

The elasticity of determinants life insurance demand in improving the efficiency of Jordanian life insurance companies

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Abstract. The starting turbulent at any new century has brought numerous difficulties for firms and nations. During this period, success and survival analysis more and more depends on the efficiency which can be described by many different researching ways. The main target of this paper is to extend the earlier works on the elasticity of credit rate, the price of life insurance and product differentiation for improving efficiency in life insurer and increase the demand of life insurance policies. The paper strength is that the efficiency of life insurance companies is estimated from point of view of the insured. The result shows the inelastic life demand insurance, there are critical effects of credit rate, price, product differentiation on competition and efficiency in the targeted life insurance company. Moreover, there is a difficulty in understanding life insurance in Jordanian firms because they don't have the employees who are specialist in insurance. The ANOVA test and OLS are basically used in this study.

Keywords: credit rate, life insurance policy, efficiency, and elasticity.

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1. Introduction

1.1 Introduction of the paper

The economy is well enhanced by the insurance industry. The insurance stimulates investments and helps to decrease the poverty rate for several reasons. Firstly, it transfers pure risk from insured to insurer such as premature death. Furthermore, the pension is well improved by the life insurance contract. However, the ability to get the lion share from policyholders will be contributed to improving the efficiency of the insurer.

Numerous definitions of efficiency have been presented with no general agreement on any given one. The point of this study is to extend prior research on some selected elements of the used the price of life insurance, credit rate and product differentiation on efficiency in life insurer is attracting the big amount from policyholders. This study investigates the effective elasticity of some selected elements on the demand for life insurance at Jordanian insurance companies.

Previously, the life insurance and credit business expanded hugely. Consistently demonstrates the re-codes of historical lending and transaction payments to estimate the creditworthiness of individuals and companies[7]. Credit rate is essentially a method for perceiving if the insurer has the capacity to remunerate at the season of loss or not. [14] said that credit rate can be used as a successful instrument in distinguish between policyholders in personal lines of life insurance.[13] investigate Iowa client's viewpoint to determine life insurance qualification. He asked 29 questions for a cross-sectional sample of Iowans, and find that is unfair, but lacks the necessary justification for the claim.

In Jordan, Several life insurance products have been offered. The pension funds have the lion share of life insurance policies in the Jordanian insurance market. In the life insurance policy, the insurer gave the promises to compensate if the insured retired or die during the time of coverage. On the other side, the insured gave the promises to pay a premium at maturity time. The efficiency of an insurance company to collect pool from insured related with the elasticity of life insurance demand. [12] found that elasticity of non-life insurance demand is smaller than unity for high wealth countries. And, he found the elasticity of insurance demand is greater than unity for low wealth countries. Furthermore, policy differentiation is another approach to enhance the efficiency of the insurer. Differentiation policies make a policy more attractive than other competing policies. Effective differentiate policy creates a competitive favorable position for an insurer, as insured see these policies as superior or unique. [3]researches the connection between the firm performance and product diversification from 1994 to 2002 in the US PC life insurance industry. The findings suggest that the product diversification has been associated with performance by the degree of geographic diversification. And, the relationship between product diversification and performance have been complex and nonlinear.

1.2 Significance of the study

This investigation differ from the prior referenced examinations for several reasons. 1. It presents the Jordanian life insurance industry. 2. It depends on the insured viewpoint to estimate the efficiency of life insurance companies. 3. It finds the elasticity of demand life insurance policy in Jordan.

1.3 Literature review

The starting turbulent at any new century has brought numerous difficulties for firms and society. During this time, sustainable development for firms increasingly depends on efficiency. The concept of efficiency changes periodically. Efficiency definition of institutions depends on their capacity to distinguish the services and product at a reasonable price. The individual risks can be estimated by the credit rating system. This system has an operational advantage of decreasing premium because it may be used by insurers to distinguish between different levels of insured risk then led to enhance the efficiency of insurance companies [8]. On the other hand, [10] found the prices and quality have a positive effect on competitive advantage in Jordanian companies. [4] investigates the role of contract performance including the quality and basis risk, financial literacy, trust, and informal risk-sharing mechanisms. This paper select 12 key variables affecting the micro-insurance demand. [2] study the non-life and life insurance demand for emerging countries, Europe and Asia. Founding that the Urbanization, the population degree of education, incomes and their distributions affected for the sustainability of the insurance sector. However, [15] discovered the direct evidence about the significance of the health insurance in Nicaragua and the transaction costs. They found about a day work need to enrollment procedure for the health insurance in Nicaragua to complete. And, the market vendors contribute about 30 percentage in hance the sign up directly at their market stall. [1]found that economic condition essentially influences the efficiency of an insurer in Nigeria. The ANOVA and OLS regression used to test the hypothesis. [5]found there is a positive significant effect between Communication Technology(ICT) on insurance companies' efficiency in Nigeria.[9] used a survey to find the effect of insurance product to create competitive advantage in life insurance firms in Kenya. The result of this study that government regulations have a significant role in creating a competitive advantage. It shows the effectiveness of the insurance product in meeting the needs of clients. [11] found the variables that determined the profitability in general insurance in Kenya. They suggest that the company can enhance the efficiency by increasing leverage, equity capital and quality of staff.

