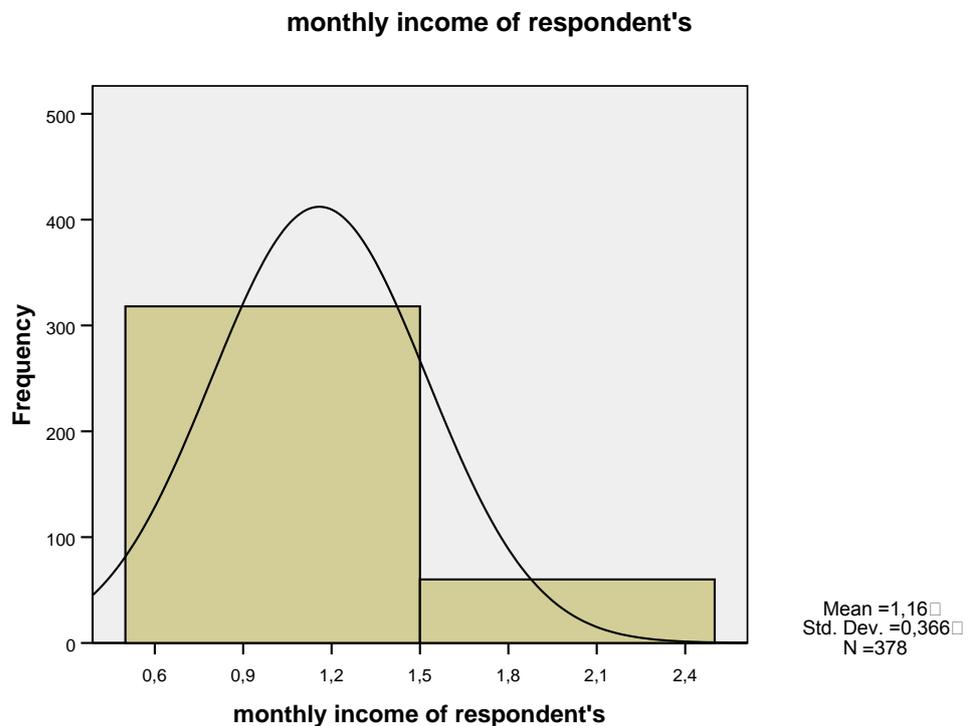

Mean =1,85
Std. Dev. =0,358
N =378

do you have sufficient income?
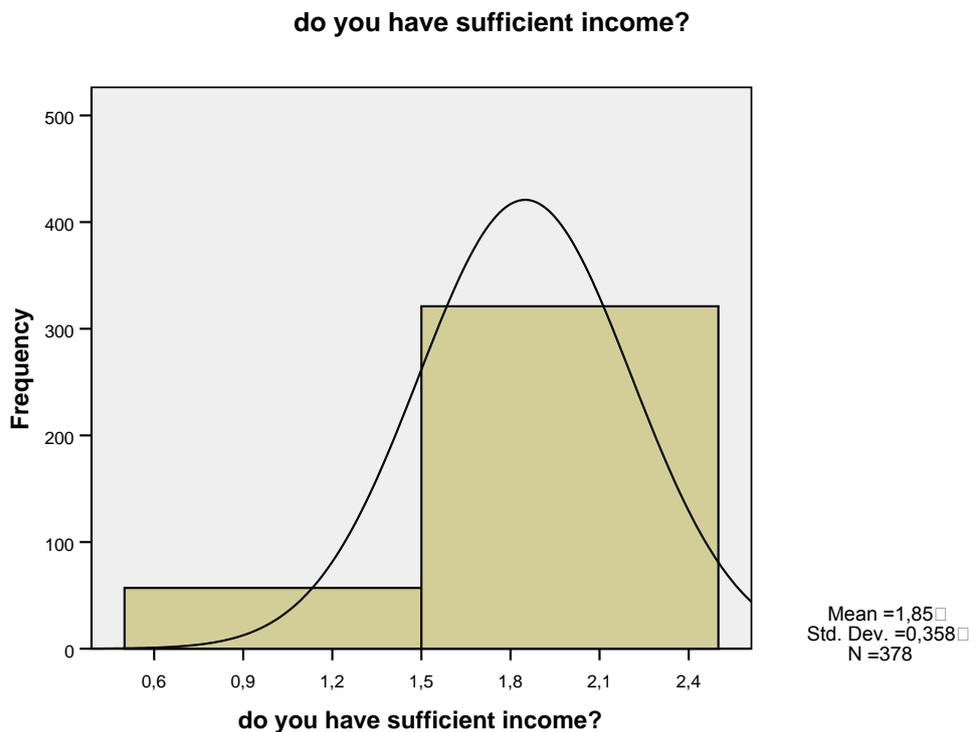
A histogram of respondents' classification is shown in Figure 6. The first column lists the number of respondents who has not sufficient income to be insured within interval. The second column lists the number of respondents who has sufficient income to be insured within interval. A normal curve on the histogram provides an indication of respondents from normality.

