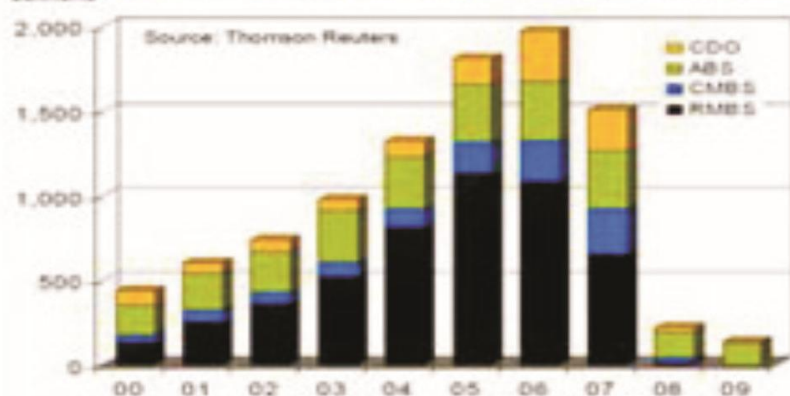


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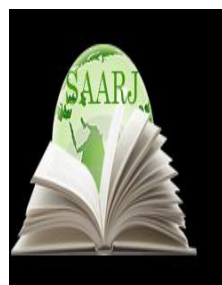
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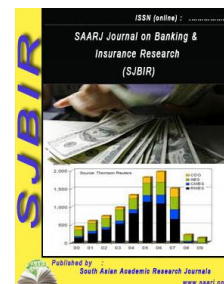
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## A FUZZY EXPERT SYSTEM TO SCORE BANK FACILITY-DEMANDING PRODUCTION AND SERVICE INSTITUTES

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### ABSTRACT

*An essential activity of a banking system is to offer facilities to producers and service providers. Accurate identification of producers and service providers would reduce overdue claims and fraud. It is necessary to identify which factors should be considered by banks to improve their performance in offering facilities to production and service institutes. This study reviews previous studies and develops a questionnaire to identify the most important factors that affect the provision of bank facilities to producers and service providers. These factors were found to be monetization, liquidity, technical knowledge, loan records, efficiency, and experience. This study aimed to design a fuzzy expert system to score bank facility-demanding institutes to assign proper facilities to producers and service providers. For this purpose, a fuzzy expert system was proposed based on fuzzy criteria, considering ambiguity in the identified factors. The validation results indicated that the proposed model had high accuracy and good performance.*

**KEYWORDS:** Bank Facilities, Expert System, Fuzzy criteria, Fuzzy logic, Scoring.

### 1. INTRODUCTION

Banking systems collect deposits and grant facilities to production and service institutes in the forms of fixed capital and current capital to enhance production and employment. They contribute to every economy in the form of indirect employment. The more effectively a banking system performs in offering facilities to production and service institutes, the lower the production costs



and the better the production, employment, and economic growth will be (Tayebi et al., 2010). Therefore, it is necessary to identify which factors should be considered by banks to improve their performance in offering facilities to production and service institutes and how much facilities each producer or service provider deserves.

Today, an essential challenge of banking decision-makers is to identify production and service institutes deserving bank facilities, specifically regarding the increase in fraud and overdue claims. Moreover, the use of non-standard and mostly subjective criteria to identify production and service institutes to assign bank facilities increases overdue and even non-receivable collections, reducing the liquidity of banks and destroying capitals. Considering the requirement of different communities for financial and economic resources, proper and efficient prioritization of facilities to offer to production and service institutes improves not only the resource assignment system but also the welfare level (Odeh et al., 2011).

Numerous studies have identified and prioritized factors influencing the provision of bank facilities to production and service institutes. The current study aims to 1) collect and identify indexes affecting the provision of facilities to production and service institutes, 2) propose a new fuzzy expert system to score production and service institutes based on the identified factors, and 3) evaluate the proposed expert system. The design of a fuzzy expert system based on the identified factors is a key innovation of this study. The output of the proposed system can accurately score facility-demanding institutes, helping the relevant experts in making decisions.

The remainder of this study is structured as follows: Section 2 provides a literature review. Section 3 discusses the determination of factors influencing the identification of production and service institutes. Section 4 proposes a fuzzy expert system. Section 5 analyzes and validates the proposed fuzzy expert system. Finally, Section 6 concludes the paper and provides some suggestions for future works.

## **2. LITERATURE REVIEW**

Granting facilities is an essential activity of banks. Facilities are the main outputs of banks, by which unused liquidities are injected into predefined and purposeful economic sectors. Identifying production and service institutes eligible for bank facilities is of great necessity. It would help assign facilities to effective production and service institutes in the employment cycle. Obviously, it is required to identify evaluation criteria to identify proper production and service institutes. Therefore, researchers have conducted several studies to determine factors affecting decisions on granting facilities.

Amiri et al. (2015) identified and analyzed criteria influencing the evaluations of loan demander plans and proposed an evaluation model. The criteria were weighted using a paired comparison matrix and fuzzy network analysis. The weights provided the value of each factor. Jamshidi et al. (2014) studied reasons for delayed payback in Mehr Iran Loan Bank. They examined the effects of independent variables, including collateral type, facility area, and payback period, on predicting the delay probability of granted facilities using the regression approach. Amin Naseri et al. (2004) classified criteria influencing the evaluation process into five groups including 1) the qualitative criteria or specifications of the borrowing individual or institute, 2) the technical feasibility of the project, 3) the specifications of the organization or company, 4) financial analysis, and 5) economic analysis. They reviewed several related studies. Table 1 provides the criteria obtained from the review.

After identifying criteria affecting the identification of more proper customers, it is required to determine the optimal model of credit and facility assignment. Jao (2001) proposed a linear programming model to obtain an optimal credit and facility assignment in Hong Kong banks. This author suggested that the proposed optimal model would increase the total interest of Hong Kong banks by approximately 2.7%. Mansouri et al. (2002) simultaneously analyzed the credit risk and credit capacity using a set of independent variables and multilayer perceptron (MLP) neural networks. They observed that the neural network and regression models had almost the same performance in estimating credit risk, while the neural network model had a higher performance in credit capacity estimation. Providing a suitable model to score customer credits and collecting expert views, Rajabzadeh et al. (2010) employed a hybrid reasoning model and a hybrid fuzzy model to design a hybrid intelligent customer credit ranking system. Comparing the results of the hybrid system and hybrid fuzzy system with the results of the expert system indicated the high accuracy of the hybrid fuzzy system.

**TABLE 1. THE MOST IMPORTANT LOAN-DEMANDING INSTITUTION IDENTIFICATION CRITERIA OBTAINED FROM PREVIOUS STUDIES**

Criteria	Sub-criteria
The characteristics of the borrowing individual or institute	Previous loan payback records, management history, education, age, gender, commercial and marketing ability, trustworthiness and honesty
Technical feasibility	Strong sales system and representatives, shareholder credits, employee knowledge and skill, manager ability, good relationships with project-related companies, physical infrastructure, required resources and materials, permission and legality, product innovation, project compliance with the latest technologies, market competition situation, technology and technical knowledge, market and customer requirement and upcoming similar plans
Financial analysis	Interest rate, inflation rate, net profit, asset/debt ratio finance, industry health situation, liquidity ratios, final price, proper feasibility study report, monthly income and expenditures
Economic analysis	The available resources and strategies of a bank, market demand, internal return rate, economic return rate, export products

Che et al. (2010) proposed a data envelopment analysis-fuzzy analytic hierarchy (DEA-FAHP) approach to solve bank loan decision-making problems in Taiwan. For this purpose, they collected the data from 2002 to 2004. The weights of the criteria and company data were analyzed by the data envelopment analysis (DEA) model. Using the proposed method, a bank loan analysis model was provided. Hsiao et al. (2011) employed the fuzzy DEA approach to analyze the performance of twenty-four commercial banks with loan and investment problems. Data mining and fuzzy logic methods were used to rank credit facility customers. Taghavifard et al. (2013) collected and filtered the data of the former customers of Saman Bank using a standard data mining process. Then, they fuzzified fuzzifiable variables according to expert comments and modeled them using a fuzzy decision tree technique. Seifbarghy et al. (2012) proposed a decision support system to

evaluate customers. The proposed model consisted of six different methods. A user could select one method or a combination of several methods.

Nojavan et al. (2014) proposed a new hybrid model to make decisions on assigning loans to bank investment projects. The model ranked acceptable projects using a combination of the AHP and the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method. Using an Artificial Neural Network (ANN) and combining the concepts of trust and validation, Mirtalaie et al. (2013) enabled financial institutes to incorporate facility-demanding institute trustworthy levels into their loan assignment processes. They provided the first trust-based algorithm to validate bank customers.

Many researchers have determined factors influencing the identification of bank facility demanders. The provision of bank facilities to reliable production and service institutes improves production and services, exhibiting its effectiveness in the improved economy. The current study is practical in terms of results and descriptive in terms of its methodology; and the applied data are qualitative. Factors affecting the provision of bank facilities to production and service institutes are identified. Then, a fuzzy expert system is proposed to validate facility-demanding production and service institutes so facility-demander institutes could enjoy bank facilities in proportion to their competency.

### **3. Criteria influencing the identification of loan-demanding producers and service providers**

Before offering bank facilities to demanders, it is required to accurately evaluate the demanders to prevent financial problems. Thus, it is necessary to derive customer evaluation criteria. For this purpose, a questionnaire with index-related items was designed based on previous studies and the documentation of experts' descriptive information on factors affecting bank facility provision. Moreover, bank experts were surveyed. Data were collected based on the views of experts in different banks in Bijar County, Iran. Considering that it was not possible to access the entire statistical population and banking system experts could not be entirely identified and accessed, a limited number of the population was investigated as samples. Thus, 150 experts in some banks in Bijar County responded to the questionnaires to identify factors influencing the granting of loans to production and service institutes.

The most frequently selected criteria by respondents were considered as the main criteria using the Delphi method. The questionnaire asked respondents to determine the importance of the criteria on the Likert scale. Introduced in 1932, the Likert scale is a method designed for measuring individuals' attitudes. This scale is used in a wide range of studies (Salimi et al. 2008). The Likert scale asks questions to show the level of agreement with a statement. The validity and reliability of a questionnaire are essential in collecting data. The validity of a questionnaire is typically confirmed by experts. The validity of this study's questionnaire was confirmed by experts. At the same time, the reliability of a questionnaire demonstrates how similar results the questionnaire would generate in the same situation. Cronbach's alpha was employed to calculate the reliability of the researcher-made questionnaire. The data of 13 items were analyzed by SPSS. Cronbach's Alpha coefficient of the questionnaire was obtained to be 0.7, suggesting a high validity. Table 2 provides different effective factors obtained from the review of previous studies.

Analyzing the responses showed that the highest scores are obtained for income, liquidity, producer manager's technical knowledge, loan and timely payback history, experience, and production efficiency, according to expert views. These indexes are described in the following.



**TABLE 2. INITIAL INDEXES**

No.	Index	No.	Index
1	Manager's technical knowledge	10	Activity management experience
2	The proper feasibility study report	11	Sales system
3	Loan and timely payback history	12	Liquidity
4	Production efficiency	13	Permission
5	Access to bank	14	Income
6	Experience	15	No bounced check
7	Non-reliance on external exchange	16	No political crisis
8	Manager experience	17	Reliable guarantee
9	Reputation	18	No debt

**Income** is an essential factor in helping production and service institutes to survive. Banks significantly consider this factor when assigning facilities since a high-income producer or service provider has a high profit, which encourages banks to offer facilities to such production and service institutes.

**Liquidity** refers to the cash amount of a producer or service provider. It should be in proportion to production or services; otherwise, it would lead to inflation and recession. Thus, a bank can give priority to a loan-demanding producer or service provider that has a relatively high cash amount (in proportion to their production or services).

**Technical knowledge** refers to a set of industrial and beneficial information along with technical and non-technical skills in designing, constructing, and operating a production or service institute to produce the required products or materials. Indeed, the higher the knowledge of the manager of a production or service provision institute, the more willing the banks will be to offer facilities.

Banks can trust and offer facilities to a production or service institute that has a **history** of loan reception and timely payback. The higher the **experience** of the production or service institute, the sooner the banks will offer facilities.

**Efficiency** is a performance evaluation index of production and service institutes. As the output of a process, efficiency indicates the prevention of wasting materials, assets, and time at work. Banks can trust and offer facilities to high-efficiency production and service institutes.

Pearson's non-parametric chi-square test was employed to investigate the relationship between inputs and facilities granted to producers and service providers. Considering that the significance level in the Pearson chi-square test was calculated to be lower than 0.05 for the six indexes, it can be concluded that:

- There is a significant relationship between income and bank facility provision to production and service institutes;
- There is a significant relationship between the technical knowledge of the manager of a production or service institute and bank facility provision to the production or service institute;
- There is a significant relationship between liquidity and bank facility provision to production and service institutes;
- There is a significant relationship between the loan and timely payback history and bank facility provision to production and service institutes;

- There is a significant relationship between experience and bank facility provision to production and service institutes; and
- There is a significant relationship between production efficiency and bank facility provision to production and service institutes.

A fuzzy expert system can be proposed using the identified criteria to score and validate customers.

#### 4. The proposed fuzzy expert system

This section provides a fuzzy expert system using the identified criteria based on fuzzy inference in MATLAB. Fig. 1 illustrates the overall architecture of the proposed system. As can be seen, the proposed fuzzy inference system consists of six sectors, including 1) input variables (which are entered by users), 2) a fuzzy rule database, 3) a fuzzification unit, 4) a fuzzy inference engine, 5) a defuzzification unit, and 6) the output variable.

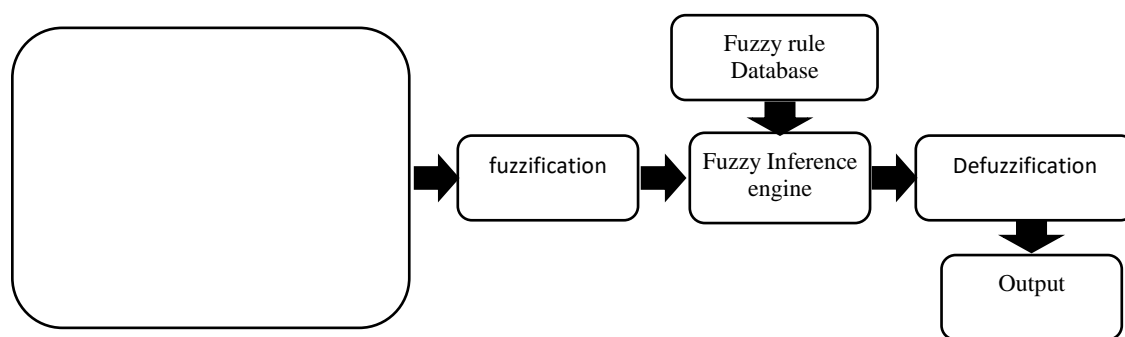


Figure 1. Proposed fuzzy inference architecture

As can be seen, these six criteria serve as the inputs of the fuzzy inference system. The defined fuzzy rule database and Mamdani fuzzy minimum inference are used to score the customers. Then, the scores are provided as the output and may be considered as the facility provision coefficient.