2. Hypotheses

The primary hypotheses are divided by 3 groups in our study as following:

Group A	H0: There is no critical effect of independent factors on the dependent factor
	H01: There is no critical effect of price for life insurance policies on efficiency.
	H02: There is no critical effect of product differentiation on efficiency in life insurance companies.
	H03: There is no critical effect of credit rate on efficiency in life insurance companies.
GroupB	H0: There is no critical difference in arithmetic mean of the effect of independent variables on efficiency in life insurance companies based on qualification.
	H04: There is no critical difference in arithmetic mean of the effect credit rate on efficiency in life insurance companies based on Majors.
	H05: There is no critical difference in arithmetic mean of the effect of price on life insurance policies on efficiency in life insurance companies based on Majors.
	H06: There is no critical difference in arithmetic mean of the effective product differentiation efficiency in life insurance companies based on Majors.
GroupC	H0: There is no critical difference in arithmetic mean of the effect of independent variables on efficiency in life insurance companies based on the type of policies.
	H07: There is no critical difference in arithmetic mean of the effect credit rate on efficiency in life insurance companies based on the type of policies.
	H08: There is no critical difference in arithmetic mean of the effect of price on life insurance policies on efficiency in life insurance companies based on the type of policies.
	H09: There is no critical difference in arithmetic mean of the effective product differentiation on efficiency in life insurance companies based on the type of policies.

3. Data sources

3.1 Descriptive of variables

The random sample from 250 employees who work in the department of insurance in different companies in Jordan. We select 182 questionnaires to analysis in statistical techniques in order to interpret the results by using the SPSS-22 program.

3.2 Measures and covariates

Cronbach's alpha coefficient uses to calculate the reliability of the study. The Cronbach's coefficient alpha for all factors is 65% that is more than 60%. It means there is high consistency between questions in the survey (Sekaran, 2010). Also, KMO test is utilized to test the sample size adequacy, where its value reached to 0.72 that is more than 0.5. So, the sample size is suitable. [6] Fiedel (2005).

4. Statistics and data analysis

Table 1. The descriptive statistics of demographic Factors in our data

		Frequency	Percent
Sex	Male	142	0.78
	Female	36	0.20
	Missing value	4	0.02
	Total	182	1.00
Age	Less than 30	66	0.36
	30-40	68	0.37
	More than 40	46	0.25
	Missing value	2	0.01
Education	Total	182	1.00
	Graduate	105	0.58
	postgraduate	17	0.09
	Others	58	0.32
Industry	Missing value	2	0.01
	Total	182	1.00
	industry	36	0.20
	services	86	0.47
Occupation	others	58	0.32
	Missing value	2	0.01
	Total	182	1.00
	General Manager	84	0.46
Experience	Chair of department	59	0.32
	Employee	37	0.20
	Missing value	2	0.01
	Total	182	1.00
Qualification	Less than 5 years	28	0.15
	5-10 years	64	0.35
	More than 10 years	88	0.48
	Missing value	2	0.01
The types of life insurance policies	Total	182	1.00
	Life insurance	6	0.03
	Business management	38	0.21
	Others	134	0.74
The types of life insurance policies	Missing value	4	0.02
	Total	182	1.00
	Whole life insurance	80	0.44
	Temporary life insurance	36	0.20
	Umbrella life insurance	62	0.34
The types of life insurance policies	Missing value	4	0.02
	Total	182	1.00

Table 1 shows the percentages and frequency for the selected employees who work at the department of insurance in different companies in Jordan. We found the percentage of postgraduate, graduate and others are 9%, 58% and 32% on succession. Furthermore, we found the percentage of females is 20%, but the percentage of the male is 78%. In addition, the percentage of employees who work in service is 47%, but the percentage of employees who work in industrial is 20%. In addition, the percentage of general chairman, manager, and em-

ployee are 32%,46% and 20% on succession. And, the percentage of employees who have a certificate in business management is 21%. Also, the percentage of employees who have a certificate in insurance is 3%. On other hands, the percentage of employees who dont have a certificate in insurance or business management is 74%. Finally, the percentage of companies that have whole life insurance policy is 44%, but the percentage of companies that have temporary life insurance is 20%.