Table 2.22 "Is insurance reasonable?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	132	34,9	34,9	34,9
	No	181	47,9	47,9	82,8
	No answer	65	17,2	17,2	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes respondent's classification who thinks that insurance is reasonable. The respondent's percentage, who thinks that insurance, is reasonable, is 34.9%, who thinks that insurance is not reasonable is 47.9%, and who has difficulty in answering, is 17.2%. As it is shown on the Table 2.22, who thinks that insurance is not reasonable in survey more than who does.

Figure 7 "Is insurance reasonable?"
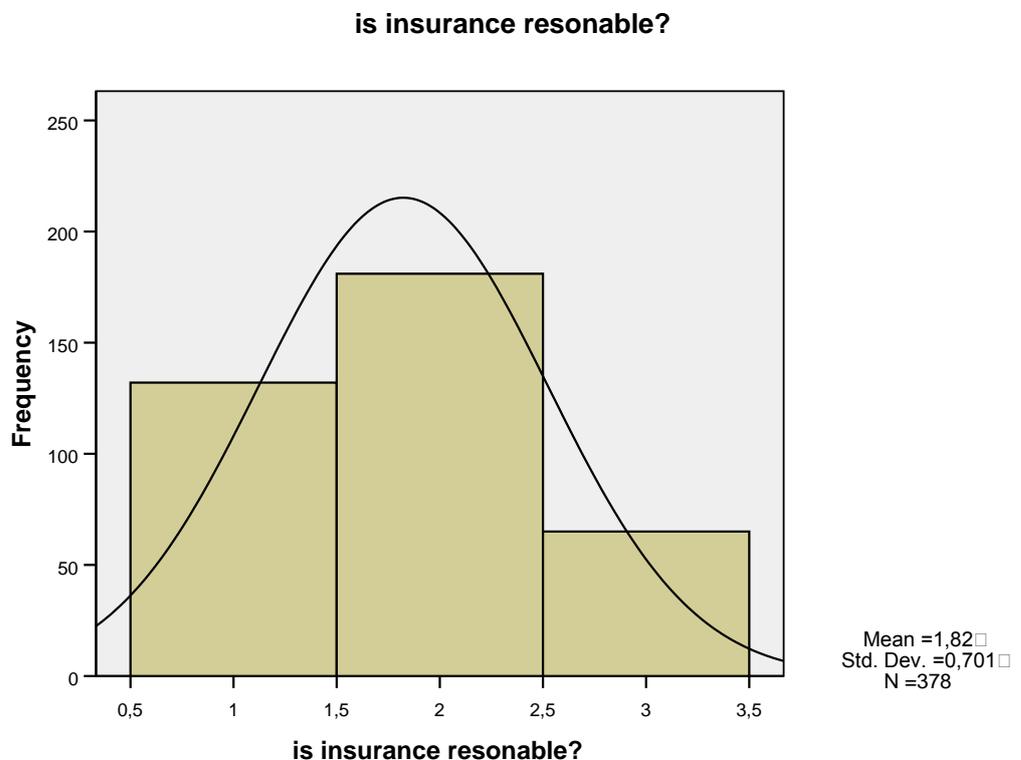
A histogram of respondents' classification is shown in Figure 7. The first column lists the number of respondents who thinks that insurance is reasonable within interval. The

second column lists the number of respondents who thinks that insurance is not reasonable within interval. Third column lists the number of respondents who has difficulty in answering. A normal curve on the histogram provides an indication of respondents from normality.

Table 2.23 "Do you believe in insurance?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	78	20,6	20,6	20,6
	No	226	59,8	59,8	80,4
	No answer	74	19,6	19,6	100,0
	Total	378	100,0	100,0	

Frequency Table arrays data with columns for frequency, percent, valid percent, and cumulative percent. That describes respondent's classification who thinks that insurance is reasonable. The respondent's percentage, who believes to insurance service, is 20.6%, who does not believe to insurance service, is 59.8%, and who has difficulty in answering, is 19.6%. As it is shown on the Table above, people who does not believe to insurance service in survey more than who does.

Figure 8. "Do you believe in insurance?"

do you believe in insurance?