##### 4.1. Defining membership functions for inputs and outputs

This section defines a set of linguistic terms for the inputs and output. Table 3 provides the linguistic values of input and output linguistic variables. Some variables were transformed into Gaussian fuzzy numbers for high accuracy. An Z-shaped membership function was used for the beginning of the interval, while an S-shaped membership function was adopted for the end of the interval. A Gaussian fuzzy number is represented as  $M = (\sigma, \mu)$ , where  $\mu$  is the mean and  $\sigma$  is the standard deviation. The Gaussian membership function is expressed as (1):

$$\mu_M = e^{\frac{-(x-\mu)^2}{2\sigma^2}} \quad (1)$$

An S-shaped function is written as (2):

$$\mu_M = \begin{cases} 0 & x \leq a \\ 1 - 2 \left( \frac{x-a}{b-a} \right)^2 & a \leq x \leq \frac{a+b}{2} \\ 2 \left( \frac{x-b}{b-a} \right)^2 & \frac{a+b}{2} \leq x \leq b \\ 1 & x \geq b \end{cases} \quad (2)$$

Also, a Z-shaped function is written as (3):

$$\mu_M = \begin{cases} 1 & x \leq a \\ 1 - 2 \left( \frac{x-a}{b-a} \right)^2 & a \leq x \leq \frac{a+b}{2} \\ 2 \left( \frac{x-b}{b-a} \right)^2 & \frac{a+b}{2} \leq x \leq b \\ 0 & x \geq b \end{cases} \quad (3)$$

where  $M = (a, b)$ . Trapezoidal fuzzy numbers were employed to define the beginnings and ends of ranges of output variable. A trapezoidal fuzzy number is represented as  $M = (m_1, m_2, m_3, m_4)$ , where  $m_1 \leq m_2 \leq m_3 \leq m_4$ . Hence, a trapezoidal membership function is written as (4):

$$\mu_M = \begin{cases} 0 & x < m_1 \\ \frac{(x-m_1)}{(m_2-m_1)} & m_1 \leq x < m_2 \\ 1 & m_2 \leq x < m_3 \\ \frac{(m_4-x)}{(m_4-m_3)} & m_3 \leq x < m_4 \\ 0 & x > m_4 \end{cases} \quad (4)$$

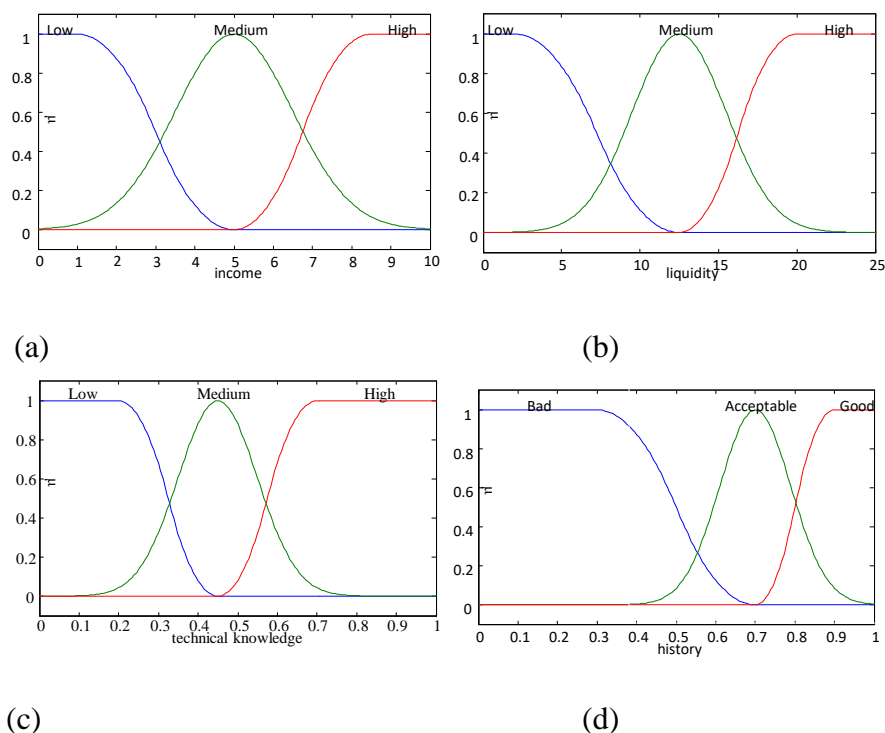
Fig. 2 demonstrates the input and output membership functions. Fig. 2a shows the membership function of the linguistic variable of income. An annual income of [0, 10] was considered, which is represented by three linguistic values: high, medium, and low. The institutes with a higher income are considered as high-income ones.

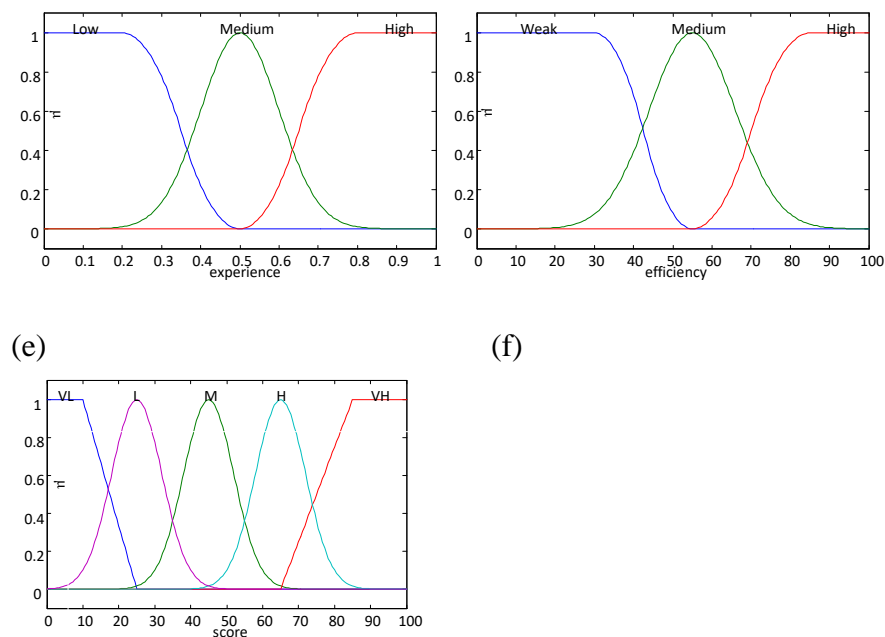
**TABLE 3. THE LINGUISTIC INPUTS AND OUTPUT OF THE FUZZY SYSTEM**

Type	Criterion	Linguistic Values	Fuzzy Numbers
Input Variables	income	Low	[1 5]
		Average	[1.5 5]
		High	[5 8.5]
	liquidity	Low	[2 12.5]
		Average	[3 12.5]
		High	[12.5 20]
	producer manager's technical knowledge	Low	[0.2 0.45]
		Average	[0.1 0.45]
		High	[0.45 0.7]
	loan and timely payback history	Bad	[0.3 0.7]
		Acceptable	[0.09 0.7]
		Good	[0.7 0.9]
	production efficiency	Weak	[30 55]
		Medium	[11 55]
		High	[55 85]
	experience	Low	[0.2 0.5]
		Medium	[0.1 0.5]

Output Variable	Score	High	[0.5 0.8]
		Very Low (VL)	[0 0 10 25]
		Low (L)	[7 25]
		Medium (M)	[7 45]
		High (H)	[7 65]
		Very High (VH)	[65 85 100 100]

Fig. 2b shows the membership function of liquidity linguistic. The liquidity of a production or service institute was assumed to be in the range of  $[0, 25]$ , with the linguistic values of the low, medium, and high. The manager's technical knowledge was considered to be in the range of  $(0, 1]$ , according to expert views. Fig. 2c illustrates the membership function of manager technical knowledge. Fig. 2d shows the loan and timely payback history of loan-demanding customers in the three groups of bad, acceptable, and good in the range of  $(0, 1]$  in terms of creditworthiness. Granting facilities to production and service institutes is also influenced by their efficiency. As shown in Fig. 2e, fuzzy efficiency is expressed in percentage, i.e.,  $(0, 100]$ , with the linguistic values of weak, medium, and high. An agile production or service institute has a high experience, high flexibility, and high risk-taking ability. This factor is represented with the linguistic values of low, medium, and high and Fig. 2f demonstrates the membership function of this variable. Fig. 2g indicates the membership function of customer score with five linguistic values of very low, low, medium, high, and very high. The fuzzy values fall in the range of  $(0, 100]$ .





(g)

Figure 2. The membership functions of inputs and output.

#### 4.2. Fuzzy rule database and fuzzy inference engine

The six input variables were investigated to create a fuzzy rule database. Using the knowledge of experts and AND, OR, and NOT operators, 225 fuzzy rules were obtained. The fuzzy rules were the core of the fuzzy inference system. After receiving input data, the Mamdani fuzzy minimum inference engine was employed using the fuzzy rule database, calculating facility scores as the output of the proposed fuzzy model. Table 4 provides some of the rules.

According to rule 7 in Table 4, for example, if the income, liquidity, manager technical knowledge, loan and payback history, and efficiency of a loan-demanding institute are high, low, non-high (i.e., medium or weak), bad, and weak, respectively, the institute will receive a low score, regardless of its experience. Expert views were employed to develop the fuzzy rules. Based on the fuzzy rules and Mamdani minimum inference engine, the output (i.e., facility score) can be used as the institute priority or facility provision coefficient.

TABLE 4. THE RULES OF THE PROPOSED FUZZY SYSTEM

Rule	income	liquidity	technical knowledge	payback history	production efficiency	experience	Score
1	High	High	High	Good	Medium	NOT Low	Very High
2	High	High	Average	Good	Weak	---	Medium
3	High	Average	High	Good	High	High	Very High
4	Average	Average	NOT Low	Acceptable	Weak	---	Low
5	High	High	High	Acceptable	Weak	Low	Medium
6	High	Average	Low	Good	Medium	---	Medium
7	High	Low	NOT High	Bad	Weak	---	Very Low



8	Low	Average	Average	Acceptable	High	High	High
9	Average	NOT High	Low	Good	NOT Weak	Low	Low
10	Average	NOT Low	High	Bad	High	NOT Low	Medium

## 5. Analyzing and validating the proposed model

This section analyzes the proposed fuzzy expert system. The proposed model was validated using expert views. Then, some relationships between the input variables were investigated using 3D fuzzy toolbox diagrams. Maintaining five inputs unchanged, the sensitivity of the model to a change in the output was analyzed.

### 5.1. Validating the proposed fuzzy expert system

A number of random data were created for 50 loan-demanding institutes to validate the proposed fuzzy expert system. Then, the data were incorporated into the system, recording the output. Table 5 provides 15 cases as examples. The data were also delivered to experts in Bijar banks to score the loan-demanding institutes.

**TABLE 5. MODEL EVALUATION AND VALIDATION**

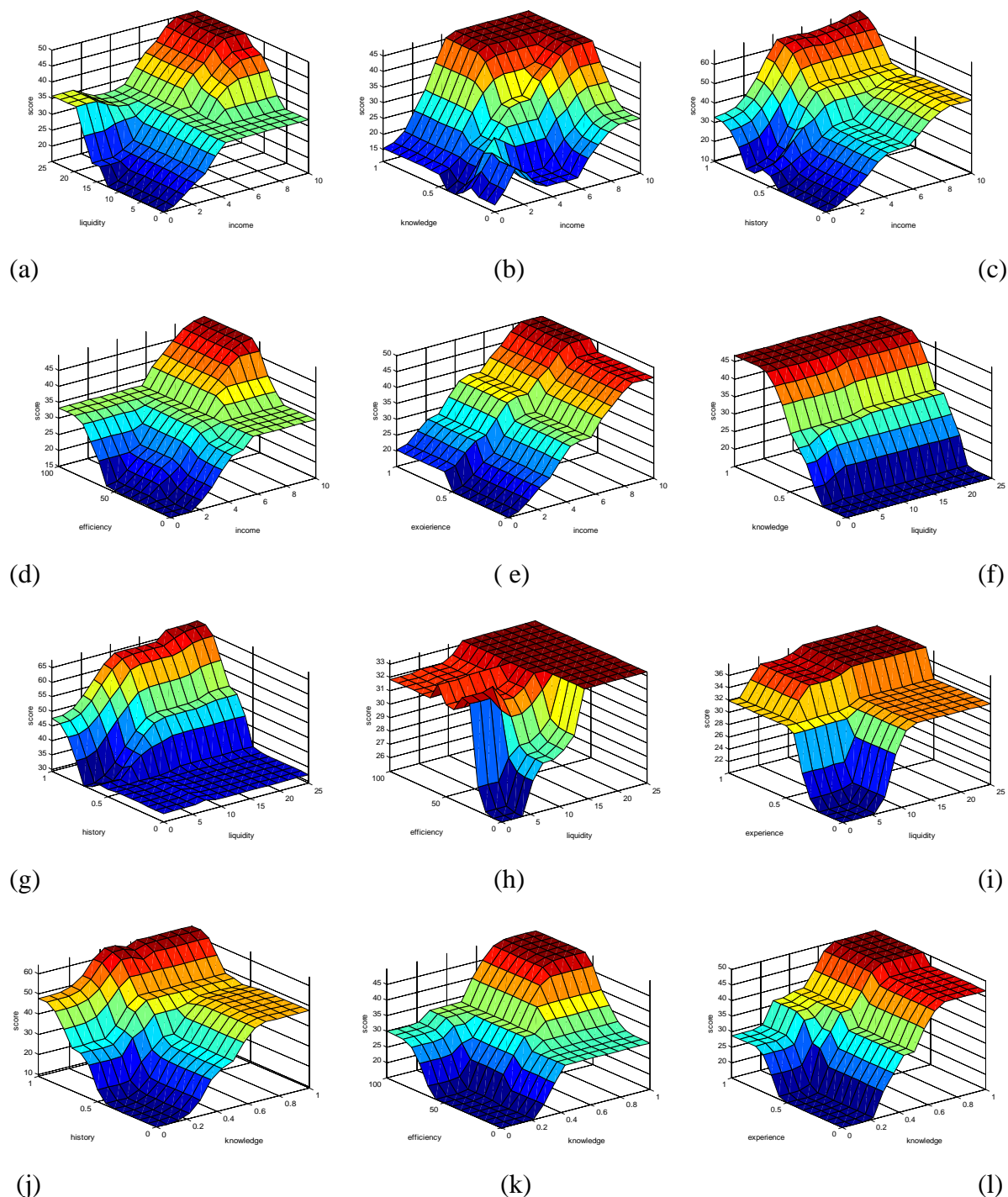
customer	income	liquidity	technical knowledge	payback history	production efficiency	experience	Score	experts
1	6	15	0.40	0.60	65	0.65	55.95	M
2	5	9	0.50	0.45	60	0.55	44.38	M
3	3	12	0.60	0.50	65	0.60	42.11	L
4	9	20	0.45	0.65	50	0.40	47.61	M
5	2	5	0.30	0.45	40	0.30	21.23	L
6	4	10	0.25	0.30	45	0.45	21.35	L
7	9	22	0.90	0.75	75	0.80	71.38	VH
8	2	4	0.20	0.35	28	0.12	9.39	VL
9	8	23	0.49	0.64	54	0.19	50.18	M
10	1	5	0.32	0.24	43	0.25	15.29	VL
11	5	20	0.85	0.69	72	0.55	51.70	M
12	6	16	0.59	0.34	22	0.64	34.29	L
13	8	24	0.85	0.66	84	0.70	66.43	H
14	2	4	0.10	0.18	25	0.14	9.35	VL
15	7	18	0.63	0.80	44	0.20	51.95	M

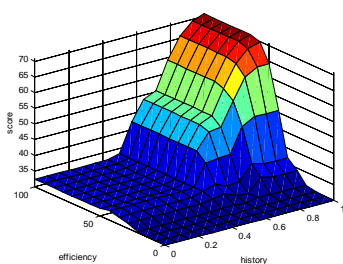
For example, institution 1 was incorporated into the fuzzy expert system and the output of 55.95 was obtained. As can be seen in Table 5, this value is in the range of medium values. At the same time, the value was delivered to bank experts. They also proposed the medium priority of facility provision. For 48 out of 50 cases, the expert system output and bank expert views were the same. This suggests a 96% accuracy for the proposed fuzzy expert system. Hence, the model performed properly.

### 5.2. Investigating mutual relationships between input variables

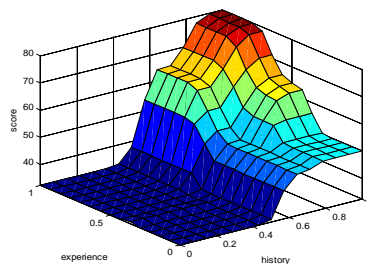
The relationships of input variables (i.e., income, liquidity, loan and timely payback history, manager technical knowledge, experience, and production efficiency) with the output variable (i.e.,

facility provision) were investigated. Fig. 3 illustrates the 3D toolbox diagrams of the relationships in MATLAB. Since six input variables were incorporated into the fuzzy expert system, fifteen 3D diagrams can be provided, some of which are analyzed in the following.

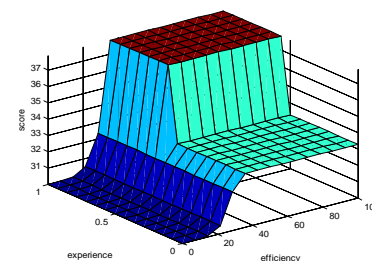




(m)



(n)



(o)

Figure 3. Effects of mutual relationships between the criteria on the output for inputs [5, 12.5, 0.5, 0.5, 50, 0.5]

As can be seen from Fig 3, the loan-demanding institute's score increases as the criteria reach higher values. This trend can be seen in the entire diagrams. The combination of the timely loan payback history (i.e., creditworthiness) of an institute with another criterion provides a higher score to the institute than other criteria. This suggests that this criterion (i.e., timely payback history) strongly influences facility provision. It can be seen from Fig. 3f that manager technical knowledge is a more effective criterion than liquidity at the medium level of other criteria. Also, Fig. 3h indicates that an institute can receive up to approximately 30% of the score at the level of other criteria with any efficiency in case it has high liquidity. According to Figs. 3m, 3g, and 3n, the bad history of an institute can significantly affect facility provision. It is of note that high efficiency, high experience, and high liquidity cannot compensate for bad history.

### 5.3. Sensitivity analysis

A method to test a model is the output behavior analysis, also known as the sensitivity analysis. It either reduces or increases a variable while maintaining others fixed to investigate the output behavior. Hence, each criterion was changed at five levels, according to Table 6, while the other criteria were at their mean level as [5, 12.5, 0.5, 0.5, 50, 0.5]. For example, the first component of the input vector was changed according to column 2 in Table 6 to investigate the effects of income.