Table 2. The arithmetic mean and standard deviation for questionner items

		Mean	S.D	Level	
Credit Rate	Qa	4.40	0.81	H	
	Qb	3.40	1.08	M	
	Qc	4.18	0.84	H	
	Qd	4.19	0.84	H	
	Qe	4.10	0.90	H	
	Qf	4.09	0.85	H	
	Average	4.06	0.50	H	
Price of life insurance premiums	Qa	3.90	1.13	H	
	Qb	2.67	1.26	M	
	Qc	3.84	1.01	H	
	Qd	3.66	1.06	H	
	Qe	3.46	1.11	M	
	Average	3.55	0.65	M	
	Differentiation of life insurance policies	Qa	4.21	0.78	H
Qb		3.67	1.17	M	
Qc		4.46	0.91	H	
Qd		4.30	0.73	H	
Average		4.15	0.50	H	
Efficiency		Qa	3.57	1.20	M
		Qb	4.53	0.69	H
	Qc	3.95	0.87	H	
	Qd	3.90	1.04	H	
	Qe	4.48	0.72	H	
	Qf	4.33	0.90	H	
	Average	4.13	0.46	H	

Five scales from Likert has been used in this survey to determine the level of agreement of each item. Table 2 shows the standard deviation and arithmetic mean for each item in the survey. We found in the table that the buying life insurance policy is highly affected by credit rate. The arithmetic mean of employees who think that the credit rate of a life insurer is highly significant for buying the life insurance policy is 4.1 and the standard deviation is 0.5. Moreover, the select of the life insurance policy is a medium affected by the price of

life insurance policy. The standard deviation of employees who think that the buying life insurance policy is affected by price is 0.65 and the arithmetic mean is 3.55. In addition, the choose of the life insurance policy is highly affected by the differentiation of life insurance policy. The standard deviation of employees who think that the buying life insurance policy is affected by differentiation is 0.5 and the arithmetic mean is 4.15.

Table 3. The correlation between survey items

	Efficiency	Price of Life insurance premium	Differentiation	Credit Rate
Efficiency	1	.318**	.443**	.496**
Price of Life insurance premium		1	.220**	.322**
Differentiation			1	.449**
Credit Rate				1

** . Correlation is significant at the 1% level (2-tailed).

The correlation between independent factors and the dependent factor presented in table 3. We found no- multicollinearity between independent factors. We found that the correlation between differentiation is of policies and credit rate of a life insurer is 0.45 that means there is a weak correlation because its less than 0.5. Moreover, the weak correlation between differentiation is of life policy and prices equal to 0.44. Finally, There is also a weak correlation between the credit rate of life insurer and price of life insurance.

Table 4. Full Regression models between dependent factor and independent factors.

Model	OLS Regression		
	B	S.E	t
Constant	1.56	0.28	5.42**
Credit Rate	0.31	0.06	4.83**
Price of Life insurance	0.11	0.05	2.26*
Differentiation	0.25	0.06	3.67**
R Square	0.42		
Durbin-Watson	2.19		
F-test	28.34		
Sig.	0.000		

Note. ** significant at 1%, *significant at 5%.

Five scales from Likert have been used. The OLS regression for determinants life insurance demand in improving the efficiency of Jordanian life insurance companies can be seen in Table4. In the table, we found there is a positive critical relationship between the efficiency of life insurer and the prices of life policy. So, we don't accept H01 (H01: there is no critical effect of price for the life insurance policy on efficiency in life insurer.) at 5% degree of significance.

