

**STUDING EFFECTIVE FACTORS IN THE DEVELOPMENT OF
ENGINEERING INSURANCE
(CASE STUDY: MOALLEM INSURANCE COMPANY OF GIULAN
PROVINCE)**

Ali Falah Ranjbar¹

Mehdi Yousefi²

Reyhaneh Rahnama³

Mona Ahmadi⁴

Darush Ahmadi⁵

Forough Abroun⁶

Azadeh khomyranzad⁷

1.2.3.4.5.6.7-M.A. Student of Business Management, Rasht Branch, Islamic Azad University, Guilan, Iran

Abstract

Engineering insurance guarantee investment in public and private sector and stimulate economic cycle. This insurance have covered stakeholders in infrastructure projects, construction and industry including employer, contractors “main and sub”, consulting engineers in case of accidents and physical damage and compensate physical damage of insured and body Indemnity resulting from civil liability administrative individual. The purpose of this research is to identify, analyze effective factors in the development of engineering insurance and provide guidelines for the development such insurance policies. In this research, effective factors in the development of engineering insurance have been provided according to the five factors in engineering insurance (Knowledge of managers, Selection of human resources based on competency, risk accurate assessment in pricing, Rules and Regulations, advertising and providing appropriate services).

Keywords: *Engineering insurance, Knowledge of managers, Selection of human resources based on competency, risk accurate assessment in pricing, Rules and Regulations, advertising and providing appropriate services*

1. INTRODUCTION

Insurance is one of the most important development tools that reliance it in different parts of trade, economic and services is inevitable. The person or organization cannot find that is far from risk. There are always risks that threaten existence of a person or organization. To avoid adverse effects due to risk presence, security and peace of mind is essential for economic activities and this is role "insurance". Among the different types of insurance activities, engineering insurance has particular role and importance in the development of civil and industrial activities in the country. Engineering Insurance in terms of diversity and inclusivity are unique. So that tabulating side streets and their pavement to highway, large and small bridges, the construction of dams, tunnels, building schools, universities, digging wells, building the largest network of sewers, build a common home or Highest towers, build

a sports stadium, to install a small workshop to the largest manufacturing factories machinery installation, used machinery contractors as well as loaders, bulldozers, various types of cranes, appliances and electronic equipment ... all and all can covered by engineering insurance And damages to them be compensated by the insurer[4].

In this research are investigated effective factors in the development of engineering insurance.

2. ENGINEERING INSURANCE HISTORY

In the mid-nineteenth century, in industry began using steam boilers and although it was a big change, steam boilers have been caused explosion that bring severe damage and loss of life and financial to people. Because the number of users has led to a remedy and they met in 1854 in Manchester, England. Mentioned meeting led to the establishment of users' organization from steam boilers Manchester. The main task of this organization was explosion causes and providing explosion prevention methods to reduce the economic impact of such explosions. Mentioned organizations also hire experts with received the annual membership fee from members because they visit to regularly used boilers of members and provide advice to them.

Gradually over time the number of members was increased. Meanwhile, also need for insurance formed among them. So in 1858 those members who were in agree of insurance established a company called "steam boiler insurance companies" that It can be named as the first company in the field of engineering insurance. In the years 1882 and 1890 in England was passed laws in connection with boiler explosion that Inspection and determine the cause of the explosion of boilers, except those that were used for specific purposes require and offenses was considered for those who were cause as boiler explosion by an error or fault. In addition to mentioned rules, other rules in 1901 (relating to boilers), 1965 (relating to power plants), 1968 (for forklifts and lift), enacted in England that led to encourages users to have insurance and the resulting increase in engineering insurance portfolios[3].

In some other European countries, after United Kingdom was formed engineering insurance, among them may be named Germany that the early 20th century by issuing first machinery insurance began engineering insurance actually. From then insurance and reinsurance companies in the field of engineering insurance began a widespread activities in Germany and nowadays, most important of engineering insurance companies are belonging to this country.

Start of engineering insurance with collaboration of different companies including Manicure reinsurance company with Iran insurance company was formed (Moallem Insurance Portal, 2009).