TABLE 6. CRITERION VARIATION RANGES IN EXPERIMENTS

Test No.	income	liquidity	technical knowledge	payback history	production efficiency	experience
1	1	2	0.1	0.1	10	0.1
2	3	7	0.3	0.3	30	0.3
3	5	12.5	0.5	0.5	50	0.5
4	7	17	0.7	0.7	70	0.7
5	9	22	0.9	0.9	90	0.9

Fig. 4 presents the outputs obtained for a change in each criterion. An increase in income increases the score at a considerable slope. However, a rise in liquidity slightly raises the score, as indicated in Fig. 4b. Fig. 4c shows the effect of manager knowledge on the score. As can be seen, manager knowledge has approximately the same effect as income on the score.

According to Fig. 4d, a good reputation in terms of payback history significantly influences the output. With an increase in the good payback history, the score increases at a large slope. The

payback history criterion is the only criterion that can increase the score to above 60 with the other criteria fixed at their mean values. Fig. 4e demonstrates that weak efficiency has a large adverse effect on the score, reducing it to near 30, while efficiency above 30% raises the score at a very small slope. This diagram suggests that even a rise in efficiency does not considerably increase the score since the other criteria are at their medium levels. Fig. 4f illustrates the effect of experience on the score. Medium or higher experience has the same effect on the score. Moreover, institutes with medium or lower experience receive a similar score. However, a considerable difference is observed between the score of medium to lower-experience institutes and that of medium to higher-experience institutes.



Figure 4. The effects of variations in each criterion on the fuzzy expert system's output

## 6. CONCLUSION

As a good monetary policy-making instrument, an optimal assignment of bank credits and facilities to different production and service sectors can direct credits to different sectors with higher utility for a banking system. This study selected several experts from different banks in Bijar, Iran, to identify factors affecting the provision of facilities to production and service institutes. Considering the ambiguity in the identified factors, the fuzzy logic was employed to model the system. Then, a fuzzy expert system was proposed using expert views to score loan-demanding institutes based on fuzzy criteria. The design of a fuzzy expert system based on the identified factors is a key innovation of this study. The evaluation of the proposed system indicated that the system can accurately score facility-demanding institutes, helping the relevant experts in making decisions. The scores of the proposed fuzzy expert system can be used to prioritize facility-demanding institutes and determine how competent they are.

Future studies may incorporate a larger statistical population with a higher number of banks. The larger the statistical population (i.e., involving a higher number of banks), the more accurate and rational the results will be. A combination of fuzzy logic and ANN can also be considered to develop a more accurate system to better contribute to bank experts in making decisions.

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# SAARJ Journal on Banking & Insurance Research (SJBIR)

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## MODELING THE MOTION OF A MIXTURE WITH WEIGHTY PARTICLES IN A STATIONARY FLOW OF LIQUID

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### ABSTRACT

*The model of a multicomponent medium containing large particles was proposed by Academician Kh. A. Rakhmatulin, where a generalized theory of filtration is considered taking into account the motion of solid particles. In this article, a two-dimensional stationary motion in a layer of a mixture consisting of an incompressible liquid and weighty solid particles is studied.*

**KEYWORDS:** Motion, Liquid, Particles, Layer, Flow, Density, Velocity, Components, Surface, Medium, Thermodynamics, Pressure, Strength.

### INTRODUCTION

The solution of many practical problems of the movement of a mixture requires the use of a more complex model of continuous media, in particular, two-component ones, where the issues of the interpenetrating motion of solid and liquid phases are considered. In [1-2], methods of mathematical modeling of processes in a continuous medium, consisting of two components, were developed: one is ideally elastic, and the other is a viscous compressible fluid whose equation was introduced from the general principles of thermodynamics of irreversible processes. The model of a multicomponent medium containing large particles was proposed by Academician Kh. A. Rakhmatulin, where a generalized theory of filtration with allowance for the motion of solid particles is considered [4-7]. This article studies a two-dimensional stationary motion in a layer of a mixture consisting of an incompressible fluid and weighty solid particles. We establish the origin of coordinates in the initial section of the layer, where the fluid flow acts at a speed  $u_{10}$ , direct the  $O_x$  axis along the free surface of the layer in the direction of the flow, the  $O_y$  axis perpendicular to

it. The equation of stationary motion of liquid particles and solid particles in an arbitrary section of the layer is written in the form [1]:

$$\rho_1(u_1 \frac{\partial u_1}{\partial x} + v_1 \frac{\partial u_1}{\partial y}) = -\frac{\rho_1}{\rho_1^0} \frac{\partial p}{\partial x} + k(u_2 - u_1), \quad (1)$$

$$\rho_1(u_1 \frac{\partial v_1}{\partial x} + v_1 \frac{\partial v_1}{\partial y}) = -\frac{\rho_1}{\rho_1^0} \frac{\partial p}{\partial y} + k(v_2 - v_1) + \rho_1 g, \quad (2)$$

$$\rho_2(u_2 \frac{\partial u_2}{\partial x} + v_2 \frac{\partial u_2}{\partial y}) = -\frac{\rho_2}{\rho_2^0} \frac{\partial p}{\partial x} + k(u_1 - u_2), \quad (3)$$

$$\rho_2(u_2 \frac{\partial v_2}{\partial x} + v_2 \frac{\partial v_2}{\partial y}) = -\frac{\rho_2}{\rho_2^0} \frac{\partial p}{\partial y} + k(v_1 - v_2) + \rho_2 g. \quad (4)$$

where  $\rho_i$  are the reduced densities,  $u_i, v_i$  are the components of the velocity vector of each component  $i = 1, 2$ ,  $p$  is the pressure common for the two components, and  $k$  is the interaction coefficient.

Equalities (1) - (4) are supplemented by the equations of a heterogeneous mixture connecting the reduced densities  $\rho_i$  with the true densities  $\rho_i^0$

$$\frac{\rho_1}{\rho_1^0} + \frac{\rho_2}{\rho_2^0} = 1, \quad (5)$$

and also, the conditions of incompressibility of the phases

$$\rho_1 u_1 = \rho_{10} u_{10}, \rho_2 u_2 = \rho_{20} u_{20} \quad (6)$$

In what follows, we assume the movement in the direction of the current flow to be the main one, and we assume  $\rho_i = \rho_i(x)$ ,  $u_i = u_i(x)$ ,  $v_i = v_i(x)$ ,  $p = p(x)$ . Then, setting  $\frac{\partial u_i}{\partial y} = 0$ ,  $\frac{\partial v_i}{\partial y} = 0$ ,  $\frac{\partial p}{\partial y} = 0$ , equations (1) - (4) are reduced to the form

$$\rho_1 u_1 \frac{\partial u_1}{\partial x} = -\frac{\rho_1}{\rho_1^0} \frac{\partial p}{\partial x} + k(u_2 - u_1), \quad (7)$$

$$\rho_2 u_2 \frac{\partial u_2}{\partial x} = -\frac{\rho_2}{\rho_2^0} \frac{\partial p}{\partial x} + k(u_1 - u_2), \quad (8)$$

$$\rho_1 u_1 \frac{\partial v_1}{\partial x} = k(v_2 - v_1) + \rho_1 g, \rho_2 u_2 \frac{\partial v_2}{\partial x} = k(v_1 - v_2) + \rho_2 g. \quad (9)$$

From the analysis of system (7) - (9) it follows that solutions of equations (9) satisfying the conditions  $v_1 = 0$ ,  $v_2 = 0$  at  $x = 0$ , are found after integrating system (7) and (8) under the boundary conditions

$$u_1 = u_{10}, u_2 = u_{20} \text{ при } x = 0 \quad (10)$$

From relations (5) and (6), we establish a connection between the velocities  $u_1(x)$  and  $u_2(x)$

$$u_2 = u_{20} \frac{(1-\alpha)u_1}{u_1 - \alpha u_{10}} \quad (11)$$

Using (11) and (8), we exclude the function  $u_2(x)$  from (7):

$$\frac{d\bar{u}_1}{dx} = \frac{k}{\rho_{10} u_{10}} \frac{\bar{u}_1^2 (\bar{u}_1 - \alpha) [\gamma (1-\alpha) - \bar{u}_1 + \alpha]}{(1-\alpha) [\alpha_0 \alpha (1-\alpha) \gamma^2 + (\bar{u}_1 - \alpha)^2]} \quad (12)$$

where  $\bar{u}_1 = u_1/u_{10}$ ,  $\gamma = u_{20}/u_{10}$ ,  $\alpha = \rho_{10}/\rho_1^0$ ,  $\alpha_0 = \rho_2^0/\rho_1^0$

I integrate (12) by the condition  $u = u_{10}$  at  $x = 0$ , we obtain

$$\xi = (1-\alpha) \left[ \frac{d_1}{d_2} \ln \bar{u}_1 + \frac{(\alpha^2+c)}{\alpha(\alpha+b)} \left( \frac{1}{\bar{u}_1} - 1 \right) + \frac{c}{\alpha^2 b} \ln \frac{\bar{u}_1 - \alpha}{1-\alpha} - \frac{b^2+c}{d_2} \ln \frac{\bar{u}_1 - \alpha - \gamma(1-\alpha)}{(1-\alpha)(1-\gamma)} \right]$$

where  $\xi = x \frac{\rho_{10} u_{10}}{k}$ ,  $d_1 = b\alpha^2 - bc - 2c\alpha$ ,  $d_2 = \alpha^2(b + \alpha)^2$ ,  $b = \gamma(1 - \alpha)$ ,  $c = \alpha_0 a b \gamma$

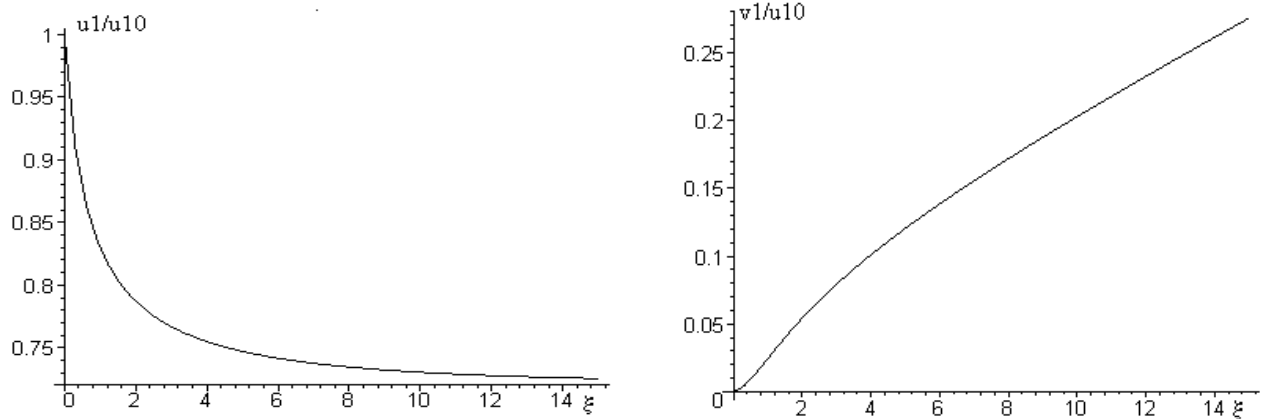
The solution to equations (9) is determined in quadratures

$$\bar{v}_1 = \frac{v_1}{u_{10}} = e^{-2\xi} \int_0^\xi \left[ \frac{\beta_1}{u_1(z)} - F(z) \right] e^{2z} dz, \quad \bar{v}_2 = \frac{v_2}{u_{10}} = F(\xi) - \bar{v}_1(\xi)$$

where  $F = \int_0^\xi \left( \frac{\beta_1}{u_1(z)} + \frac{\beta_2}{u_2(z)} \right) dz$ ,  $\beta_1 = \rho_{10} g / k u_{10}$ ,  $\beta_2 = \rho_{20} \gamma g / k u_{10}$

Figure 1 shows the curves of the dependence of the components of the velocity vectors (referred to  $u_{10}$ ) of the air flow (Fig. 1a) and solid particles (Fig. 1b) on the reduced distance  $\xi = xk/\rho_{10}u_{10}$ , where it is taken:  $\rho_1^0 = 1.2 \text{ kg / m}^3$ ,  $\rho_{10} = 0.8 \text{ kg / m}^3$ ,  $\rho_2^0 = 100 \text{ kg / m}^3$ ,  $\rho_{20} = 30 \text{ kg / m}^3$ ,  $u_{10} = 30 \text{ m / s}$ ,  $u_{20} = 5 \text{ m / s}$ ,  $k = 100 \text{ kg / m}^3 \cdot \text{p}$ .

a)



b)

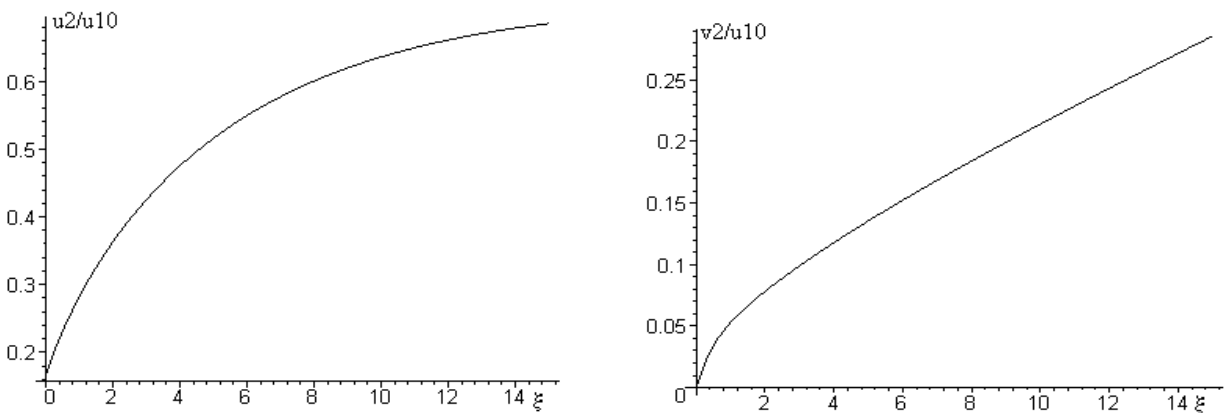


Fig. 1. Variations in the velocity components of air ( $u_1/u_{10}$ ,  $v_1/u_{10}$ ) (a) and solid particles ( $u_2/u_{10}$ ,  $v_2/u_{10}$ ) (b) from the reduced distance  $\xi = xk/\rho_{10}u_{10}$

An analysis of these curves shows that after feeding, as the flow moves in the direction of its action, the velocities of air and particles of the solid component, respectively, decrease and increase, and further, with an increase in this distance, their velocities equalize. The components of the velocities  $v_1(x)$  and  $v_2(x)$  in the direction of the action of the flow first grow intensively and then, with increasing distance, under the action of gravity, they increase linearly.

Figure 2 shows the curves of the dependence of the mass content of solid particles  $m = 1 - \alpha u_{10}/u_1$  on the reduced distance  $\xi$  for two values of the rate of supply of solid particles to the transportation zone.

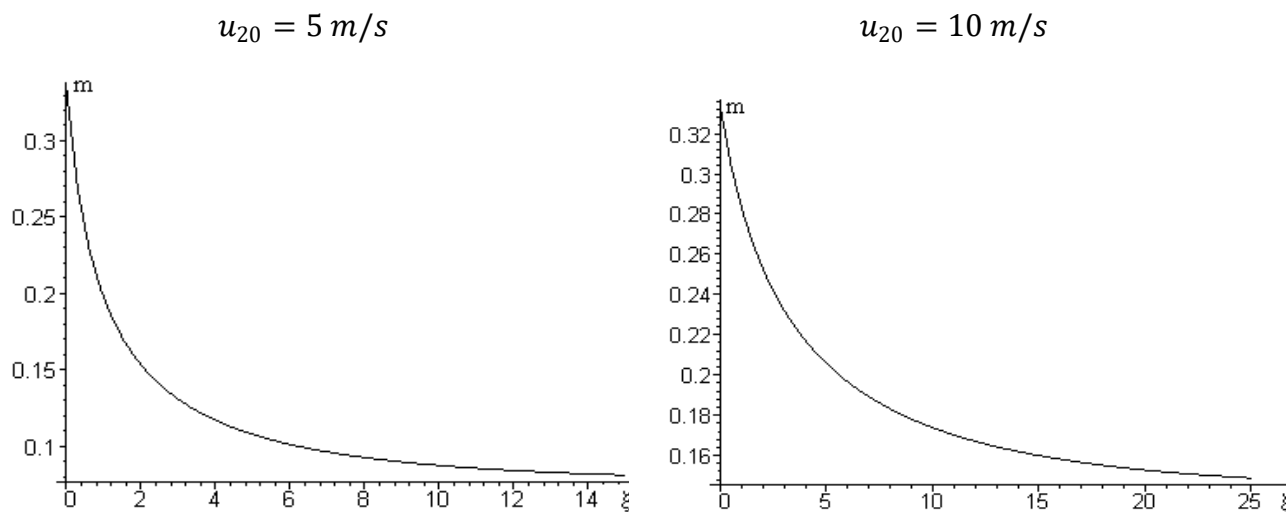


Fig. 2. Change in the mass content of solid particles  $m = 1 - \alpha u_{10}/u_1$  from the reduced distance  $\xi = xk/\rho_{10}u_{10}$  for two values of the rate of supply of solid particles  $u_{20}$  to the transportation zone.