We found the elasticity of prices of life policy less than one. That means there is a limited effect of demand life insurance result from a change in the price of life insurance policy. On the other hand, the inelastic demand encourages insurance companies to increase the prices. Also, the employees prefer compulsory government insurance "social security pension fund" than private life insurance. This result agrees with [15] and [12]. In another meaning, the increase in the price life insurance affects about 11 percent in hancing the efficiency of a life insurer for attracting the big share from an insured. Furthermore, we noted from the table that the relationship between the efficiency of life insurer and differentiation of life insurance policies is positively significant. So, we don't accept H02 (H02: there is no critical effect of product differentiation on efficiency in life insurer.) at 1% degree of significance. This concludes agree with [5]. In another meaning, the efficiency of life insurer affected about 25 percent by the differentiation of life insurance policy. Moreover, the elasticity of differentiation of life insurance products less than one. That means there is a limited effect of demand life insurance result from change differentiation of life insurance products. However, the table shows that the relationship between the efficiency of a life insurer for the demand for life insurance and credit rate of a life insurer is positively significant. So, we don't accept H03 (H03: there is no critical effect of credit rate on efficiency in life insurer) at 1% degree of significance. This concludes agree with [14]. In the other meaning, the creditworthy and solvency of insurer to pay the indemnity in the future are an indicator of a credit rating system. So, the efficiency of life insurer affected about 31 percent by the credit rating. The elasticity of credit rate less than one. That means there is a limited effect of demand life insurance result from the change in credit rate of life insurance policy.

In addition, we found the independent factors can interpret about 0.42 from the efficiency in life insurer. Furthermore, the Durbin-Watson test is 2.19. The OLS regression is significant at 1%.

The differences of the arithmetic mean between independent factors on dependent factor based on qualification can be seen in the ANOVA test in Table 5. In credit rating, we found that the sum of squares within a group is 43.133 and between groups is 1.033 at F-test equal 2.1 with a significant level less than 15%. So, we don't accept H04 (H04: there is no critical difference in arithmetic mean of the effect credit rating on efficiency in life insurer based on qualification). Moreover, we noted that the sum of the square within groups equal to 69.84 and between groups equal 6.97 in the price of life policy at F-test equal 8.83 that is significant at 20%. So that, we don't accept H05 (H05: there is no critical difference in arithmetic mean of the effect of price on life insurance policies on efficiency in life insurer depend on qualification). In addition, we found that the sum of the square within groups equals 41.5 and between groups equal to 2.1 in the differentiation of life policy at F-test equal 4.5 that is significant at 5%. So that, we don't accept H06 (H06: there is no critical difference in arithmetic mean of the product differentiation on efficiency in life insurer depend

on qualification). In our survey, the percentage of selected employees who have a business degree, insurance degree, and other qualification is around 21%, 3%, and 74% respectively. This means there is a misunderstanding of life insurance policy in Jordanian companies because there are no specialists in this area.

The differences of the arithmetic mean between independent factors on the dependent factor depend on the type of life insurance policies can be seen in the ANOVA test in Table 6. In credit rating, we found that the sum of squares within a group is 41.01 and between groups is 3.02 at F-test equal 6.4 with a significant level less than 5%. So, we don't accept H07 (H07: there is no critical difference in arithmetic mean of the effect credit rating on efficiency in life insurer based on the type of life insurance policies). Moreover, we noted that the sum of the square within groups equal to 74.2 and between groups equal to 1.8 in the price of life policy at F-test equal to 2.1 that is significant at 15%. So that, we don't accept H08 (H08: there is no critical difference in arithmetic mean of the effect of price on life insurance policies on efficiency in life insurer depend on the types of life insurance policies). In addition, we found that the sum of the square within groups equals 39.92 and between groups equal to 1.00 in the differentiation of life policy at F-test equal to 2.20 that is significant at 15%. So that, we don't accept H09 (H09: there is no critical difference in arithmetic mean of the product differentiation on efficiency in life insurer depend on the types of life insurance policies).

5. Conclusion

This paper expands prior works. It determined the elasticity of life insurance demand in enhancing the efficiency of the Jordanian life insurer. The ANOVA test and OLS regression used for this purpose. The study found that there is a critical significant effect of price, product differentiation, and credit rating on the efficiency of the Jordanian life insurer. Furthermore, there is a misunderstanding of the concept of life insurance for employees who work in Jordanian companies because they are not specialists in this area. In addition, the elasticity of determined of life insurance demand less than one.