3. TYPES OF ENGINEERING INSURANCE

3.1. All Risk Insurance of Contractors

All construction projects in the building sector began to work date to temporary delivery time covered by this insurance policy. In this insurance types of constructional operations, such as construction of dams, airports, tunnels, silos, hospitals, hotels, port construction, wharf construction, building stations, and television and radio transmitters and telecom

facilities, residential buildings and commercial and any other construction operations are included insurance[2].

3.2. All Risk Insurance of Installation

This type of insurance is comprehensive and adequate support against risks that occur during installing equipment and machinery manufacturing projects, including power plants, transmission lines, steel, iron smelting, railroads, refineries, pipelines, oil and gas, activities in the textile, chemical, etc.

3.3. Machinery Breakdown Insurance

During operation of all risk insurance of contractors and installation begins machinery continually work and Increase risk of machinery breakdown and need to be covered in a separate insurance policy. The main reasons of machines important are: 1- not completes coverage by the manufacturer's warranty 2- large share of negligence and malpractice of machines users in damage 3- machines restructuring costs. In this insurance types can be covered by type of mechanical equipment, instruments and machines[6].

3.4. Contractor's Plant & Machinery Insurance

This insurance compensate all damages to equipment of contractors such as loaders, bulldozers, cranes and ... that are used as contractors tools.

3.5. Deterioration of Stock in Cold Storage:

This insurance includes loss of all goods storage into cold storage such as protein, fruits, dairy products, and chemicals and pharmaceuticals.

3.6. Electronic Equipment Insurance:

This insurance includes types of equipment used in industrial workshops, industrial, medical and laboratory equipment, office supplies, alarm systems, hospital equipment, control systems, film and video equipment, material testing machines, computers, etc.

3.7. Machinery Losses of Profit Insurance

This insurance includes lost profits due to work interruption in compensable accident insurance occurred machinery failure.[6]

3.8. Civil Engineering Completed Risks

This insurance includes losses exerted on types of structures built in the time of the operation, such as roads, airport runways, tunnels, canals, harbors, kinds of dams and

3.9. Latent Defects of Building insurance

Period of insurance is from issuing time end work and will continue ten years. This insurance includes total destruction of the building, the cost to prevent the destruction of loss, costs required to clean up the site and removing waste.

4. THE INTRODUCTION OF MODEL ELEMENTS

4.1. Knowledge of managers

Manager must have an understanding of specific leadership in order to provide the growth and development of the organization. This knowledge is not limited only to the environment within the organization. This is important since Most managers during their decisions on organization issues acts form an irregular (non-systematic) and arbitrary. Decisions are taken by managers in large organizations, are very complex and should be systematically analyzed. Management factors effecting development of engineering insurance can be stated as follows:[1]

- A) Stability of boards of directors and effective management.
- B) Fair competition and cooperation between managers of insurance companies.
- C) careful and regular planning

4.2. Selection of human resources based on competency

The purpose of selection of human resources based on competency is finding the most qualified person for a job vacancy. Effective selection is based on the principle that organization position is Depends on having a human resource professional, committed and interested to work. Experts who have seen professional training in engineering insurance very little and most of the staff based on experience in this field have information. Therefore, in such circumstances for the development of engineering insurance must be provided trained and required manpower[8].

4.3. Accurate assessment in pricing (*risk appetite*)

Risk can be a portal of opportunity, the development, improve, or new thinking. Risk appetite in pricing include following four processes:

- identify and determine risk in pricing
- Analysis to risk in pricing
- The appropriate response to risk in pricing
- controlling response to risk in pricing

4.4. Rules and Regulations

Engineering insurance has been precisely created to resolve the concerns and willingness to construction activities until be safe support for investors. Engineering insurance Rules and Regulations are divided into two categories:

- The insurance policy for the period of constructional operations or installation (during construction) will be issued.
- Insurance policy that are issued for the period of operation. At the global level, to support realization of premiums and distribution of insurance policy are continuously being modified rules and regulations and constantly new arrangements for it is growing, therefore, proper rules and regulations and supervision, is important[7].