## CONCLUSIONS

In the example under consideration, in the cross section of the feed, we have  $m = 0.35$ . Further, with increasing distance  $\xi$ , the parameter  $m$  decreases and reaches the limiting value  $m = 0.08$  at  $u_{20} = 5 \text{ m/s}$  and  $m = 0.15$  at  $u_{20} = 10 \text{ m/s}$ . This regularity indicates an intensive loosening of the mixture composition due to a decrease in the mass content of solid components in it.

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# SAARJ Journal on Banking & Insurance Research (SJBIR)

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## ANALYSIS OF FINANCIAL INDICATORS OF INSURANCE COMPANIES OF THE REPUBLIC OF UZBEKISTAN

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### ABSTRACT

*This paper studies the importance of ensuring the financial stability of insurance companies in the development of the economy. The approaches of economists on the theoretical and practical problems of ensuring the financial stability of insurance companies have been studied. The indicators of financial stability of insurance companies operating in the Republic of Uzbekistan are analyzed and conclusions on improving this issue are given.*

**KEYWORDS:** *Financial Stability, Solvency, Financial Ratios, Liquidity Ratio, Insurance Reserves, Return On Authorized Capital, Digital Economy, Rapid Liquidity, Absolute Liquidity, Financial Independence.*

### INTRODUCTION

Systematic analysis of the insurance market, which is one of the key segments of the financial market in Uzbekistan, as well as the effective use of foreign best practices in ensuring the financial stability of insurance companies play an important role. It should be noted that in recent years, the country has been working effectively to comprehensively develop the insurance market. The Action Strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021 states that “expanding the volume of insurance, leasing and other financial services through the introduction of new types and improving their quality, as well as attracting capital and alternative resources for enterprises, financial institutions and the population Development of the stock market” was highlighted[1]. In addition, the adoption of the Resolution of the President of the Republic of Uzbekistan dated August 2, 2019 No PP-4412 “On measures to reform the insurance market and ensure its rapid development” laid the foundation for radical reforms in the innovative development of insurance companies[2].

It should be noted that in recent years, although significant work has been done to analyze the financial stability of insurance companies, identify and address existing problems in the

development of insurance companies, it is the development of clear criteria for assessing financial stability. in practice, there are a number of shortcomings regarding the use of key financial ratios used in determining the rating of insurance companies. Accordingly, it is necessary to carry out scientific and practical work to make the population and legal entities active participants in this market by increasing the financial stability of insurance companies, which play an important role in the development of the economy.

### Main part

There are four types of financial stability of insurance companies, each of which has its own characteristics:

1. Absolute financial stability. In this case, all the reserves of the enterprise are covered by their own working capital. In this case, there is no need for external creditors in enterprises, there are no insolvencies and their causes, internal and external financial discipline is not violated.
2. Moderate financial stability. In this process, the enterprise effectively uses various sources to cover reserves and costs, ie own and borrowed funds, which can guarantee the solvency of the enterprise.
3. Unstable financial situation. In this process, the solvency of the enterprise is disturbed, and the enterprise is forced to attract additional financial resources to cover reserves and costs. An unstable financial situation means that enterprises lack their own working capital and long-term sources of financing.
4. Understands the situation when a crisis or critical financial situation is on the verge of bankruptcy of the enterprise. In this case, the cash, receivables and short-term securities of the enterprise are not even enough to cover accounts payable and overdue debts[3].

In the analysis of financial stability indicators of insurance companies, it is important to classify the external and internal factors that affect it and reveal their main features. Factors affecting the financial stability of insurance companies can be divided into external (non-manageable) and internal (manageable) factors according to the general approach (Table 1).

**TABLE 1 FACTORS INFLUENCING THE FINANCIAL PERFORMANCE OF INSURANCE COMPANIES**

External factors	Internal factors	
	Classification of internal factors	Types of factors
General state of economic development	the  of  Description enterprise	- organizational and legal form of economic activity
The financial policy of the state and the structure of the financial system		- production volume or scale
The main features of the regulation of entrepreneurial activity by the state		- stages of the development cycle
		- specialization of the enterprise
		- degree of diversification of enterprise activity
Inflation rate	features of corporate	- return on assets and product sales

Tax relations and the main aspects of their regulation		- private capital and liabilities
		- currency balance
Conditions for doing business	Financial condition of the enterprise	- solvency
		- current liquidity
The degree of monopoly in the industry		- financial independence
	Financial relations	- income and expenses
The cost and possibility of attracting financial resources		- accounts receivable and accounts payable
		- payments to the budget
The degree of implementation of currency relations	Financial management system	- financial planning and forecasting
		- financial resource management
The state of development of the regional economy		- financial control
		- financial risk management

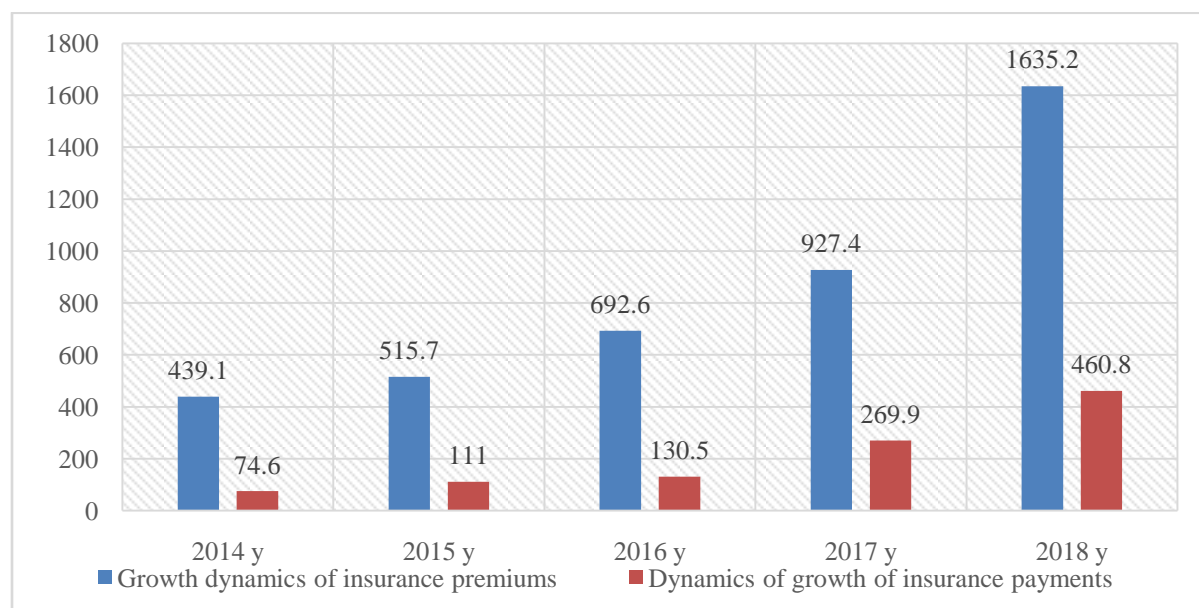
It should be noted that one of the main external factors affecting the financial stability of insurance companies is the legal framework for regulating this system in the country. It is the perfect development of legal and regulatory documents regulating the activities of the insurance market that ensures the effective operation of companies based on the implementation of strategic projects, optimal decision-making, achieving financial stability. In addition, the main internal factors affecting the financial stability of insurance companies are the effective organization of corporate governance in insurance companies, opportunities to diversify insurance types and services, risk management, optimization of the insurance portfolio, the amount of insurance reserves.[4].

As mentioned above, the role of financial management in ensuring the financial stability of insurance companies is important. Financial managers must develop concrete measures to ensure the balance of financial stability in the effective implementation of current and strategic tasks of the enterprise, the timely identification, reduction and prevention of factors that negatively affect financial stability.

## RESULTS AND DISCUSSIONS

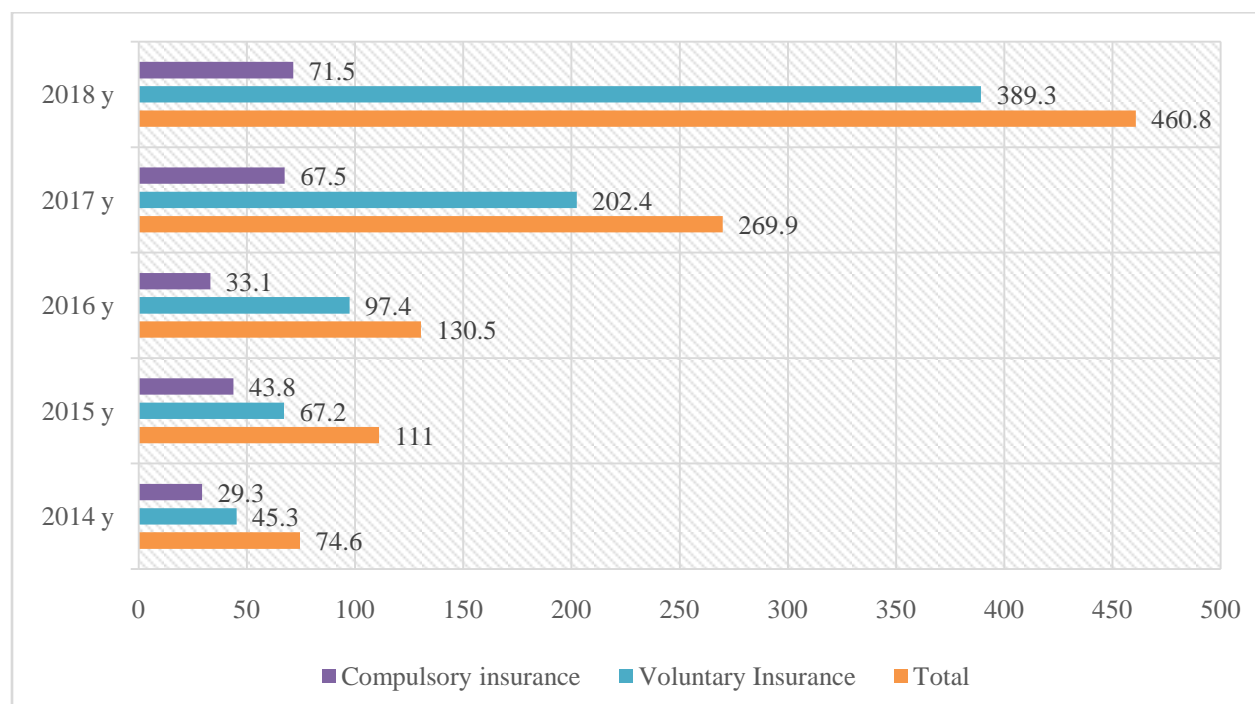
As of December 31, 2018, in the republic all registered 30 insurance companies, out of which 24 increased the value of insurance and 6 insurance companies in life, in frequency, on the market of new insurance companies OOO "Euroasia Life" and OOO SK "Kafolat Hayot".

In 2018, the insurance market of the republic, compared to 2014, increased by 3.7 times, reaching the level of 1,635.2 billion soums of collected insurance premiums (Figure 1).



**Figure 1. Growth dynamics of insurance premiums and insurance payments (billion soums) [5]**

The total amount of insurance payments for all types of insurance in 2018 increased 6 times compared to 2014, from 74.6 billion soums to 460.8 billion soums. The reason for such a sharp increase in insurance claims compared to 2017 (170%) was payments in the life insurance industry. In addition, for compulsory insurance, the total amount of insurance benefits paid in 2018, compared to 2014, increased by 2.4 times, insurance payments for voluntary types increased by 8.6 times (Figure 2).



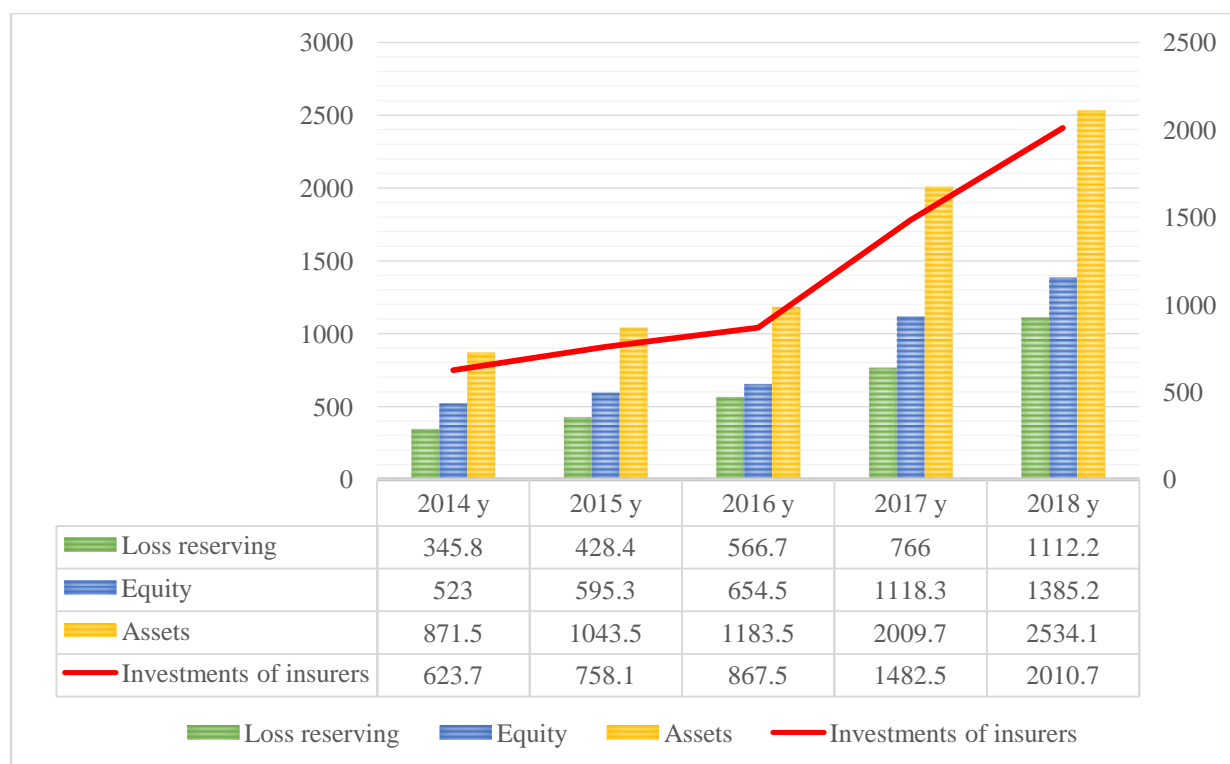
**Figure 2. Dynamics of voluntary and compulsory insurance payments (billion soums) [6]**



The number of insurers' subdivisions increased 1.3 times - from 1048 units. in 2014 up to 1451 units. in 2018, with the opening of 131 units. new divisions in the reporting period. On a systematic basis, the Ministry of Finance of the Republic of Uzbekistan cooperated with the International Association of Insurance Supervisions (IAIS), whose members are insurance supervisory bodies in more than 140 countries of the world.

In order to develop the infrastructure of the insurance market, improve the quality of insurance services provided and create new jobs, recommendations are sent to insurers on a regular basis to expand the use of assistance services, surveyors, adjusters, actuarial organizations and other professional participants in the insurance market. To raise awareness about the insurance market, the Ministry of Finance regularly publishes in the media Annual Reports on the Regulation and Supervision of Insurance Activities in the Republic of Uzbekistan, and since 2012, expanded information on the insurance market has been posted on the official website of the Ministry.

As of December 31, 2018, the total assets of the republic's insurers amounted to 2,534.1 billion soums, which is 2.9 times more than in 2014. The total amount of own funds of the republic's insurers amounted to 1 385.2 billion soums (an increase of 24% compared to 2017). The total volume of insurance reserves formed by the insurers of the republic in order to ensure the fulfillment of insurance obligations assumed under current insurance contracts amounted to 1,112.2 billion soums (an increase of 45% compared to 2017) (Figure 3).



**Figure 3 Growth dynamics of insurance reserves, equity capital, assets and investments of insurers (billion soums) [7]**

A significant increase in assets, equity capital and insurance reserves of insurers primarily expands their investment opportunities, and also improves the quantitative and qualitative indicators of investment activities. So, at the end of 2018, the total investment of insurers in the republic

exceeded 1 482.5 billion soums (an increase of 36% compared to 2017). The growth of this indicator at the end of 2014 was 3.2 times. In the aggregate investment portfolio of insurers for 2018, bank deposits prevail - 51.8%, as well as shares and other securities - 35.2% of the total investment.