Mean =1,99
Std. Dev. =0,635
N =378
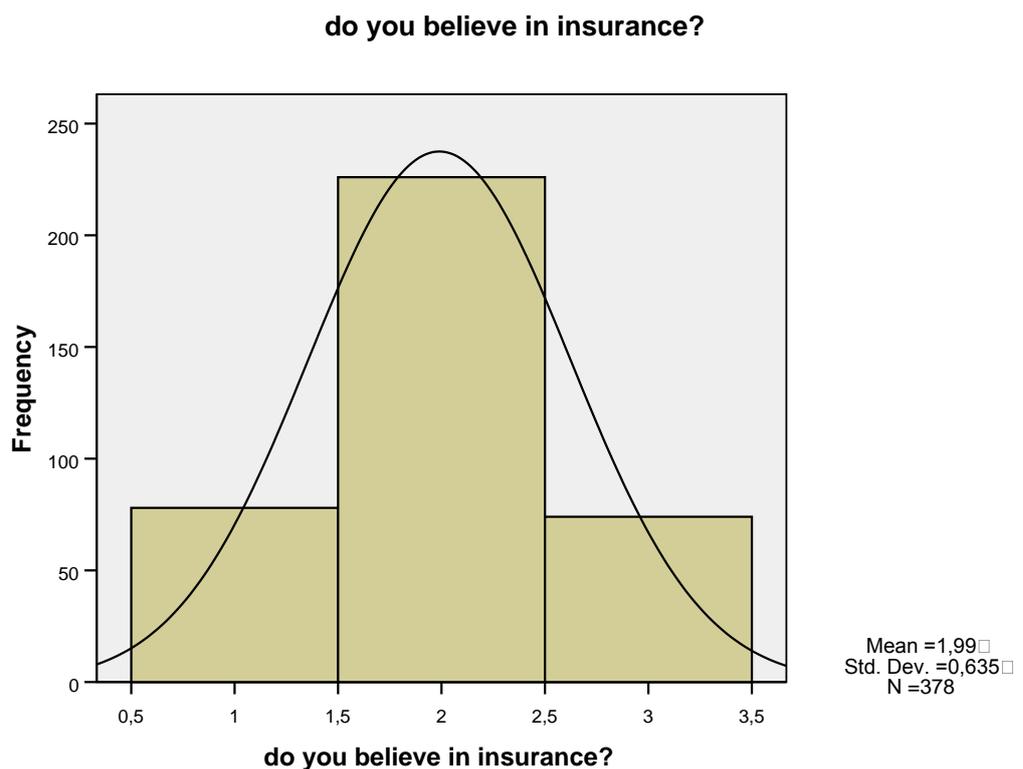
A histogram of respondents' classification is shown in Figure 8. First column shows the number of respondents who believe to insurance service within interval. The second column shows the number of respondents who does not believe to insurance service within interval. Third column shows the number of respondents who has difficulty in answering. A normal curve on the histogram provides an indication of respondents from normality.

We re-tested the respondents' attitude to insurance by demographic factors (gender, age, education) with sample test Chi-Square ($\chi2$). Statistical SPSS 14v. Program is used to compute relations between variables.

Ho-The proportion in the respondents who thinks that the insurance is reasonable independent of gender.
H1- The proportion in the respondents who thinks that the insurance is reasonable dependent of gender.

Table 2.24. Cross table " Is insurance reasonable? * respondent's gender "

			respondent's		Total
			male	female	
is insurance reasonable?	Yes	Count	87	45	132
		% within is insurance reasonable?	65,9%	34,1%	100,0%
		% within respondent's	35,1%	34,6%	34,9%
		% of Total	23,0%	11,9%	34,9%
		Residual	,4	-,4	
		Std. Residual	,0	-,1	
		Adjusted Residual	,1	-,1	
	No	Count	119	62	181
		% within is insurance reasonable?	65,7%	34,3%	100,0%
		% within respondent's	48,0%	47,7%	47,9%
		% of Total	31,5%	16,4%	47,9%
		Residual	,2	-,2	
		Std. Residual	,0	,0	
		Adjusted Residual	,1	-,1	
	No answer	Count	42	23	65
		% within is insurance reasonable?	64,6%	35,4%	100,0%
		% within respondent's	16,9%	17,7%	17,2%

	% of Total	11,1%	6,1%	17,2%
	Residual	-,6	,6	
	Std. Residual	-,1	,1	
	Adjusted Residual	-,2	,2	
Total	Count	248	130	378
	% within is insurance reasonable?	65,6%	34,4%	100,0%
	% within respondent's	100,0%	100,0%	100,0%
	% of Total	65,6%	34,4%	100,0%