4. 5. Advertising and providing appropriate services

Modern organization environment is dynamic and is associated with extensive changes. This requires that organizations with planning to conduct advertising and offers good service to customers exploit from opportunities and minimize environmental treats. Dynamic competition has changed the role of customers in organization. Currently customers are not only as a consumer, customers also in the production of goods, providing appropriate services, procedures of doing things, knowledge development and competitiveness are along with members of the organization. So regardless of the type of industry and product, organization by advertising and providing appropriate services seeking to gain excellent position in the minds of customers, increase loyalty and satisfaction [5].

Research model is as follow:

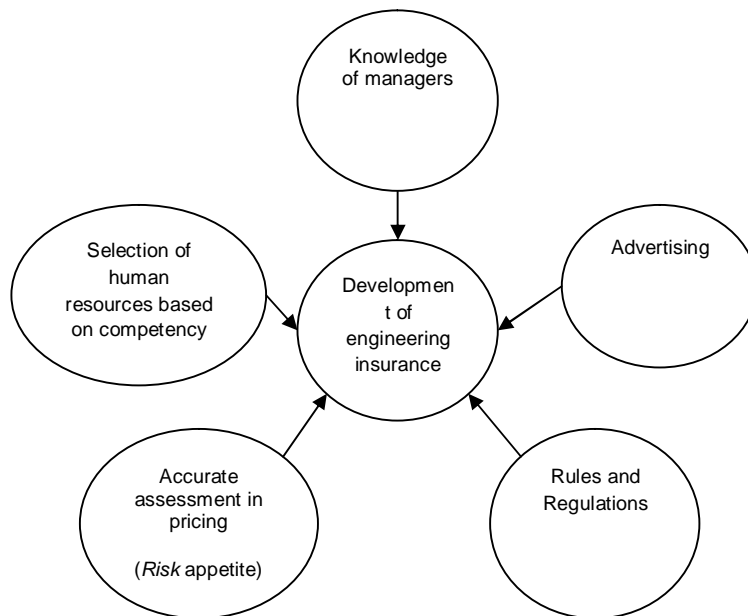


Figure 1: Analytical Model of research

5. RESEARCH HYPOTHESES

Due to dimensions of mentioned and theoretical framework for the study, five hypotheses have been considered that include:

- 1- There is significant relationship between growth and development of engineering insurance with knowledge of managers.
- 2- There is significant relationship between growth and development of engineering insurance with selection of human resources based on competency.
- 3- There is significant relationship between growth and development of engineering insurance with risk accurate assessment in pricing.

- 4- There is significant relationship between growth and development of engineering insurance with rules and regulations.
- 5- There is significant relationship between growth and development of engineering insurance with advertising and providing appropriate services.

6. DATA COLLECTION TOOL

In this study is used closed questionnaire. Questions this questionnaire in part of Knowledge of managers and technology (3 questions) and the selection of human resources based on competency (4 questions), and risk accurate assessment in pricing and risk-taking (4 questions), and the rules and regulations (3 questions) and advertising (6 questions) has been used. Total Cronbach's alpha coefficient of questionnaire has obtained 0.8048 that represents reliability of research tool and to assess the validity of the questionnaire are used experts, university professors, and experts. In this research will use SPSS software for data analysis.

7. DATA ANALYSIS

First hypothesis

H₀: There isn't significant relationship between growth and development of engineering insurance with knowledge of managers.

H₁: There is significant relationship between growth and development of engineering insurance with knowledge of managers.

Table 1: Correlation coefficient between growth and development of engineering insurance with knowledge of managers

Variables	Number	correlation coefficient	Sig	Result
Growth and development of engineering insurance with Knowledge of managers	30	.518	0.002	Confirmed

According to the table it can be seen that $\text{sig}=0.002 < 0.05$, thus with 95% confidence interval H₀ rejected and H₁ confirmed and this impact is significant. Based on results obtained also can say that correlation Intensity between growth and development of engineering insurance with knowledge of managers is 0.518.