## CONCLUSION

The real changes taking place in all spheres of economic and social life of the republic today create objective conditions for increasing the role of the economy as an integral part of the financial system. The insurance market is one of the most important segments of the market economy, and its role plays an important role in the socio-economic development of the state. The prospects for the development of the national insurance services market and its growing impact on the economy are obvious, and now it is one of the strategic factors for the effective functioning and successful development of financial and economic relations in our country.

Based on the results of the analysis, it can be said that the role of insurance services in the financial market of our country today is not large. The share of this industry in the country's GDP is only 0.4%. One of the mysteries in the industry is that insurance services are not attractive enough. In particular, in the first six months of 2019, 887 billion soums of insurance premiums were collected, but the amount of insurance coverage paid was only 11% of the premiums. In the world, the figure is on average 50-60%. Given this, the time has come to radically reform the insurance services market, which is difficult to implement without the digitization of insurance services, the use of new information platforms and the introduction of innovative insurance products in the insurance market of Uzbekistan.

In addition, in order to ensure the financial stability of insurance companies, it is necessary to perform the following important tasks:

Increasing the investment attractiveness of the national insurance market by ensuring transparency and improving the procedure for disclosing information on insurance activities by insurers in accordance with the international standards of the *IAIS*; continuation of work to improve the investment climate and business environment in the insurance market, as well as procedures related to the implementation of insurance activities and the provision of public services.

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# SAARJ Journal on Banking & Insurance Research (SJBIR)

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## THE MAIN DIRECTIONS OF PROTECTION OF INSURANCE CONSUMERS IN THE CURRENT SITUATION

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### ABSTRACT

*The article scientifically substantiates the importance of protecting the interests of consumers of insurance products in the development of insurance activities. Considering that the protection of consumers of insurance services is mainly carried out by competent state bodies, work in this direction is carried out in the European Union and its member countries, Great Britain and Germany, as well as in the USA and Japan. In the study, the author critically analyzed the consumer protection system and developed theoretical and scientific recommendations and proposals for its improvement.*

**KEYWORDS:** Insurance, Insurance Activity, Insurance Product, Insurance Consumer, Insurance Contract, Insurance Company, Insurance Control, Insurance Tariff, Financial Ombudsman, Insurance Ombudsman.

### INTRODUCTION

Globally, the insurance sector serves to ensure the stability of the economy and improve the standard of living of the population by compensating for damage caused by natural and man-made disasters. However, as a result of financial and economic crises occurring at different times, and incorrect policies of insurance companies, insurance companies may find themselves in a difficult financial situation. This, in turn, requires the creation of a reliable and effective system for protecting the interests of insurance companies' clients. In this regard, the topic of this study is relevant.

Currently, the system for protecting the interests of insurance consumers in all countries has a different content and form. In most countries, the task of protecting consumers of insurance services is the responsibility of the competent government authorities for the regulation and supervision of insurance activities. With this in mind, the "Basic Principles of Insurance"

(Insurance Core Principles, 2019), approved by the International Association of Insurance Supervisors, it is noteworthy that the regulatory authorities require insurers and intermediaries in the conduct of insurance activities to treat consumers fairly from the date of conclusion of the insurance contract until the fulfillment of all obligations under this contract.

The significant of the insurance consumer protection system in ensuring the sustainable development of insurance activities is also reflected in the 2016/97 (EU) Directive (Directive, 2016) of the European Parliament and the Council of Europe of 20 January 2016. This Directive states that insurance and reinsurance intermediaries play a central role in the sale of insurance and reinsurance products within the Union. It is also stated that insurance products can be sold by various types of individuals and organizations, including agents, brokers, “bank insurance operators”, insurance companies, travel agencies and car rental companies. It shows that despite the differences between the channels of sale of insurance products, insurance consumers should enjoy the same level of protection.

We see that the protection of the interests and legal rights of consumers of insurance products is receiving attention at the international and regional levels. The main reason for this is that the failure of large and systemically important insurance companies to fulfill their obligations in the wake of economic insolvency is causing mass dissatisfaction of many insurance consumers, not only to the insurance company, but also to the government.

### **Main Part**

Numerous studies have been carried out to regulate and improve the insurance consumer protection mechanism. For example, Katarzyna Malinowska (2014) in her study expressed the concept of domestic law, including insurance legislation, which underlies consumer protection, in one good sentence: a well-protected consumer, hence the idea that this is a well-informed consumer about insurance. In contrast, Sandeep Chaudhary and Jasneet Kaur (2016) argue that clients are the mainstay of the life insurance business and that any company strives to attract new clients and retain existing clients in order to maximize profits. In their view, compared to developed foreign countries, India's life insurance industry has not achieved much success due to insufficient familiarity of customers with insurance, poor customer service and lack of insurance products to suit the taste of the customer.

Consumers of insurance products may apply to the state body regulating insurance activities in case of violation of their rights, for example, in case the insurance company refuses to pay for the damage. Endorsing this view, Daniel Schwarcz (2014) argues that information on consumer complaints about unjustified refusals to pay insurance coverage by insurance companies is the only source of information for regulators. In his view, most U.S. insurance commissions, such as the National Association of Insurance Commissioners, post information about consumer complaints on their websites, but it is not mandatory for insurers to disclose this information directly to consumers of insurance products.

Gabriel Bernardino (2012) noted that new approaches to dealing with insurance consumer complaints have been introduced within the European Union, noting that a guide has been developed on what kind of information customers should have in order to be able to make an insurance product purchase decision. Based on the results of a study of insurance consumer protection, Peter Pfund (1993) concludes that the main priority for the insurance regulator is to protect policyholders from artificial increases in insurance rates or the risk of insolvency of “his” company. Peter Pfund's views on this issue are not unique to Europe. Conversely, the European

Insurance Supervision Authority agrees that the correct formation of technical reserves and careful valuation of assets should be the basis for controlling the insurer's solvency.

Yuri Kolesnikov (2016) in his study on the protection of the interests of consumers of insurance products pointed out that the consumer in the insurance services market needs constant protection. He explains this by saying that the insurance consumer should be protected not only from the risk of serious financial crimes of the insurance company, but also from the risk that the insurance contract will include conditions that would embarrass the consumer and unreasonably increase insurance rates. The majority of complaints from insurance consumers are related to dissatisfaction with the amount of insurance coverage to be paid by the insurer to the client to cover the damage caused and non-compliance with payment deadlines.

## **RESULTS AND DISCUSSION**

The results of our research and analysis of scientific studies published by experts and scientists in the field have shown that the system of protection of insurance consumers has not yet been formed. This view was also supported by Gabriel Bernardino (2014), who acknowledged that it was not until the 1960s that the legal framework for consumer protection was in place. He also noted that the protection of consumer rights was first mentioned in EU documents in 1972, and since then the protection of the interests of consumers of insurance products has intensified.

The study shows that the openness and transparency of information about the insurer and the insurance product provided is an important tool in protecting the interests of insurance consumers. Experts from the U.S. Treasury Department's Office of the Comptroller of the Currency of the U.S. Department of the Treasury say insurers in the U.S. are required to provide certain information to consumers in order to avoid the risk of selling insurance products in a prohibited and misleading manner. calculates. This requires ensuring the transparency of information about any insurance product and annuity before selling it.

A study by Lucie Lechardoy, Adriana Rodriguez Diaz, and others (2017) found that in addition to life insurance in the UK, protection of other insurance consumers is carried out by the Financial Conduct Authority. This organization is an independent government agency and is fully funded by fees paid by companies under its control. Its main tasks are to implement international and European standards and regulations in the field of finance, including insurance, in the UK. Also, in the UK, the task of protecting insurance consumers is vested in the Prudential Regulation Authority, which is part of the Bank of England.

UK insurance consumers have a low level of trust in insurance companies as in other countries and they do not have a clear idea about the network. Also, the prices of insurance products listed on the website of insurance companies are not transparent. The current state of many terms and conditions related to insurance is causing problems for consumers. In fact, insurance-related documents are described in complex language, and insurance consumers do not have a deep understanding of terms such as exceptions and coverage. In some cases, the size of the documents exceeds 60 pages. This, in turn, takes up a lot of consumers' time and ultimately does not get the information they need about the features of the insurance product.

In Germany, too, the protection of insurance consumers has its own characteristics. Protection of insurance consumers in this country is the responsibility of the Federal Financial Supervisory Authority (BaFin) of Germany. BaFin's activities are not funded from the federal budget, but are covered by allocations from financial institutions under its control (BaFin, 2020). BaFin oversees



the activities of various financial institutions operating in Germany, including insurance companies, in order to protect the interests of consumers of financial services. Provides a range of advice to consumers based on the deficiencies identified as a result of the inspection. BaFin also explains to consumers the basics of various insurance products through its official website and regularly provides information on the conclusion and termination of insurance contracts, what to do in case of insurance claims..

The analysis of the Japanese experience in the protection of insurance consumers is of scientific interest. Regulation and supervision of insurance activities in this country is carried out by the Financial Services Agency (FSA), which reports to the Ministry of Financial Services of Japan (IMF, 2012).

In order to protect insurance consumers, the FSA applies early warning measures to insurance companies. This measure is based on the order of the supervisory authority to make the necessary adjustments depending on the solvency status of the insurance company, and applies to companies whose margin of solvency of the insurer has fallen below 200 percent.

It should be noted that in addition to the regulatory authorities, other organizations are actively involved in protecting the interests of insurance consumers. For example, the Financial Ombudsman Service Limited was established in 2000 under the UK Financial Services and Markets Act (Financial Ombudsman Service 2020). Its main task is to resolve complaints between financial institutions, in particular insurance companies and their clients, in a fair, reasonable and minimal formality. If the problem between the insurance company and its client is not resolved independently, then the Financial Ombudsman will come to the rescue. If the insurance indemnity is not paid to the consumer through the fault of the insurance company, through the efforts of the ombudsman, this amount is settled in favor of the consumer. From April 1, 2019 to October 1, 2020, the Financial Ombudsman Service received 45,200 complaints from insurance consumers, of which 35,165 were resolved positively.

In contrast to the UK, the Insurance Ombudsman Association (2020) has been established in Germany, whose main activities are to assist in the out-of-court settlement of disputes between the insurance company and the consumer. Insurance companies and the German Insurance Federation (GDV) are members of the association. The Association has an Arbitration Council, which includes an ombudsman and staff, as well as 45 lawyers, insurance and administrative staff.

Thus, the results of the study showed that while the mechanism of protection of insurance consumers differs in different countries, the main goal is common. That is, to ensure reliable and effective protection of consumers of insurance products who are in a difficult situation as a result of unfair decisions and attitudes of insurance companies.

## **CONCLUSION**

As a result of the research on the protection of consumers of insurance services, it became clear that the protection of consumers of insurance services plays an important role in ensuring the sustainable development of the insurance business, increasing its prestige and rating in society.

The results of the research show that there are still a number of problems in protecting insurance consumers. For example, information on the nature and composition of insurance products, prices are not fully provided to consumers by insurance companies. In short, ensuring the transparency and openness of the activities of insurance companies is not at the level of demand. The documents

required to formalize the insurance product are stated in a more complex language, which is causing dissatisfaction among consumers.

Based on the foregoing, it is recommended that insurance companies ensure greater transparency of their activities, create all the necessary conditions for consumers.

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## ANALYSIS OF DETERMINATION OF COTTON FIELD QUALITY AS A RESULT OF CHANGES IN TECHNOLOGICAL PROCESSES

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### ABSTRACT

*This article studies the influence of various technological processes on the quality characteristics of the fibers on the Sultan breeding variety of cotton, and also recommends the best option for production conditions.*

**KEYWORDS:** *Flagella, Skin With Fiber, Nodules, Staple Mass Length, Relative Breaking Load, Fiber Maturity.*

### INTRODUCTION

Cotton entering the primary processing plant will contain impurities and mineral defects. The amount of pollution includes flowers, leaves, pods, twigs, stones, sand, and more. The amount of contamination is divided into large and small defects. If the size of the defects is greater than 8 mm, they are considered large defects. These impurities are located on the surface and inner layers of the seed cotton, as well as have adhesive strength with different fibers. If there are contaminants on the surface of the seed cotton, the adhesive strength to the fiber will be low [1].

The effectiveness of cleaning cotton from contaminants depends on the type of selection, moisture, variety, fiber length, the nature of impurities and other parameters [2-4].

The amount of contaminants in the cotton is removed using ginning equipment at ginneries. The impact efficiency of the cleaning equipment working parts, in turn, depends on several factors, namely the cleaning efficiency, the speed of movement of the working parts, the design of the working parts, the repetition of cleaning and the degree of cleaning of air streams [5, pp. 1-5].

Moisture is very important during cotton cleaning. This is because the more moisture there is, the more difficult it is to separate the defects, leading to an increase in the number of seeds that are hit or injured. Therefore, the moisture content of cotton received at ginneries and ginning plants should not exceed 11% for grade I and 13% for sub-varieties. If the pre-moisture content of the gin equipment is in the range of 7-8%, the quality of cotton fiber is maintained [6-7].

### **THE MAIN FINDINGS AND RESULTS**

Cotton with high moisture content will have a large amount of defects and waste, the cleaning rate of cotton will be low, leading to deterioration in the quality of the fiber. As a result, the quality of the finished product obtained from the fiber will be negatively affected. In addition, the cotton gets stuck between the working parts of the machine, and the seeds that are hit or injured cause an increase in the amount of fiber in the shell [8].

During the initial processing of cotton, the amount of defects and waste in the composition of cotton fiber increases under the influence of high humidity and technological processes above the standard requirements. If the moisture content of the seed cotton is higher than the standard values, the amount of impurities in the fiber, the amount of impurities, the amount of impurities in the fiber, the amount of hull fibers, beaten or injured seeds will decrease. In addition, the more technological processes the seed cotton undergoes, the better it is to be cleaned of contaminants, leading to an increase in the amount of some beaten or injured seeds, twisted and complex twisted fiber, husk fiber. At the same time, due to the low moisture content leads to an increase in the total amount of defects and waste in the composition of cotton fiber due to an increase in the amount of bark fibers and nodules, beaten or injured seeds. In addition, some selection varieties have a low degree of purification and do not meet the demand. It follows that not all varieties created may meet the demand [9].

Defects and wastes in cotton fiber were determined in different technological process sequences, and the test results are given in Table 1.

One of the main quality indicators of cotton fiber is the change in the composition of the defect and the amount of waste under the influence of moisture. When the amount of defects and waste in the composition of cotton fiber is higher than the standard, the quality of the fiber deteriorates, and the physical and mechanical performance of the yarn obtained from it is negatively affected. According to the state standard, cotton fiber is divided into a number of classes, ie high, good, medium, dirty and bad, depending on the amount of pollution, and the price varies according to these classes [1].

The impact of different selection varieties of cotton on the technological processes, which are initially processed in ginneries, will be different. While some selection varieties are well cleaned of contaminants, some are the opposite. Therefore, it is necessary to create optimal conditions for each variety grown in our country. In addition, the seeds of some selection varieties are brittle, and there is a possibility of injury under the influence of technological processes [2].

**TABLE 1 DEFECTS IN COTTON FIBER AND CHANGES IN THE AMOUNT OF WASTE IN THE SEQUENCE OF DIFFERENT TECHNOLOGICAL PROCESSES**

WASTE IN THE SEQUENCE OF DIFFERENT TECHNOLOGICAL PROCESSES				
t/p	Defective fiber content and waste,%	Options		
		1	2	3
Before the technological process				
1.	Common defects	2,80	3,00	2,51
2.	A handful of raw fiber	0,14	0,16	0,12
3.	Coarse fiber	-	-	-
4.	Complex tangled fiber	-	-	-
5.	Shell fiber	0,34	0,38	0,28
6.	Beaten or injured seeds	0,50	0,54	0,43
7.	Knots	0,10	0,08	0,08
8.	Dirt	1,62	1,84	1,50
After the technological process				
1.	Common defects	2,42	2,60	2,00
2.	A handful of raw fiber	0,12	0,15	0,11
3.	Coarse fiber	-	0,02	-
4.	Complex tangled fiber	-	-	-
5.	Shell fiber	0,74	0,69	0,60
6.	Beaten or injured seeds	0,62	0,72	0,50
7.	Knots	0,20	0,18	0,12
8.	Dirt	0,74	0,84	0,67

The results of the study showed that compared to the fiber obtained before the technological process sequence in Option 1, the total amount of defect or waste in the fiber obtained after the technological process sequence decreased by 13.6%, the amount of cortical fiber 54.1%, the amount of crushed or injured seeds increased by 19.4%, the number of nodules increased by 50.0%, the amount of contaminants decreased by 54.3%, compared to the fiber obtained before the sequence of the technological process in option 2. Thus, the total amount of defects or waste in the fiber obtained after the sequence of the technological process decreased by 13.3%, the amount of cortical fiber by 44.9%, the amount of crushed or injured seeds by 25.0%, the amount of knots by 55.6% increased, the amount of impurities decreased by 54.3%, compared to the performance of the fiber obtained before the technological process sequence in option 3, the technological the total amount of defect or waste in the fiber content obtained after the sequence of the process decreased by 20.3%, the amount of hull fiber increased by 53.3%, the amount of crushed or injured seeds increased by 14.0%, the amount of nodules increased by 33.3%, impurities the amount decreased by 53.3%.