Figure 9. Is insurance reasonable? * respondent's gender
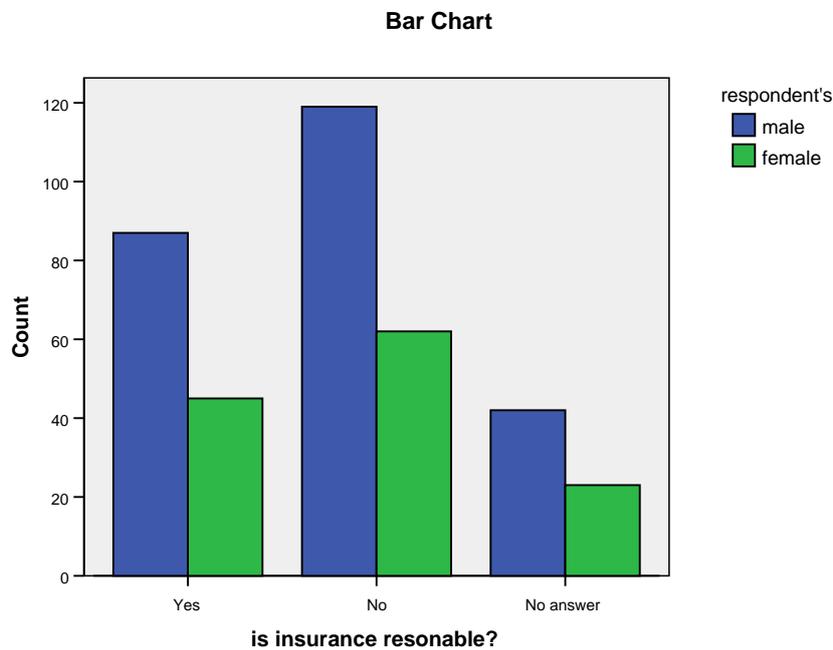
Statistical test: Use the one-sample Chi-Square (χ2) to compare the observed distribution to a hypothesized distribution. Chi-Square (χ2) test is used because the responses are classified into nominal categories, categories, and there are sufficient observations.

Table 2.25 Chi-Square Test results " Is insurance reasonable? * respondent's gender"

Statistic	Value	DF	P	
Chi-Square	0,035	2	0,983	

The test results are given first as the raw Chi-Square ($\chi2$) value (0.035) and the degree of freedom (2) along with the P value (0.983).

Critical test value: The value of ($\chi2$) (Appendix 2) with the degree of freedom (2) is 13.82 for $\alpha = 0.01$.

Decision: The calculated value is smaller than the critical value, so the null hypothesis is assumed. It means who thinks that the insurance is reasonable does not depend on his gender.

*Ho- The proportion in the respondents who thinks that the insurance is reasonable independent of age.*

H1- The proportion in the respondents who thinks that the insurance is reasonable dependent of age.

Table 2.26 Cross table Is insurance reasonable? * Age of respondents

			age of respondent's			
			under 25	26-45	46-over	Total
is insurance reasonable?	Yes	Count	23	89	20	132
		% within is insurance reasonable?	17,4%	67,4%	15,2%	100,0%
		% within age of respondent's	19,8%	44,7%	31,7%	34,9%
		% of Total	6,1%	23,5%	5,3%	34,9%
		Residual	-17,5	19,5	-2,0	
		Std. Residual	-2,8	2,3	-,4	
		Adjusted Residual	-4,1	4,2	-,6	
	No	Count	79	83	19	181
		% within is insurance reasonable?	43,6%	45,9%	10,5%	100,0%
		% within age of respondent's	68,1%	41,7%	30,2%	47,9%
		% of Total	20,9%	22,0%	5,0%	47,9%
		Residual	23,5	-12,3	-11,2	
		Std. Residual	3,1	-1,3	-2,0	
		Adjusted Residual	5,2	-2,5	-3,1	
	No answer	Count	14	27	24	65
		% within is insurance reasonable?	21,5%	41,5%	36,9%	100,0%
		% within age of respondent's	12,1%	13,6%	38,1%	17,2%

		% of Total	3,7%	7,1%	6,3%	17,2%
		Residual	-5,9	-7,2	13,2	
		Std. Residual	-1,3	-1,2	4,0	
		Adjusted Residual	-1,8	-2,0	4,8	
Total		Count	116	199	63	378
		% within is insurance reasonable?	30,7%	52,6%	16,7%	100,0%
		% within age of respondent's	100,0%	100,0%	100,0%	100,0%
		% of Total	30,7%	52,6%	16,7%	100,0%