Table 5. ANOVA-test between independent factors on efficiency in life insurer based on qualification

Variables	Mean	ANOVA-test					
		Sum of Squares	df	Mean Square	F	Sig.	
Credit Score	Life insurance	Between Groups	1.033	2	0.517	2.1	0.123**
	Business management others	Within Groups	43.133	177	0.244		
		Total	44.166	179			
Price of Life insurance premium	Life insurance	Between Groups	6.967	2	3.483	8.8	0.178*
	Business management others	Within Groups	69.843	177	0.395		
		Total	76.809	179			
Total 76,809 Product Differentiation	Life insurance	Between Groups	2.117	2	1.063	4.5	0.012***
	Business management others	Within Groups	41.431	177	0.235		
		Total	43.548	179			

Note. ***significant at 5%, **significant at 15%, *significant at 20%.

Table 6. ANOVA-test for dependent Factors on independent Factors depend on the type of policies

Variables	Mean	ANOVA-test					
		Sum of Squares	df	Mean Square	F	Sig.	
Credit Score	Life insurance	Between Groups	3.02	2	1.51	6.44	0.002***
	Business management others	Within Groups	41.01	175	0.23		
		Total	44.03	177			
Price of Life insurance premium	Life insurance	Between Groups	1.76	2	0.88	2.08	0.128**
	Business management others	Within Groups	74.19	175	0.42		
		Total	75.95	177			
Product Dis-crimination	Life insurance	Between Groups	1.00	2	0.50	2.20	0.114**
	Business management others	Within Groups	39.92	175	0.23		
		Total	40.92	177			

Note. ***significant at 5%, **significant at 15%, *significant at 20%.

References

- [1] M.O. Adamu, *The impact of economic environment on insurance companies in Nigeria*, Journal of Scientific Research and Development (JSRD), 13 (2011).
- [2] Simona Laura Dragos, *Life and non-life insurance demand: the different effects of insurance factors in emerging countries from Europe and Asia*, Economic research-Ekonomska Istraživanja, 27(2014), 169-180.
- [3] B. Elango, Yu-Luen Ma and Nat Pope, *An investigation into the diversification performance relationship in the us property liability insurance industry*, Journal of Risk and Insurance, 75 (2008), 567-591.
- [4] Martin Eling, Shailee Pradhan, and Joan T. Schmit, *The determinants of microinsurance demand*, The Geneva Papers on Risk and Insurance-Issues and Practice, 39 (2014), 224-263.
- [5] Olajide Solomon Fadun, *Information and communication technology (ict) and insurance companies profitability in Nigeria*, Journal Accounting Business and Management-International, 20 (2013).
- [6] Babin Anderson Hair, Black and Tatham, *Multivariate data analysis*, Pearson Education, 7th ed., 2010.
- [7] David J. Hand and William E. Henley, *Statistical classification methods in consumer credit scoring: a review*, Journal of the Royal Statistical Society: Series A (Statistics in Society), 160 (1997), 523-541.
- [8] Noriszura Ismail and Abdul Aziz Jemain, *Construction of insurance scoring system using regression models*, Journal of Modern Applied Statistical Methods, 7 (2008).
- [9] S.M. Kiragu, *Assessment of challenges facing insurance companies in building competitive advantage in kenya: A survey of insurance firms*, International Journal of Social Sciences and Entrepreneurship, 1(2014), 467-490.
- [10] Momani and Mqatif, *The effect of substitution on building a strategic advantage competitiveness - a field study on companies insurance in Jordan*, Quds Open University for Research and Studies Magazine, 27, 2012.
- [11] Mirie Mwangi and Cyrus Iraya, *Determinants of financial performance of general insurance underwriters in Kenya*, International Journal of Business and Social Science, 5 (2014).
- [12] Hiroyuki Nakata, Yasuyuki Sawada, et al., *Demand for non-life insurance: a cross-country analysis*, CIRJE Working Paper, F-461, 2007.

- [13] Y. L. Richards, Thomas J. Quinlan, et al., *Use of credit scores by the insurance industry: Iowa consumers perspective*, 2009.
- [14] Gregory V. Serio, *Testimony of the national association of insurance commissioners before the sub- committee on financial institutions and consumer credit committee on financial services, United States house of representatives regarding: the fair credit reporting act: How it functions for consumers and the economy (transcript of testimony)*, Albany, NY: Superintendent of Insurance, New York, 2003.
- [15] Rebecca L. Thornton, Laurel E. Hatt, Erica M. Field, Mursaleena Islam, Freddy Solís Diaz, and Martha Azucena González, *Social security health insurance for the informal sector in Nicaragua: a randomized evaluation*, Health Economics, 19 (2010), 181-206.

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