Research shows that with the increase in the sequence of the technological process, the amount of fibrous fiber in the fiber content, the amount of seeds hit or injured, the number of nodules increases.

Bark fibers and knots in the fiber are harmful and have a negative impact on the quality of yarn and finished products. This is because the more fibrous fiber there is in the fiber, the less likely it is to separate. If it is separated, first of all, the amount of waste increases and the length of the fiber



decrease, resulting in deterioration in the quality of fiber and its products. In addition, if we separate the fiber from the husk, the amount of short fibers increases [1].

Under the influence of various factors, incorrect reception of cotton, its long-term and high density storage in the gin, drying, cleaning and ginning at high temperatures, the physical-mechanical and geometric properties of the fiber change, ie cotton is harvested, ginned, stored, drying, cleaning, grinding, fiber cleaning and pressing processes. Therefore, optimal conditions for each process are determined in ginneries [2].

In order to preserve the natural properties of the initially processed cotton fiber in ginneries, it is necessary to properly store the cotton in the optimal way, drying it at the specified temperature and humidity, cleaning high industrial varieties once, low varieties twice, and ginning processes.

Moisture content of cotton stored in the ginning plant has a negative impact on the physical and mechanical properties of the fiber. If the moisture content of the cotton decreases, the quality of the fiber deteriorates, but the cleaning efficiency is high, and vice versa, i.e. if the moisture content of the cotton is high, the fiber quality improves, but the cleaning efficiency decreases.

One of the main parameters of cotton fiber is the specific tensile strength and staple mass length. If the staple mass length of cotton fiber decreases, the amount of short fiber increases, the strength and specific tensile strength decrease. As a result, the quality of yarns obtained from fibers is negatively affected.

Even if the length of the fiber is reduced by 0.5 mm, the quality of the yarn obtained from it deteriorates. It also causes an increase in the amount of waste during the spinning process.

One of the most important properties of cotton fiber is its physical and mechanical properties. Fracture strength at rupture is one of the main static properties, which evaluates the intermediate loading of the fiber before the fracture period. During the determination of fiber strength, the fiber is cut from a weak cut.

A second feature of cotton fiber is its geometric properties, which include the length and linear density of the fiber.

The length of the cotton fiber is important, and as each 1 mm length of fiber decreases, the elongation of the yarn at 1 km is reduced. Alternatively, the longer the cotton fiber, the smoother, finer and more durable the yarn will be.

In addition, as the length of the cotton fiber decreases, the amount of short fiber increases, and the tensile strength of the fiber decreases. As a result, the quality of the fiber is deteriorated, and the quality of yarn and fabrics obtained from it deteriorates.

In addition, changes in the physical and mechanical properties of the fiber under the influence of technological processes were studied.

Based on the results of the study, in Figures 1-3, histograms of changes in fiber properties under the influence of technological processes were constructed.

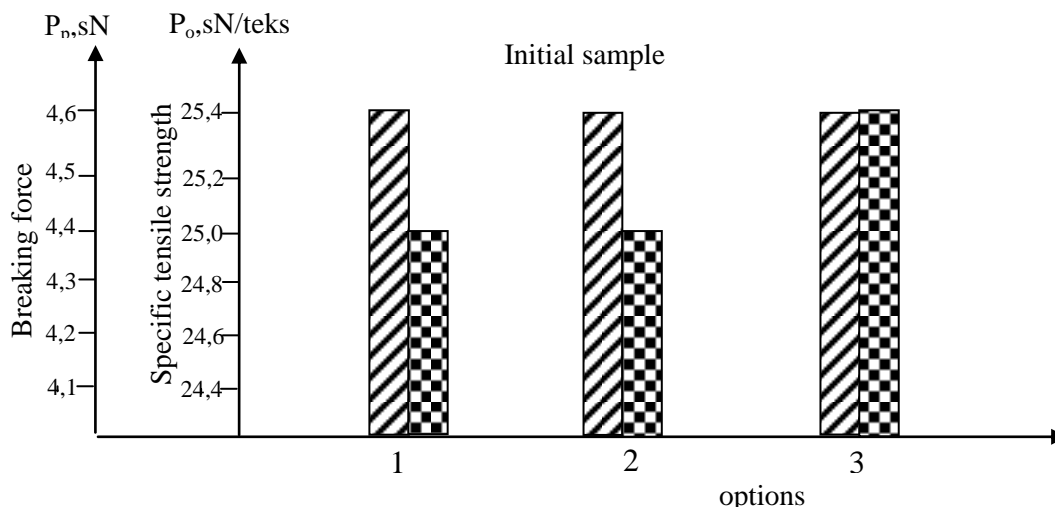


Figure 1. Influence of technological processes on fiber tensile strength and specific tensile strength.

▨ -break force;

▣ -Comparable tensile force

Analyzing the research work, the tensile strength of the fiber obtained under the variant 1 before the technological process was 4.6 sN, the specific tensile strength was 25.0 sN / tex, the staple mass length was 33.9 mm. The tensile strength of the obtained fiber is 4.6 sN, the specific tensile strength is 24.6 sN / tex, the staple mass length is 32.5 mm, the tensile strength of the fiber obtained under option 2 before the technological process is 4.6 sN, specific tensile strength 25.1 sN / tex, staple mass length 33.8 mm, the tensile strength of the fiber obtained from the technological process according to option 2 is 4.6 sN, specific tensile strength 24.6 sN / tex, staple mass length 32.8 mm, the tensile strength of the fiber obtained according to option 3 before the technological process is 4.6 sN, the specific tensile strength is 25.4 sN / tex, the staple mass length is 34.2 mm, the technological process 3 The breaking strength of the obtained fiber is 4.6 sN, the specific breaking strength is 24.9 sN. / tex, the staple mass length was 33.9 mm.

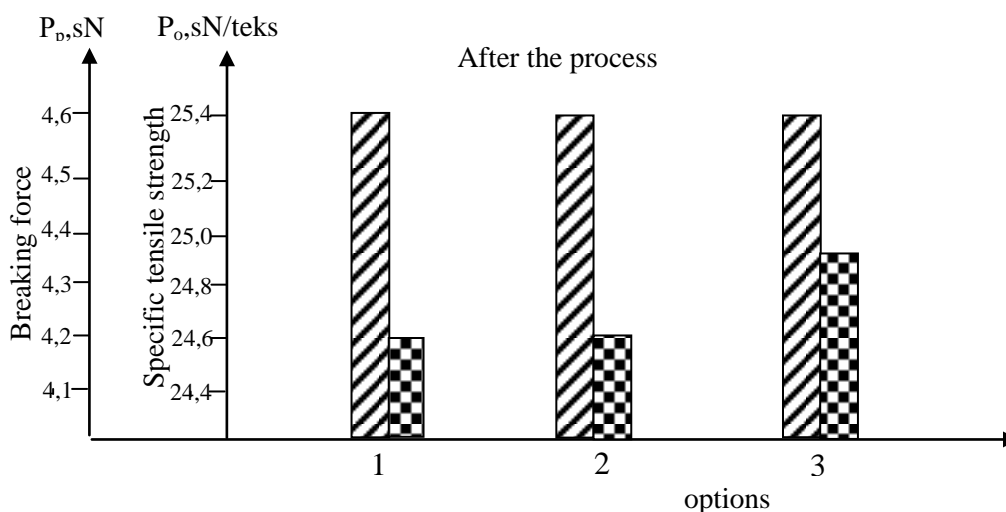


Figure 2. Influence of technological processes on fiber tensile strength and specific tensile strength.

▨ -break force;  
▣ -specific breaking strength.

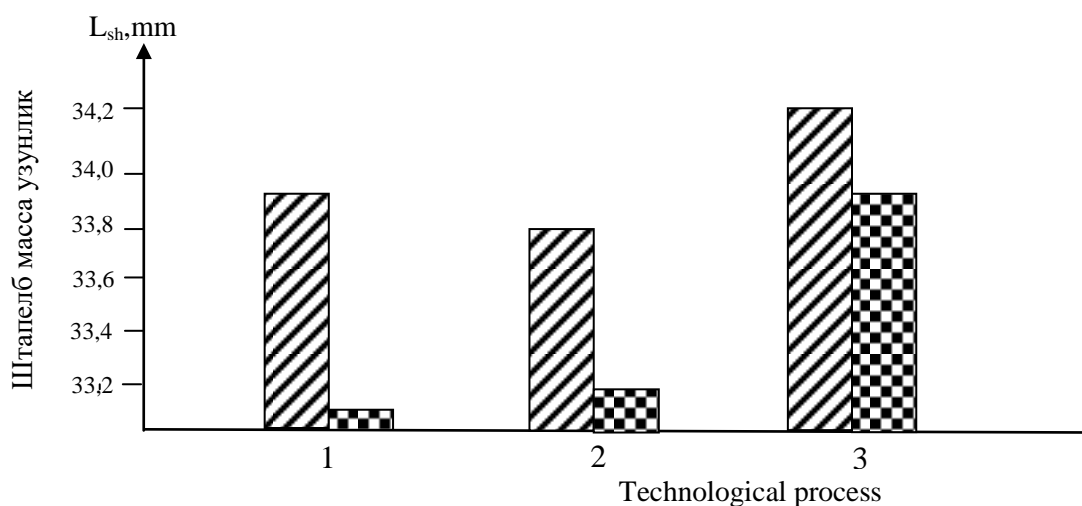


Figure 3. The effect of technological processes on the staple mass length of the fiber.

▨ -before the technological process;  
▣ - after the technological process.

The analysis of the results shows that the more technological processes cotton is processed in, the lower the specific tensile strength and staple mass length of the fiber.

The results of the analysis showed that due to the reduction of the sequence of the technological process, the total amount of defects or waste in the fiber content decreased from 13.6% to 20.3%, the amount of cortical fiber from 54.1% to 53.3%, the amount of crushed or injured seeds From

14.0% to 19.4%, the amount of nodules increased from 33.3% to 50.0%, the amount of impurities decreased from 54.3% to 53.3%.

## CONCLUSION

Analyzing the test results obtained on the physical and mechanical properties of the fiber, the specific tensile strength of the fiber obtained before the technological process on option 1 is 0.4 sN / tex, and the staple mass length is 1.4 mm, before the technological process on option 2 the specific tensile strength of the obtained fiber is 0.5 sN / tex and the staple mass length is 1.0 mm, the specific tensile strength of the fiber obtained before the technological process according to option 3 is 0.5 sN / tex, and the staple mass length is 0.3. decreased by mm.

The quality of finished garments and knitwear, ie their appearance, the degree of shelf life, is inextricably linked with the properties of the yarns in the fabric used in their production [10, pp. 82-85].

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## AWARENESS OF HEALTH INSURANCE IN RURAL AREAS

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### ABSTRACT

*This paper is about Health Insurance companies in the wake of better and affordable healthcare services in rural sector of India. The findings of the research are that the Health Insurance companies are demonstrating some promising results even in the time of limited resources due to failing economy. Health insurance is a rapidly emerging social security instrument for the rural poor, for whom, chronic health problems, arising due to prevalence of diseases and inaccessibility to an affordable health care system is a major threat to their income earning capacity. Insurance is one of the risk management strategies. The need for an insurance system that works on the basic principle of pooling of risks of unexpected costs of persons falling ill and needing hospitalization by charging premium from a wider population base of the same community. There is a need to increase the awareness of health insurance among rural population therefore this study was undertaken.*

**KEYWORDS:** Health Insurance, Awareness, Mediclaim Policy, Government Schemes

### INTRODUCTION

Even after more than 60 years of independence, inequalities in access to health care is widely prevalent in Indian communities. These inequalities in access to health care are related to socioeconomic status, geography, and gender, and are compounded by high out-of-pocket expenditures, with more than three-fourths of the increasing financial burden of health care being met by households. The rise in health care demand has increased the cost of health care system to the extent that specialized care is beyond the reach of common man, only 10% Indians have some form of health insurance, mostly inadequate. As per National Family Health Survey-3, only 5% households are covered under any health scheme or insurance.

The rural populations are more susceptible to risks such as illness, injury, accident, and death because of their unique social and economic circumstances such as the inability to bear hospital expenses at an unpredictable moment.

There is a need to provide financial shield to poor families for the same reason. Health insurance could be a way of removing the financial barriers and improving accessibility to quality medical care. Health insurance is an instrument wherein “an individual or group” purchase health care coverage in advance by paying a fee called a premium.

## **OBJECTIVES**

Taking into consideration of all the above facts, this study was planned with the objectives:

- To study the socioeconomic and demographic characteristics of rural population;
- To analyze the awareness of health insurance of rural population.

## **RESEARCH METHODOLOGY**

The current study attempts to explain the concept of challenges and awareness faced by rural population towards health insurance in India. The nature of research is completely descriptive. It is a conceptual research which is based on review of previously done researches in this area. All the relevant data used in research paper has been collected from secondary sources e.g. e- journals, newspaper, Govt. publications and various e- resources.

## **HEALTH INSURANCE IN INDIA**

Today many countries are shifting over to health insurance as a mechanism of financing their health-care program. In India, we need to shift from the current predominance of out-of-pocket payments to a health insurance program. The reasons are very clear: (1) direct out-of-pocket payments are a financial barrier to access health services. On the other hand, an insured patient can walk into a health facility without the fear of financial burden; (2) direct out-of-pocket payments can push families into indebtedness or poverty. Health insurance protects the patient from the burden of raising funds at the time of illness; (3) Direct out-of pocket payments are inequitable as they place the burden on the vulnerable. Insurance through its risk pooling mechanism is more equitable and (4) direct out-of-pocket payments do not permit patient's participation in his/her treatment. On the other hand, by its collective nature, a health insurance program can negotiate for better quality care.

Most health insurance schemes can be classified into three broad categories, social health insurance (SHI), private health insurance (PHI), and community (or micro) health insurance. In India, we have a fourth category called government initiated health insurance schemes that do not fit into any of the above three categories. Each has its own specific cities. However, there are some features that overlap among three.

## **SOCIAL HEALTH INSURANCE (SHI)**

SHI schemes are statutory programs financed mainly through wage-based contributions and related to level of income. SHI schemes are mandatory for defined categories of workers and their employers. It is based on a combination of insurance and solidarity. The classical example of an SHI is the German or Belgian health insurance system. Here, employees and employers contribute to a “mutual fund(s)” that is then used to finance the healthcare for the entire population. Citizens have to enroll compulsorily in one of these mutual funds. The government also provides significant funding to cover those who are not able to contribute.



## **PRIVATE HEALTH INSURANCE (PHI)**

PHI refers to insurance schemes that are financed through individual private health premiums, which are often voluntary and risk rated. For-profit insurance companies manage the funds. In low-income countries such as India, they provide primary insurance cover, that is, they insure hospitalizations. On the other hand, in high-income countries, they usually provide supplementary secondary insurance cover.

## **COMMUNITY HEALTH INSURANCE (CHI)**

Community health insurance is “any not-for-profit insurance scheme aimed primarily at the informal sector and formed on the basis of a collective pooling of health risks, and in which the members participate in its management.” The important point to note is that in CHI, the local community takes the initiative in establishing a health insurance scheme, usually to improve access to healthcare as well as protect against high medical expenses. The solidarity element is strongest in CHIs as most of the members know each other. CHI as a movement is quite active in sub-Saharan Africa. Even in Asia, we have examples from India, the Philippines, Indonesia, Cambodia, Bangladesh, etc.

## **GOVERNMENT-INITIATED HEALTH INSURANCE SCHEMES (GHI)**

GHI specify that the government introduces a health insurance program, usually for the poorest and vulnerable sections of the community. In many of the schemes, the premium is totally subsidized by the government (from tax-based revenues) and is paid directly to the insurance company. Rarely, the community may be expected to pay a token amount. The insurance company or an independent body is the organizer of the scheme. These schemes last for a couple of years depending on the political will and longevity of the government. These are seen more as populist welfare schemes rather than a long-lasting intervention. In the present scenario, the annual expenditure on health in India amounts to about \$7.00 in rural areas and \$10.00 in urban areas per person. The majority of care being provided by the private sector. With improved literacy, modest rise in incomes, and rapid spread of print and electronic media, there is greater awareness and increasing demand for better health services.