Figure 10. Is insurance reasonable? * Age of respondents
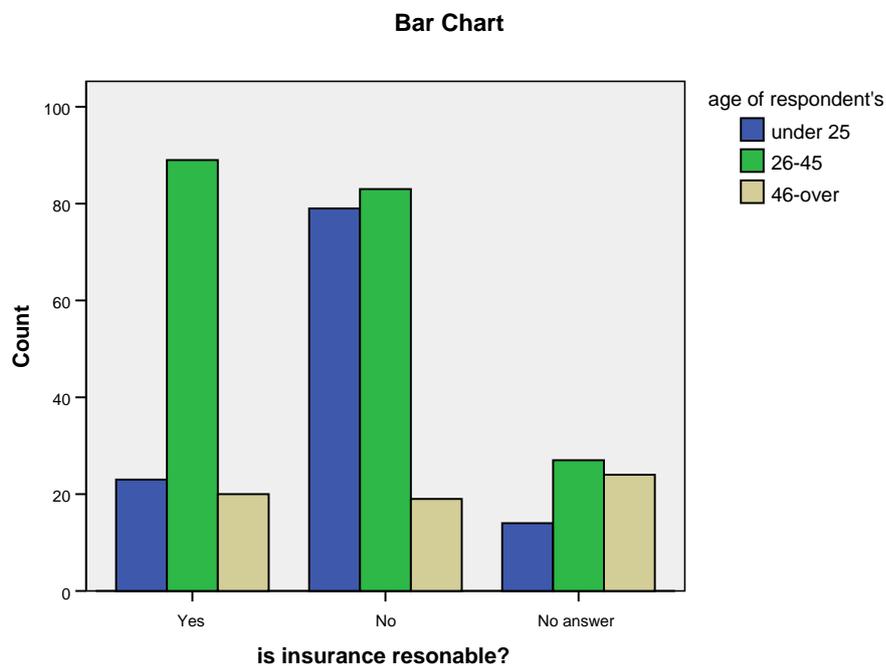
Bar Chart

Statistical test: Use the one-sample Chi-Square ($\chi 2$) to compare the observed distribution to a hypothesized distribution. Chi-Square ($\chi 2$) test is used because the responses are classified into nominal categories, categories, and there are sufficient observations.

Table 2.27 Chi-Square Test Results "Is insurance reasonable? * Age of respondents"

Statistic	Value	DF	P	
Chi-Square	48,147	4	0,000	

The test results are given first as the raw Chi-Square ($\chi 2$) value (48.147) and the degree of freedom (4) along with the P value (0.000).

Critical test value: The value of (χ2) (Appendix 2) with the degree of freedom (4) is 18.46 for α = 0.01.

Decision: Calculation indicates that calculated value is greater than critical value, so the null hypothesis is rejected. From that we conclude that respondents' age influence to their decision in reasonability of insurance.

Most of respondents (67.4%) whose age is 26-45 assume that the insurance service is necessary in life. We can conclude that this part of population actively takes part in social life and business, that's why their opinion about insurance is positive. Respondents under age 25 have negative opinion about insurance. We think the reasons are:

1) According to official information there is not a subject related to insurance at schools and colleges.

2) According to our survey, not insured people is much more (93.9%) than insured people (6.1%). It might mean there is not such condition for young people to have their own opinion in society.

*Ho- The proportion in the respondents who thinks that the insurance is reasonable independent of education;*
H1- The proportion in the respondents who thinks that the insurance is reasonable dependent of education;

Table 2.28 Cross table "Is insurance reasonable? * Education"

			education		Total
			Graduated	high school	
is insurance reasonable?	Yes	Count	116	16	132
		% within is insurance reasonable?	87,9%	12,1%	100,0%
		% within education	50,9%	10,7%	34,9%
		% of Total	30,7%	4,2%	34,9%
		Residual	36,4	-36,4	
		Std. Residual	4,1	-5,0	
		Adjusted Residual	8,0	-8,0	
	No	Count	76	105	181
		% within is insurance reasonable?	42,0%	58,0%	100,0%

		% within education	33,3%	70,0%	47,9%
		% of Total	20,1%	27,8%	47,9%
		Residual	-33,2	33,2	
		Std. Residual	-3,2	3,9	
		Adjusted Residual	-7,0	7,0	
	No answer	Count	36	29	65
		% within is insurance reasonable?	55,4%	44,6%	100,0%
		% within education	15,8%	19,3%	17,2%
		% of Total	9,5%	7,7%	17,2%
		Residual	-3,2	3,2	
		Std. Residual	-,5	,6	
		Adjusted Residual	-,9	,9	
Total		Count	228	150	378
		% within is insurance reasonable?	60,3%	39,7%	100,0%
		% within education	100,0%	100,0%	100,0%
		% of Total	60,3%	39,7%	100,0%