Table 2: Regression test between variable of growth and development of engineering insurance with knowledge of managers

Variables	R	R ²	Beta	Constant	sig
Growth and development of engineering insurance with Knowledge of managers	.518	.242	.518	1.47	0.000

Since sig is less than 0.05 thus knowledge of managers has significant impact on growth and development of engineering insurance. impact intensity is equal to 0.518 and according to beta coefficient; this impact is positive and direct. In other hand R² is equal to 0.242 means that Independent variable 24.2% of changes in the dependent variable can predict.

Second hypothesis

H₀: There isn't significant relationship between growth and development of engineering insurance with selection of individuals based on competency.

H₁: There is significant relationship between growth and development of engineering insurance with selection of individuals based on competency.

Table 3: Correlation coefficient between growth and development of engineering insurance with selection of individuals based on competency

Variables	Number	correlation coefficient	Sig	Result
Growth and development of engineering insurance with Selection of individuals based on competency	30	.777	0.000	Confirmed

According to the table it can be seen that sig=0.000<0.05, thus with 95% confidence interval H₀ rejected and H₁ confirmed and this impact is significant. Based on results obtained also can say that correlation Intensity between growth and development of engineering insurance with selection of individuals based on competency is 0.777.

Table 4: Regression test between variable of growth and development of engineering insurance with selection of individuals based on competency

Variables	R	R ²	Beta	Constant	Sig
-----------	---	----------------	------	----------	-----

Growth and development of engineering insurance with Selection of individuals based on competency	.777	.603	.777	.409	0.000
---	------	------	------	------	-------

Since sig is less than 0.05 thus selection of individuals based on competency has significant impact on growth and development of engineering insurance. Impact intensity is equal to 0.777 and according to beta coefficient; this impact is positive and direct. In other hand R^2 is equal to 0.603 means that Independent variable 60.3% of changes in the dependent variable can predict.

Third hypothesis

H_0 : There isn't significant relationship between growth and development of engineering insurance with risk accurate assessment in pricing.

H_1 : There is significant relationship between growth and development of engineering insurance with risk accurate assessment in pricing.

Table 5: Correlation coefficient between growth and development of engineering insurance with risk accurate assessment in pricing

Variables	Number	correlation coefficient	Sig	Result
Growth and development of engineering insurance with risk Accurate assessment in pricing	30	.701	0.000	Confirmed

According to the table it can be seen that $\text{sig}=0.000 < 0.05$, thus with 95% confidence interval H_0 rejected and H_1 confirmed and this impact is significant. Based on results obtained also can say that correlation Intensity between growth and development of engineering insurance with risk accurate assessment in pricing is 0.701.

Table 6: Regression test between variable of growth and development of engineering insurance with risk accurate assessment in pricing

Variables	R	R^2	Beta	Constant	Sig
Growth and development of engineering insurance with risk Accurate assessment in pricing	0.701	0.491	.701	1/136	0.000

Since sig is less than 0.05 thus risk accurate assessment in pricing has significant impact on growth and development of engineering insurance. Impact intensity is equal to 0.701 and according to beta coefficient; this impact is positive and direct. In other

hand R^2 is equal to 0.491 means that Independent variable 49.1% of changes in the dependent variable can predict.

Fourth hypothesis

H_0 : There isn't significant relationship between Growth and development of engineering insurance with Rules and Regulations.

H_1 : There is significant relationship between Growth and development of engineering insurance with Rules and Regulations.

Table 7: Correlation coefficient between growth and development of engineering insurance with rules and regulations

Variables	Number	correlation coefficient	Sig	Result
Growth and development of engineering insurance with Rules and Regulations	30	.788	0.000	Confirmed

According to the table it can be seen that $\text{sig}=0.000 < 0.05$, thus with 95% confidence interval H_0 rejected and H_1 confirmed and this impact is significant. Based on results obtained also can say that correlation Intensity between growth and development of engineering insurance with rules and regulations is 0.788.