## **HEALTH INSURANCE FOR THE POOR**

For the low-income people, insurance was never considered to be an option in the past. They were assumed to be too poor to save and pay premium. Hence, the government assumed the responsibility of meeting health care needs of the poor. One could argue that if government pays for the poor anyway, why think of insurance at all? Well first, it is being increasingly realized that even low-income people can make small periodic contributions, which can add up to a significant amount, thereby taking some financial burden off from the already strained state revenues. Second, the insured individuals would have an option of going to either public or private service provider, which in turn would generate competition among providers for better services. Finally, health insurance can be used to promote certain desirable behavior. For example, the Aarogya Raksha scheme of Andhra Pradesh links family planning to health insurance.

## **CHALLENGES FACED BY HEALTH INSURANCE SECTOR**

Health care in India can be considered almost unique in several respects. The share of public financing in total health care financing in the country is considerably low just around 1% of GDP compared to the average share of 2.8% in low- and middle-income countries or even relative to

India's share in disease burden. The World Bank (2002) estimates that one-quarter of all Indians fall into poverty as a direct result of medical expenses in the event of hospitalization.

Only 4.05% of India's GDP spends on health care, which one of the lowest health spending globally, the government contributes a sizable portion of the health expenditure, in India, it is one of the lowers, less than a quarter of the total expenditures.

One of the important challenges facing the Indian health policy experts is how to convert predominantly private out-of-pocket spending into health insurance premium whereby this amount is collected from a much larger group of insured individuals rather than from the limited number households affected by illness.

Another major concern in health insurance is: Insufficient data on health insurance consumers, disease patterns and limited control of healthcare delivery network resulting in limited product and pricing innovation. In a country like India where public health care suffers from poor management, low service quality, weak finances, and lack of responsiveness to patients' needs and demands, development of health insurance is likely to bring improvement in public health care system. Before launching any major health initiative, there ought to be a well-articulated vision of health care system for the country, and public health policy must be devised to realise that vision.

### **SCHEMES INTRODUCED BY THE CENTRAL AND STATE GOVERNMENTS**

In 2003, the Indian government launched Universal Health Insurance (UHI) to protect families living below the poverty line (BPL) by partially subsidizing insurance premiums. While the scheme has been criticized for high premiums, slow uptake (by 2008-2009 only 3.7 million people were covered), and for covering only hospitalization, it has provided valuable lessons for future government-sponsored health insurance schemes.

State insurance programs, in practice based on public private partnerships, have also been encouraged. In Andhra Pradesh, one example of private public partnership, RajiveAarogyarsi, was launched in 2007 to benefit BPL families who possess a ration card. The scheme is overseen by a trust that has selected a private insurance company through an open, competitive bidding process and established a network of private and public hospitals to provide free secondary and tertiary healthcare.

By 2013, 87% of BPL families in the state have been covered, which is a notable success. The scheme does not reduce OOP for outpatient visits, but it does reduce unpredictable expense related to hospitalizations that are more likely to suddenly plunge a household into economic crises. Ethnographic research has highlighted significant barriers in accessing health-care among the poor rural population in this state, reducing the impact an insurance scheme such as Aarogyasri.

### **PRIVATE HEALTH INSURANCE IN INDIA**

Unlike most countries where private/social health insurance is the main source of health care financing, in India, and more generally in developing countries, most private insurance is a supplementary service. Health insurance, whether social and private, whether formal or informal, is extremely limited in India. Although a number of private insurance companies have entered after the liberalization of the insurance market in 2000, no significant change in health insurance has been observed either in terms of new health insurance products or in terms of the volume of business. The two health insurance products namely Medi claim for the general public and Jan

Arogya for the poor, launched prior to the liberalization, have not shown any significant growth either in terms of volume of business or in the number of policies sold post liberalization.

### **EMPLOYEE STATE INSURANCE SCHEME**

ESI Act 1948 came into life to protect employees against loss of wages due to inability to work due to sickness, maternity, disability and employment injury. It also covers employees and their family member without fees for services, implemented in Delhi in February 1952 and covers about 1.2 lakh employees.

### **RECENTLY GOVERNMENT OF INDIA HAS IMPLEMENTED**

Ayushman Bharat is National Health Protection Scheme, which will cover over 10 crore poor and vulnerable families (approximately 50 crore beneficiaries) providing coverage up to 5 lakh rupees per family per year for secondary and tertiary care hospitalization.

Ayushman Bharat - National Health Protection Mission will subsume the ongoing centrally sponsored schemes – Rashtriya Swasthya Bima Yojana (RSBY) and the Senior Citizen Health Insurance Scheme (SCHIS). If these personal health policy deterrents are addressed properly by the insurance providers, it could give a significant boost to personal health insurance in India. Needless to mention that insurance providers are very conservative in claim settlement under personal insurance policies as compared to group health policies.

The study also fails to analyse the role of health insurance brokers in promoting personal health insurance who primarily favour group health sector. Their services could also be brought under the purview of IRDA.

### **CONSUMER AND SOCIAL PERSPECTIVE ON HEALTH INSURANCE**

One of the big challenges after the government decide to privatize the insurance sector, would be how to develop such mechanism, which will help making consumers aware about the various intricacies of insurance plans. Information knowledge and awareness of existing insurance plan is very limited.

The report on Universal Health Coverage (UHC) identified nine principles behind the formulation of UHC system of in India namely

1. Universality,
2. Equity,
3. Non- exclusion and non-discrimination,
4. Comprehensive care that is rational and of good quality,
5. Financial protection,
6. Protection of patients' rights that guarantee appropriateness of care, portability and continuity of care,
7. Consolidated and strengthened public health provisioning,
8. Accountability and transparency and
9. Community participation and putting health in people's hands.

### **IMPACT ON THE POOR**

Developments on the health insurance front will not leave the poor unaffected. Even though private for-profit insurance companies are not expected to voluntarily provide health insurance

cover to the poor, the poor may still be affected on account of the influence that development of health insurance will have on the supply of such services.

There are both potential benefits and risks associated with it.

Potential Benefits:

- If the introduction of evidence-based medicine trickles down to other providers that are used more often quality in the private by the poor, the poor could benefit from the improvement in sector.
- If public subsidy to the non-poor who join health insurance decreases, greater public resources may be available for providing subsidy to the poor.
- Potential Risks:
- The gap between the poor access at present and the required access may increase with cost escalation.
- As the non-poor make a switchover from public to private hospitals there is a risk of political support for public financing getting reduced which would impact the poor by excluding them quality care from private market or by deteriorating quality and weakening support for public services

Assessment of the real world impact of health insurance requires a holistic, multidisciplinary analysis that captures its complexity and is sensitive to the larger social, political, and economic context in which policy is created and introduced.

A health policy and systems research approach promotes such 'systems thinking' and explores why and how certain programs work for some, but not for others. Such research must be people-centered and attentive to human agency, social relations, cultural values, and trust based. At the same time, it should also be policy-minded and attentive to processes, structures, and power relations that constitute the field in which a policy is both constructed and negotiated.

In the case of health insurance, research needs to take stock of those factors that lead citizens to enroll in and drop out of insurance programs as well as to use insurance in 18 particular ways. It should also investigate the impact of insurance on the way healthcare is administered at multiple levels. Medical anthropology could play a vital role in this research agenda, as is evident from a few of the many lines of potential research proposed in this paper.

The health system should be regulated and higher amount of transparency and standardization needs to be ensured.

Because in the words of Elizabeth Edwards "Successful health reform must not just make health insurance affordable, affordable health insurance has to make health care affordable".

In a nut shell, we can say that government has done a lot for the health insurance sector to develop at a good speed, now Companies working in the domains must also put a lot of effort to sensitize people about the need for a health insurance in their life. Health care in India demand is rising in India nowadays it has been estimated at 10% of health insurance market and it will rise up to 35% in the future.

## CONCLUSION

The determinants of awareness of health insurance were education and socio economic status. Though this study shows increased prevalence of awareness of health insurance there is still an

alarming need to improve the awareness with regard to their knowledge about health insurance covering the medical expenses in the rural communities.

Creating awareness to the society about Health Insurance Policies is of utmost importance for the Insurance Industry. From our research, we have noticed that many people are not aware about the importance of Health Insurance Policy. So, Insurance Companies and the government must put their hand together to boost the awareness among people especially in the rural areas because they don't have enough facilities as compared to the urban areas in health care. And in case of emergencies, they take loans from unorganized sources which charge them a very high interest rate. This results into they been indebted with huge amount of loans to payback.

So, people should be made carefully aware about the importance and the benefit of a health insurance policy. People who are aware still need to be made more aware as they think this is not necessary for their lives. And the Insurance Companies should provide those kind of schemes which the poor can also purchase for their health care that is with affordable premium.

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# SAARJ Journal on Banking & Insurance Research (SJBIR)

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## OVERDRAFT CREDIT IN COMMERCIAL BANKS AND ITS ACCOUNTING

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### ABSTRACT

*The article explains the role and importance of overdraft in ensuring the liquidity and solvency of bank customers, its emergence, specific features. In commercial banks of the Republic of Uzbekistan, the conditions, terms, interest rates, and amounts of overdraft in the banks offering overdraft are studied in the accounting records. The work on overdraft in the Russian Federation and the United Kingdom has been studied. The banking system of Uzbekistan has studied the provision of overdraft using foreign experience.*

**KEYWORDS:** *Overdraft, Credit, Bank, Bank Account, Credit Limit, Customer.*

### INTRODUCTION

The most effective way for commercial banks to ensure competitiveness is to gain the trust of customers and create all the conveniences for them, as well as increase the type, quality and speed of services. Banks are increasingly feeling the need to introduce modern banking services and use new technologies to ensure competitiveness.

As a result of improving the living standards of the population, the acquisition of modern knowledge, their demand for new financial services is growing. The speed, quality, accuracy, safety and reliability of services of commercial banks are the requirements of bank customers (Umarov, 2020). One of these services is overdraft credit. This type of loan is considered to be profitable in terms of profitability, high risk and depends on the liquidity of the bank.

Adoption of the Resolution of the President of the Republic of Uzbekistan dated March 23, 2018 No 3620 "On additional measures to increase the popularity of banking services" identified the existing problems in the provision of banking services and measures to be taken by banks.



In addition to the fact that commercial banks provide banking services on favorable terms for customers, it requires special attention to the profitability, risk and liquidity of the bank. Establishes economic and legal relations with commercial banks in the provision of banking services and operations to individuals and legal entities. The terms of the bank account agreement define the procedure for making payments by the client, how and with what funds, using what payment method.

Every customer should be satisfied with the banking service, have quick funds to ensure their liquidity. An overdraft account or loan, which is widely used in the world, helps to ensure the liquidity of this customer.

Although the issue of overdraft in the chart of accounts of commercial banks of Uzbekistan was introduced in 1997, the first overdraft loans were issued to individuals in 2017. Currently, overdraft loans are mainly issued to individuals, but there is no practice for legal entities to open this loan or account. This article examines the essence of overdraft, its accounting, and its widespread introduction in the banking practice of Uzbekistan.

## LITERATURE REVIEW

Overdraft loan or account is a relatively short-term lending operation in the practice of commercial banks in international practice, despite the fact that it is a method of transferring funds from a bank account, it is rarely used in the banking system of Uzbekistan. At the same time, overdraft remains insufficiently studied in the context of insufficient funds for banks to manage lending activities and make current payments to customers.

Overdraft is a form of short-term credit widely used in international practice, in which the bank makes a payment in the absence of funds in the client's account, which creates a debit balance (Gryaznova, 2004), ie funds in the absence of funds in the client's current account, is spent and a debit balance appears.

One of the main reasons why the word overdraft is also derived from English is that it originally appeared in connection with the United Kingdom. In May 1728, Edinburgh merchant William Hogg discovered that he had some financial problems. He approached his bank, the Royal Bank of Scotland, about the matter and thought of possible solutions to solve his problem. After many hours of heated debate, they came to an agreement: the bank would allow him to go into debt for a few days (Bourne, 2012). This was the first overdraft.

Overdraft loan (overdraft) - a short-term form of lending that gives the holder of a bank plastic card the right to use more than the balance on the bank plastic card account when making payments for goods (works, services) (2900-nizom, 2017)(effective as of 30.12.2019) lost). This has allowed commercial banks in Uzbekistan to make payments to individuals on bank cards within the credit limit.

Overdraft lending is an "on-demand" lending (Toymuhamedov, 2005). It turns out that the bank has to lend to the customer's account.

Overdraft is a special form of overdraft. Its special feature is that the bank allows the client to have a debit balance on his account for a short period of time (Abdullaeva, 2003). An overdraft loan is a type of overdraft that is directly related to the customer's account, which creates a debit balance on the customer's account in the short term, and the balance decreases as funds arrive at the account. There are no current accounts in Uzbekistan.

Overdraft loans of commercial banks are issued in the amount of debit balances of current accounts of customers, and in this regard, customers play an important role in ensuring the continuity of production activities (Sayfidinov & Sheraliev, 2019). When a customer uses an overdraft, he will be able to make current payments if he does not have enough funds.

When providing an overdraft to a customer, the bank deducts funds from the customer's current account to pay for payments in excess of the balance on that account, i.e., provides a loan for the missing amount within the credit limit set for the customer (Vilegjanina&Mustafaeva, 2019). In accordance with the bank account agreement concluded between the bank and the client, makes payments within the pre-agreed amount, ie within the credit limit.

When there are not enough funds in a customer's account, banks cover their transactions and charge an overdraft commission (Parrish & Frank, 2011). It can be seen that the bank also charges a commission for servicing the account by charging interest on the loan.

A study by Ashton and Gregoriou examines whether personal current accounts that offer overdraft use customers less than accounts that do not offer this service. Their results show that the cost of deposit and payment services for personal current accounts that offer overdraft is higher than for accounts that do not offer this service (Ashton & Gregoriou, 2017). This shows that customers' interest in overdraft is relatively high.

Banks need to balance the revenue generated by overdraft payments with consumer dissatisfaction and the potential dissatisfaction that results from these payments. An alternative strategy of overdraft payments can increase bank revenues and increase consumer welfare (Liu et al., 2018). Of course, commercial banks should also pay close attention to the financial condition of the customer, the payments for overdraft provided to the customer from the process of servicing the bank account.

Summarizing these points, it can be noted that an overdraft bank lends the customer's bank account for a short period of time to pay the billing documents when there is not enough or no money in the customer's account under the contract, creating a debit balance on the account. In this case, the bank deducts funds from the customer's account within the pre-agreed credit limit.

## **ANALYSIS AND RESULTS**

An overdraft differs from a regular loan in that all funds received in the customer's account are sent to repay the debt. Therefore, depending on the inflow of funds to the overdraft account, the size of the loan may also change. Sometimes a grace period is provided for the use of an overdraft, with no interest accrued for the use of the loan. It depends on the bank's credit policy.

When a loan is issued from an overdraft account, the borrower must provide a credit balance on that account at the end of each month. If the client has a time deposit account in the bank, then he may be entitled to a permanent debit balance within his deposit, provided by the credit policy. If the borrower does not have a term deposit account with the bank and the debit balance is maintained in the overdraft account at the end of the month, lending to this customer will be suspended until the loan is fully repaid. When a borrower uses an overdraft account, he has the right to re-issue this type of loan to another type, subject to the availability of loan repayment security and compliance with the terms of the short-term loan.

These review cases describe overdraft loans to legal entities, the terms of which may vary for different types of overdraft loans.

An overdraft loan for individuals allows you to use a bank loan when you do not have funds in your account. It is obvious that currently overdraft loans issued by commercial banks of the country are issued through bank plastic cards.

In accordance with the Regulation of the Central Bank of the Republic of Uzbekistan dated July 21, 2017 2900 "On the procedure for granting overdraft loans to individuals by bank plastic card" (expired on 30.12.2019) by the overdraft commercial bank It was noted that the transfer will be made by bank plastic card. It is the adoption of this regulation that has led to the provision of overdrafts by commercial banks in Uzbekistan.

The first overdraft loans in Uzbekistan were offered by JSCB Uzpromstroybank.

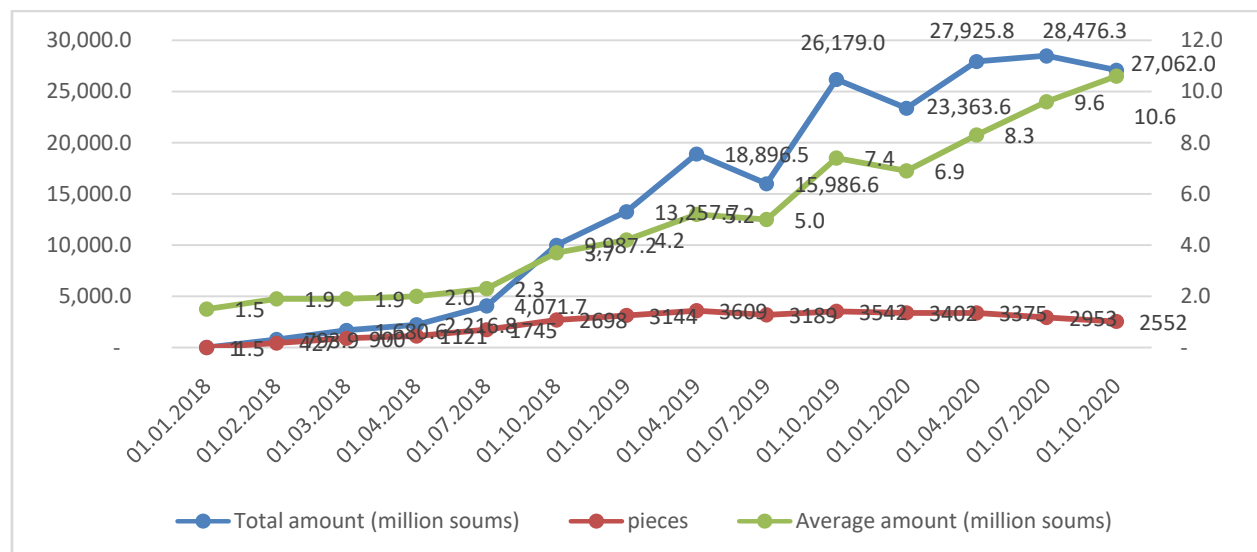


Figure 1. Overdraft dynamics provided by Uzpromstroybank JSCB (Uzpromstroybank, 2020).