Figure 11. Is insurance reasonable? * Education

Bar Chart
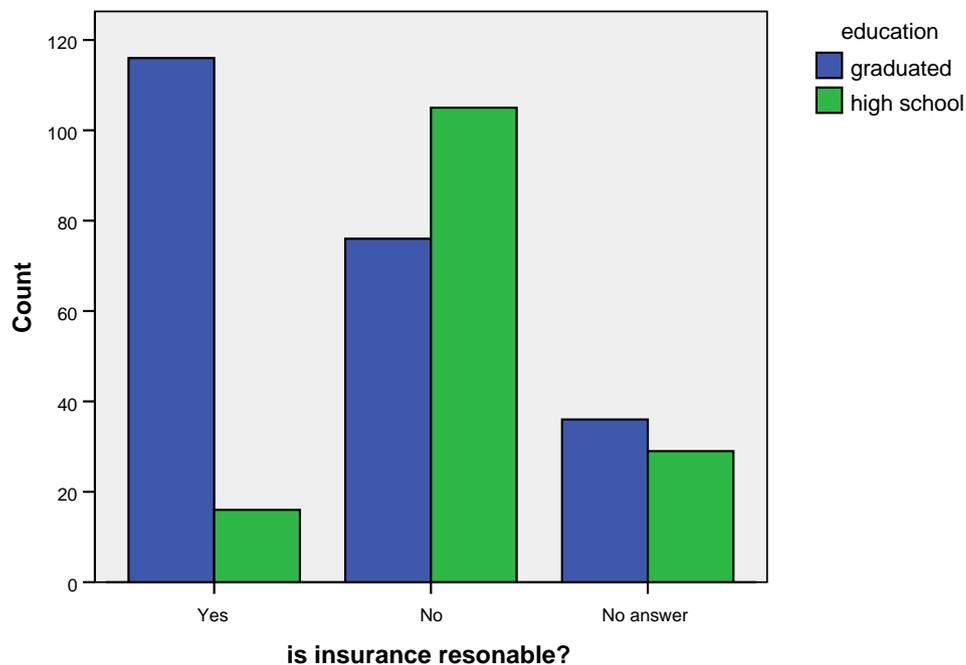
Statistical test: Use the one-sample Chi-Square ($\chi 2$) to compare the observed distribution to a hypothesized distribution. Chi-Square ($\chi 2$) test is used because the

responses are classified into nominal categories, categories, and there are sufficient observations.

Table 2.29 Chi-Square Test Results "Is insurance reasonable? * Education"

Statistic	Value	DF	P	
Chi-Square	67,956	2	0,000	

The test results are given first as the raw Chi-Square ($\chi 2$) value (67.956) and the degree of freedom (2) along with the P value (0.000).

Critical test value: The value of ($\chi 2$) (Appendix 2) with the degree of freedom (2) is 13.82 for $\alpha = 0.01$.

Decision: The calculated value is greater than the critical value, so the null hypothesis is rejected. From that we conclude that respondents' education influence to their decision in reasonability of insurance.

Most of the respondents (87.9%) with high education consider that insurance services are necessary. We think the reasons are:

1) Most universities and college's educate some business disciplines as obligatory subjects.

2) Most of students usually try to start their own business or are engaged already in small, medium and large business. That's why they are much interested in economics system at all including insurance.

H_0-The proportion in the respondents who is insured independent of respondent's sufficient income to be insured.
H_1- The proportion in the respondents who is insured dependent of respondent's sufficient income to be insured.

Table 2.30 Cross table "Are you insured? * Do you have sufficient income to be insured?"

			do you have sufficient income to be insured?		Total
			Yes	No	
are you insured?	Yes	Count	22	1	23

			3,5	19,5	23,0
		Expected Count	3,5	19,5	23,0
		% within are you insured?	95,7%	4,3%	100,0%
		% within do you have sufficient income to be insured?	38,6%	,3%	6,1%
		% of Total	5,8%	,3%	6,1%
		Residual	18,5	-18,5	
		Std. Residual	10,0	-4,2	
		Adjusted Residual	11,1	-11,1	
	No	Count	35	320	355
		Expected Count	53,5	301,5	355,0
		% within are you insured?	9,9%	90,1%	100,0%
		% within do you have sufficient income to be insured?	61,4%	99,7%	93,9%
		% of Total	9,3%	84,7%	93,9%
		Residual	-18,5	18,5	
		Std. Residual	-2,5	1,1	
		Adjusted Residual	-11,1	11,1	
Total		Count	57	321	378
		Expected Count	57,0	321,0	378,0
		% within are you insured?	15,1%	84,9%	100,0%
		% within do you have sufficient income to be insured?	100,0%	100,0%	100,0%
		% of Total	15,1%	84,9%	100,0%

Figure 12. "Are you insured? * Do you have sufficient income to be insured?"