Table 8: Regression test between variable of growth and development of engineering insurance with rules and regulations

Variables	R	R^2	Beta	Constant	Sig
Growth and development of engineering insurance with Rules and Regulations	.788	.608	.788	.935	0.000

Since sig is less than 0.05 thus rules and regulations has significant impact on growth and development of engineering insurance. Impact intensity is equal to 0.788 and according to beta coefficient; this impact is positive and direct. In other hand R^2 is equal to 0.608 means that Independent variable 60.8% of changes in the dependent variable can predict.

Fifth hypothesis

H_0 : There isn't significant relationship between growth and development of engineering insurance with advertising and providing appropriate services.

H_1 : There is significant relationship between growth and development of engineering insurance with advertising and providing appropriate services.

Table 9: Correlation coefficient between growth and development of engineering insurance with advertising and providing appropriate services

Variables	Number	correlation coefficient	Sig	Result
Growth and development of engineering insurance with advertising and providing appropriate services	30	.812	0.000	Confirmed

According to the table it can be seen that $\text{sig}=0.000 < 0.05$, thus with 95% confidence interval H_0 rejected and H_1 confirmed and this impact is significant. Based on results obtained also can say that correlation Intensity between growth and development of engineering insurance with advertising and providing appropriate services is 0.812.

Table 10: Regression test between variable of growth and development of engineering insurance with advertising and providing appropriate services

Variables	R	R ²	Beta	Constant	sig
Growth and development of engineering insurance with advertising and providing appropriate services	.812	.648	.812	.882	0.000

Since sig is less than 0.05 thus advertising and providing appropriate services has significant impact on growth and development of engineering insurance. Impact intensity is equal to 0.882 and according to beta coefficient; this impact is positive and direct. In other hand R^2 is equal to 0.648 means that Independent variable 64.8% of changes in the dependent variable can predict.

8. CONCLUSIONS

According to what was said, we can offer some of suggestions related to factors affecting the development of the engineering insurance express as following:

- 1- Policymaking appropriate insurance companies in introducing the engineering insurance to industrial and civil projects managers.
- 2- Existence of risk management unit in industrial and civil organizations.
- 3- For providing services to Insurance policyholders and growth and development is necessary that selection of employees in insurance industry be based on their familiarity and experience is with insurance.
- 4- Employees participating in training seminars insurance engineering

- 5- Existence an independent organization of insurance companies comprised with experience and knowledgeable engineers to assess the damage of engineering insurance for fields of engineering insurances.
- 6- Development of software to identify engineering insurance programs risk and certain rate for projects.
- 7- Since an engineering insurance is relatively complex contract, thus all provisions of this contract and the duties and obligations of the insured and the insurer must be clear.
- 8- Legislation to pay commissions to brokers and insurance agents for public insurance.
- 9- Engineering insurance suitable advertising that advertise in the media, magazines and technical journals that are used by engineers and contractors are more effective.
- 10 - The inclusion of courses under the title business insurance in all academic fields.
- 11 - Timely payment of engineering insurance claim.
- 12 - Increasing engineering insurance sales network.
- 13 - Correctly identifying the needs of potential policyholders.

References

- [1] Jason,H.(1992).An introduction to commercial insurance . published by chartered insurance institute .
- [2] Astin,a.(2010). Looking at engineering insurance and the reasons for the lack of its growth in country, insurance economic group.
- [3] Dastbaz,h&Dastbaz,k.(2009). engineering insurance, Insurance Institute.Tehran.
- [4] doerpinghaus,H&schmit,T& jia-hesingyeh,J&Jason,A.(2008).age and gender effects on auto liability insurance payouts,the journal of risk and insurance.vol.75,no.3,527-550
- [5] Mahmoudi,M.J.(2007). review Barriers to growth and development in the country engineering insurance, insurance industry Journal, 22.
- [6] Malakouti,s.k.(1996). a major obstacle to optimal growth and development of engineering All-risk insurance in iran, Journal of insurance industry.
- [7] Mohammadkhan,M.(1996). Insurance Key role in development, Journal of Central Insurance of Iran
- [8] Noori,M.(2009). Introduction to Engineering Insurance, Insurance Institute.