Overdraft loans issued by Uzpromstroybank JSCB started on January 1, 2018 and have been growing. Currently, the amount of overdraft is 27062 mln. The average amount of each overdraft is 10.6 million soums.

To account for overdraft loans issued to individuals, pensioners are allowed to have a debit balance under the overdraft agreement in the accounts "22617 - Liabilities of pensioners on plastic cards" and for other individuals "22618 - Liabilities of plastic cards of individuals."

This debit balance is transferred to the account of the balance of the commercial bank "12503 - Short-term loans to individuals by plastic cards" until the end of the balance day.

**TABLE 1 INFORMATION ON OVERDRAFTS OFFERED BY COMMERCIAL BANKS OF THE REPUBLIC OF UZBEKISTAN \***

№	Bank's name	Amount	Term	Interest rate
1.	NBU JSC	Up to 50,000,000 soums	1 year	21
2.	Uzpromstroy bank JSCB	Up to 50,000,000 soums	1 year	23
3.	Asaka bank	In the amount of up to 1 time of the average monthly salary (pension)	1 year	23
4.	Mikrokreditbank	In the amount of up to 3 times the average	1 year	22

		monthly salary (pension)		
5.	Alokabank	Up to 22,300,000 soums	1 year	23
6.	Trastbank	Up to 669,000 soums	1 year	23
7.	Asia Alliance Bank	Up to 22,300,000 soums	1 year	22
8.	Ziraat Bank Uzbekistan	In the amount of up to 3 times the average monthly salary (pension)	1 year	20
9.	Orient Finans Bank	Up to 10,000,000 soums	1 year	23
10.	Ravnaq-bank	Up to 669,000 soums	1 year	20
11.	Eron "Soderot" bank	Up to 4,460,000 soums	1 year	22

\* prepared by the author on the basis of data from the sites of commercial banks

If we pay attention to the overdrafts currently offered by commercial banks of the Republic of Uzbekistan (Table 1), the maximum amount of overdrafts is 50 mln. soums. The term of the overdraft is not more than 1 year, the annual interest rate is more than 20% and is offered mainly to employees of their corporate clients, retirees. Taking into account that as of November 2020, there are 34 commercial banks operating in the banking system, 29% of them offer overdraft loans. Also, overdraft is given only to individuals. There are no commercial banks offering overdraft loans to legal entities.

Accounting for overdraft loans to legal entities, as well as other loans per day this type of loan is not used in practice.

Therefore, it is advisable to introduce overdraft credit at the expense of collateral for sales revenue for customers who have at least daily sales revenue of overdraft credit. This type of loan is offered by most foreign commercial banks.

As a rule, no additional collateral is required for this loan. But banks often require personal guarantees from business owners as an additional guarantee to repay the loans. In addition, some banks (for example, Sberbank) require insurance of a minimum balance of goods in stock.

Often the size of the loan is required to be up to 75% of the average monthly income, the maximum amount is set independently by the commercial bank.

The main purpose of this loan is to meet the client's need for working capital.

Let's look at overdraft loans issued by banks of the Russian Federation.

**TABLE 2 DYNAMICS OF OVERDRAFT LENDING BY RUSSIAN BANKS** (Vilegjanina & Mustafaeva, 2019)

Year	Number of banks offering overdraft loans	All banks of the Russian Federation		
		Overdraft loan portfolio, mln. ruble	Total loan portfolio, mln. ruble	Share of overdraft in loan portfolio, in%
2004	362	58 755	1 927 262	3,05
2005	406	80 537	3 012 203	2,67
2006	453	110 290	4 220 325	2,61
2007	552	152 499	6 537 765	2,33
2008	597	183 343	10 182 858	1,8
2009	545	121 793	13 454 543	0,91

2010	561	94 094	13 326 589	0,71
2011	579	125 880	15 600 900	0,81
2012	574	176 209	20 731 369	0,85
2013	571	221 419	25 857 301	0,86
2014	538	229 880	29 836 692	0,77
2015	492	190 548	34 888 476	0,55
2016	402	163 763	35 176 500	0,47
2017	328	189 042	37 800 220	0,5
2018	299	202 693	42 928 749	0,47
2019	254	266 891	48 436 678	0,55

The table shows that while the overdraft loans offered by the banks of the Russian Federation increased in total, the share of overdraft in the loan portfolio decreased. At the same time, the number of banks offering overdraft loans has also decreased.

Given the financial difficulties faced by overdraft users in the context of a pandemic, the issue of privilege is being widely addressed in most countries. In particular, the Financial Conduct Authority (FCA) in the UK has developed a separate “Overdraft and Coronavirus: A Temporary Updated Guide for Firms” to protect customers. No interest shall be paid on a given overdraft balance of up to £ 500, the whole balance shall be interest-free if the overdraft is less than £ 500, and firms shall not charge interest on the first £ 500, regardless of whether the overdraft exceeds this amount (Authority, 2020).

Of course, such convenience for customers using overdraft is critical to their socio-economic support in the event of a pandemic.

## CONCLUSIONS

In conclusion, the following can be noted:

1. Overdraft bank lends the customer's bank account for a short period of time to pay the billing documents when there is not enough or available money in the customer's account under the agreement, a debit balance is generated in the account.
2. Overdraft loan or account servicing is provided on different terms depending on the financial condition, desire and type of activity of the client.
3. Overdraft loans in commercial banks of Uzbekistan are provided mainly to individuals, they should be provided to legal entities.
4. Separate software should be developed to account for overdraft.
5. Improving the issuance and accounting of overdraft credit has not lost its relevance.

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# SAARJ Journal on Banking & Insurance Research (SJBIR)

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## ROLE AND IMPACT OF INSURANCE ON CONSUMER AN ANALYTICAL PERSPECTIVE

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### ABSTRACT

*Insurance industry is one of the most sector of our economy. It protects the economy from stagnating and keeps the commerce moving. The insurance sector comprises of companies that offer risk management solutions. Insurance has not just become a guarantee against untoward loss it has become a necessity in today's life. With such high paced lives and high unpredictability, insuring everything ranging from homes, vehicles and even life has become a necessity. Insurance industry is in the money making business but at the same time it lightens burdens from people's shoulders by talking their responsibilities upon them. It is a beneficial industry as the number of people who actually claim the insurance is comparatively very less than the number of people who buy these policies. Hence, interests of both the insurer and the insured are met. The present study shall discuss the impact of insurance on customers and talks about how they are benefitted from it.*

**KEYWORDS:** *Insurance, Customer Satisfaction, Insurer, Insured, Insurance Policy*

### INTRODUCTION

Insurance can be described as an arrangement where accompany or an institution undertakes the duty of providing compensation for a possible loss, damage, death or emergency in exchange for a specified premium payment. It is a guarantee against a plausible mishap.

Life is highly uncertain. We are surrounded by risks all the time. It could be risk in business, risk of life, medical emergency or cases of damage to property or theft. Insurance in such cases act as a prudent way of transferring the risks onto an insurance company (insurer) by paying a successful premium as promised in the insurance policy. It is like as safeguard against financial losses.

There are different types of insurance that various companies provided. The main types of insurance are life insurance, which is insurance of life. Under this if a policy holder dies untimely during the period of the policy, his/her family is adequately compensated as per the terms and amount of the policy. Next is health insurance, where the insurance company covers for the

medical treatment of the insured. Car insurances have become a necessity for all car owners. It protects customers against any untoward situation like theft or accidents. Education insurance is a safe way of providing for your child's higher education. Last but not the least, is the Home Insurance that covers against natural calamities or other unfortunate incident.

Apart from the safety benefits of acquiring insurance, insurance policies have other benefits too. Since, it helps us deal with emergencies and untoward situation; it helps deal with stress a lot. Insurance can help us to save money spent on taxes as well. Infact, under the subsection 80C of the Income Tax Act of 1961, a person can claim tax relaxation of up to rupees one lakh on the total taxable income based on the money they spent on insurance.

A variety of factors can influence customers decision of pursuing a particular policy. These factors could be demographic like age, income group, number of people in family etc. Or service based like ease of service, trust, or type of service that include amount of premium, total amount of coverage, term of insurance, ease of payment of premium etc. The study undertakes each of these factors and describes which factors influence customers the most.

## LITERATURE REVIEW

Customer satisfaction is the key to the success of any business group. Now life insurance companies have also begun to realise this. Customer satisfaction has massive role in success of the life insurance industry. The research by Siddiqui and Sharma (2010) focusses upon analysing the factors that cause customer satisfaction and how the service quality of different life insurance services impacts them. the various parameters that were considered during the analysis were assurance, personalized finance planning, competence, corporate image, tangibles and technology. The customer satisfaction was analysed using three variables like customer satisfaction with agents, satisfaction with functioning services and satisfaction with company. According to the study, overall customer satisfaction is largely dependent upon customer satisfaction with functional services which means customers want those services which are provided to them easily and in a hassle-free manner. Lastly, the study recommended that the results of the study could be applied to other industries as well even though this research was life insurance industry centric.

Getting insurance for variety of things has become a very common phenomena in today's world. Therefore it is important that these insurance service providers build adequate trust with their customers so that customer loyalty can be achieved. People are getting insurance policies for a number of different reasons today. Now, it may be possible that these customers obtain one or more policies from the same provider or from different providers. They may or may not renew their agreements with a particular insurance company based on if they trust the company or are happy with their services. Therefore, it is very clear that trust is the most important factor of the service industry and especially when in the insurance industry stakes are extremely high. The various factors like price of the insurance policy, company trustworthiness, customer service an convenience etc. Are few of the other essential factors for the Indian insurance sector. The study by Damtew and Pagidmarri( 2013) analysed the role of trust in building customer loyalty in Insurance sector. The study concluded by saying that trust is directly correlated to customer loyalty.

The research by Petra (2012) was based on understanding consumer behaviour. Consumer behaviour in choice of insurance is a very important factor that contributes to the development of the Insurance Industry. Demographic factors like age, income bracket, gender etc. are very important factors that specify how consumers behave towards specific insurance services. The

purpose of the study is to familiarise with the behaviour of consumers in the insurance market. This research is important as it will help in achieving better appliance client comprehension, product optimisation and therefore expansion of clientele. The various factors affecting the choice of insurance like price range of insurance, amount of the coverage of insurance etc. were also analysed. The research showed that the choice of insurance is highly dependent upon the income group of the customers and is not really related to the gender or level of education of customers. Also, customers often tend to behave irrationally based on media coverage of the insurance claims, discount or extension of amount of coverage.

Insurance business is unique as it manages the risk of other people. It is one of the most significant aspect for countries economy. The study by Jain (2018) on customer satisfaction towards services of life insurance corporation with special reference to Jaipur city contemplate that LIC is not just a business platform but is also very important as it covers and provides protection to the large poor and middle class population of our country. With new technologies, changing market, economic uncertainties, and high competition customer satisfaction has become the primary goal of service provider companies in order to survive in the highly competitive industry. A variety of reasons were analysed that were the decisive factors for choosing of life policies by customers. For example, coverage of risk, savings, tax purposes, easy accessibility, recommendation from friends etc. are the most important factors guiding the purchase of policies. The study revealed that more than half of customers were satisfied with their policies provided by the Life Insurance Corporation. However, a little less than half showed their displeasure and were willing to switch to a different policy provider. Hence, such studies are a tool to understand the companies position in market so they could build better strategies for future.

Life insurance industry is the most critical industries of India. It is a blooming market with a lot of competition. Each insurance service provider is working harder to satisfy their customers. The study by Khurana (2012) was aimed at understanding the relationship between service quality and customer satisfaction in the Indian Life insurance industry. The relationship between customer satisfaction and services quality was analysed in the study. Sample of about 200 customers of ten different life insurance companies was taken. Statistical tools were used to analyse the results. The questions included were of age group, income group, marital status, gender, profession etc. were asked. The results showed that tangible dimensions have the greatest impact on customer satisfaction.

The success of a company is often measured on the basis of customer satisfaction with their services. The insurance industry is one of the most important industries of the country. Thus, customer satisfaction is extremely important. Understanding the factors that cause customer satisfaction is important in context of relationship marketing. It is the determinant of customer loyalty. The study by Coviello and Trapani (2012) was aimed at developing the foundation for understanding the customer retention process. Customer satisfaction often depends upon customer satisfaction and the quality of relationship between the service provider and the service receiver. Studies like this help companies to get an idea of their shortcomings and work on improving them in order to increase their member base.

With the development of technology, service industry has gained a new momentum. The study by Khare (2012) shows that the dissemination of services has improved with the introduction of web based technology. The various attributes of online service like Convenience, ease of use are now prioritized by companies while designing their services. The research shows that online insurance

services have a lot of potential in India. Improving attributes of online insurance web sites can enhance the customer's usage of services.

The economic performance of insurance companies is based on Customer's satisfaction. It also depends upon how customers perceive the service quality of various Insurance service providers. The study by Singh, Sirohi and Chaudhary (2014) on study of customer's perception towards service quality of Life Insurance companies has revealed that there are four major factors that decide customer perception. These are responsiveness and assurance, convenience, tangibles and empathy. Various demographic variables like age, gender, educational qualification were considered for analysing consumer perception of service qualities. The study has shown that age of respondents significantly determines the perception of customers towards service qualities. The advantage of carrying out such a study is that it can be used by Insurance service providers to build efficient strategies and improves their brand image.

The insurance sector of India is a very fast growing industry. With more private players coming into play the competition has increased many folds. Hence it becomes extremely crucial that customer satisfaction is achieved so companies can retain their customers and track potential customers. The major aim of the study by Mathur and Tripathi (2014) is exploring the various factors that influence customer's perception and finding out the influence of each factor on customers. A number of demographic variables were also considered. The study has a very important role in building customers perception towards a particular service. The researchers were able to identify 29 factors as responsible for influencing customer's decision for a choice of insurance company. Out of these 29 factors, 9 had a key role in the decision making. These 9 factors include proximity, company services and infrastructure, convenience, security or privacy, technology, responsiveness, reputation, image and ownership. The studies show that companies must also focus on physical attributes like infrastructure and location of office alongside the service qualities and that the reputation of the company largely depends on its customer services. No significant impact of gender or education was found on consumer's perception of particular insurance company.

A research was conducted by Barkur, Varambally and Rodrigues (2007) on understanding the dynamics of Insurance sector. It tried to understand the degree of influence of five critical factors on service quality in the insurance sector. With web driven services and increased competition, customers demands have also grown exponentially. Hence, past experiences, personal needs, external communication, word of mouth and active clients significantly influence a company's service quality. Such a study can be applied to the insurance sector so that they can better their services and provide customers with a better experience so they continue with a particular insurance company.

## CONCLUSION

The present study has revealed that Insurance Industry is one of the most important and significant service provider industry in India. A large number of insurance provider companies like LIC, Aegon Life Insurance, Religare Health insurance, Bajaj Allianz General Insurance etc. are present in the market today. There is so much competition in the market that it becomes imperative for companies to look for ways to increase their customer base. People are increasingly relying on insurance policies to cover their medical bills and life insurance services for their promise of providing the pre decided sum of money for the family of the diseased. These companies are reducing the burden of payment. It is especially advantageous to middle class families where it

becomes very difficult to pay for high medical bills. Life insurance policies benefit those who are the sole earners of their family and can be assured that after their death, their families wouldn't have to suffer as much, at least monetarily. With such huge stakes, it is important that these insurance industries have a level of trust and assurance to their customers. Only those insurance companies can survive in the market who provide the best services to their customers. Hence the present study undertook the task of analysing the factors that decide the reasons behind customer satisfaction with a particular insurance company. Age, income level, education qualification were some of the common demographic variables that decide on the kind of insurance policy the person would pursue. While the price of policy, the amount of coverage, assurance to customers decides which companies are more suited by customers. The importance of such a study is for both the insurance providers as well as receivers. The providers would find efficient ways of marketing and serving their customers while the customers would be able to make informed choices.

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