Bar Chart
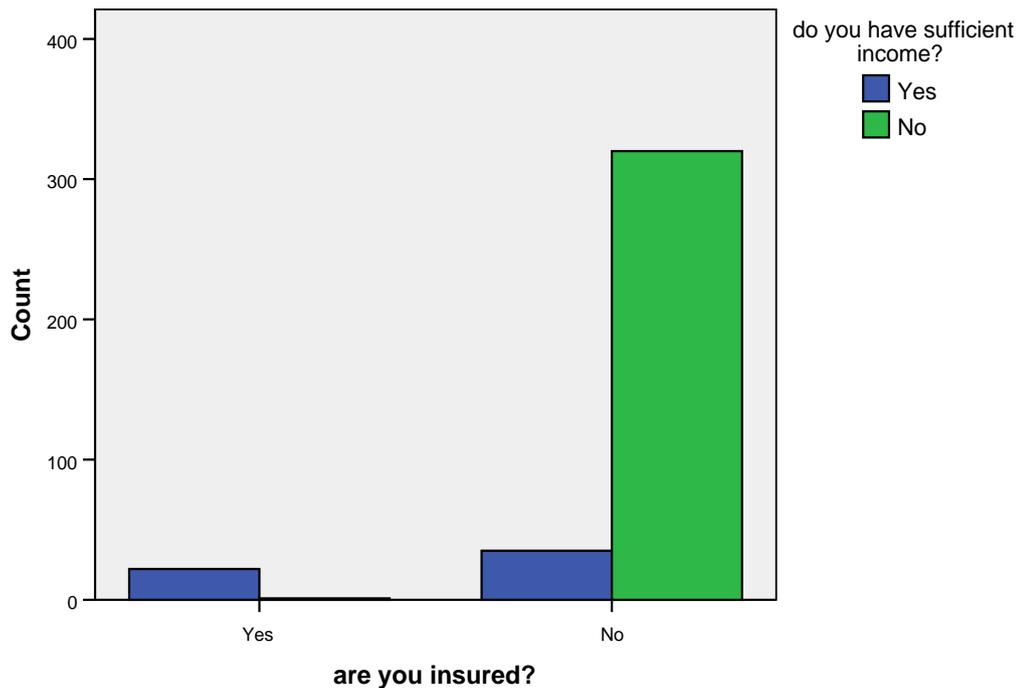
Table 2.31 Chi-Square Test Results "Are you insured? * Do you have sufficient income to be insured?"

Statistic	Value	DF	P	
Chi-Square	124.157	1	0,000	

The test results are given first as the raw Chi-Square ($\chi2$) value (124.157) and the degree of freedom (1) along with the P value (0.000).

Critical test value: The value of ($\chi2$) (Appendix 2) with the degree of freedom (1) is 10.83 for $\alpha = 0.01$.

Decision: The calculated value is greater than the critical value, so the null hypothesis is rejected. This means that not using the insurance service by people depends on their sufficient income to be insured.

Chapter 3. Conclusion and recommendations

Conclusion

On our research we have found out followings:

1. Insurance premiums mostly come from obligatory insurance. We discovered that banks are the main clients of insurance agencies at present.

2. "Uzbekinvest" and "Kafolat" are the main competitors of "Ishonch".

3. Annual insurance expenditures of people strongly depend on their annual income.

4. The respondent's percentage of Jizzak region, who is insured, is 6.1%, and who is not insured is 93.9%.

5. The respondent's percentage, who has sufficient income to be insured, is 15.1%, and who has not sufficient income to be insured is 84.9%.

6. The respondent's percentage, who thinks that insurance, is reasonable, is 34.9%, who thinks that insurance is not reasonable is 47.9%, and who has difficulty in answering, is 17.2%.

7. The respondent's percentage, who believes to insurance services, is 20.6%, who does not believe to insurance services, is 59.8%, and who has difficulty in answering, is 19.6%.

8. Respondents who is educated and whose age is 26-45 assume that the insurance services is necessary and has positive opinion about it.

9. Not using the insurance service by people depends on their sufficient income to be insured.

We consider followings are the main reasons for undeveloped insurance market in Jizzak region:

- low level of insurance culture, low level of income, lack of understanding by the population and legal entities the need in insurance services,

- Undeveloped economy of country, which doesn't allow the insurance market to develop as a whole;

- Lack of brokerage companies to work with insurance agencies;

- Lack of skilled specialists and prepared insurance managers.

Strategic recommendations

Following recommendations are essential to succeed in the future:

1. To improve partnership with Banks. Banking Association is the main founder of the "Ishonch". The earned resources of the Banking Association contains 1% of all banks' annual profit in Uzbekistan (information was taken from the Central bank of Uzbekistan). Chance should be given to banks as offering them available services. This project must be worked out with all commercial banks and Banking Association.

2. To give whole rights to banks in insuring their clients. To make simpler registration procedure. It would be convenient for people to insure not leaving banks because their trust to banks. It would help to avoid misunderstanding between them too. Another reason for that is the efficiency and high speed procedure of insurance services.

3. All the documentations, balance sheets, contract forms should be written in Uzbek language, because most of the youth in Jizzak city have difficulty in speaking & writing Russian. Uzbek is our state language.

4. We realised that specialist-development and training are not seriously considered by the management. Only good motivated and trained specialists can lead organisation towards good results. Training function should be developed and its responsibilities should be agreed.

5. To work on complex program how to improve the knowledge of hired insurance agents and give them opportunity to experience their knowledge in practice. It is much better to organize programs in the company itself, because

students who study in colleges and universities are far from practical work. That's why agents will be taught in company where they already worked for some time, they will put all their ability and skills to develop insurance services and how it works with clients.

6. "Ishonch" insurance agency needs to be provided with up-to-date computers, Office and phone equipments.

7. To provide agents with monthly salary for their work and find some ways to improve working conditions.

8. To organise an insurance marketing research to identify potential opportunities and business directions. Uzbek insurance market is not developed and there is huge potential to grow. Marketing research among individuals and corporate clients will show the customer needs and changes/ directions in the market in a new future. Research should be conducted by international recognised agency to get comprehensive and detailed results. It should form start point for future direction.

9. To develop new services and products for banking sector. New services and products might come from the research mentioned in a point above.

10. To improve Strategic Planning and Control Process. Analysis shows that Strategic planning process has to be improved. There significant rooms for improvement in this area. Short, medium and long term Plans should be developed and agreed by the Board. This should be main document to be followed for top Managers and should be regularly monitored comparing with actual results. Strategic Plan should be reviewed at least once year and corrective parameters should be agreed depending on current market conditions and available internal resources. Because marked point of marketing for agents seem to be unreal during their work and investment projects in our region as well. Given information is not correct and it is usually shown just in facts. Only three projects out of twenty-nine didn't fall through but the rest twenty six projects were taken away from the program in 2006.

11. To identify new geographical expansion opportunities. "Ishonch" agency has already good geographical presence. But some regions are not covered by insurance

agencies due to several reasons. Agency should conduct own research to identify possible opportunities and if it is possible to make necessary investments.

12. To lobby insurance service reform. Insurance system should be reformed to be able to render better services to clients. It should be lobbied by Government. All other insurance companies also should be involved in insurance reform discussions with Government.

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Appendix 1. Application

Gender:	male: female:
Age: from 18 till 25	
from 26 till 45	
from 46 and above	
Obtained knowledge degree:	College(University)
	High school
Monthly income:	under 50 000
	50000 over
Do you use insurance service?	Yes
	No
	No answer
If, No, are you able to afford (pay) for insurance services?	Yes
	No
	No answer
Do you believe in Insurance?	Yes
	No
	No answer
Do you think insurance is reasonable?	Yes
	No
	No answer

Appendix 2

Critical values of the Chi Squire distribution.

degree of freedom	Probability under Ho that $\aleph^2 \geq$ Chi Square				
	0.10	0.05	0.02	0.01	0.001
1	2.71	3.84	5.41	6.64	10.83
2	4.60	5.99	7.82	9.21	13.82
3	6.25	7.82	9.84	11.34	16.27
4	7.78	9.49	11.67	13.28	18.46
5	9.24	11.07	13.39	15.09	20.52
6	10.64	12.59	15.03	16.81	22.46
7	12.02	14.07	16.62	18.48	24.32
8	13.36	15.51	18.17	20.09	26.12
9	14.68	16.92	19.68	21.67	27.88
10	15.99	18.31	21.16	23.21	29.59
11	17.28	19.68	22.62	24.72	31.26
12	18.55	21.03	24.05	26.22	32.91
13	19.81	22.36	25.47	27.69	34.53
14	21.06	23.68	26.87	29.14	36.12
15	22.31	25.00	28.26	30.58	37.70
16	23.54	26.30	29.63	32.00	39.29
17	24.77	27.59	31.00	33.41	40.75
18	25.99	28.87	32.35	34.80	42.31
19	27.20	30.14	33.69	36.19	43.82
20	28.41	31.41	35.02	37.57	45.32
21	29.62	32.67	36.34	38.93	46.80
22	30.81	33.92	37.66	40.29	48.27
23	32.01	35.17	38.97	41.64	49.73
24	33.20	36.42	40.27	42.98	51.18
25	34.38	37.65	41.57	44.31	52.62
26	35.56	38.88	42.86	45.64	54.05
27	36.74	40.11	44.14	46.96	55.48
28	37.92	41.34	45.42	48.28	56.89
29	39.09	42.56	46.69	49.59	58.30
30	40.26	43.77	47.96	50.89	59.70

Source: Donald R. Cooper and C. William Emory, *Business Research Methods,* published by RICHARD D. IRVIN, INC., 1995.

Appendix 3

Critical values of the *F* distribution for $\alpha=0.05$

N2	Degrees of Freedom for Numerator																		
	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.9	245.9	248.0	249.1	250.1	251.1	252.2	253.3	243.3
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00

Degrees of Freedom for Denominator (left vertical axis label)

Source: Donald R. Cooper and C. William Emory, *Business Research Methods,* published by RICHARD D. IRVIN, INC., 1995.