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ANALYSIS OF SHARIA LIFE INSURANCE CONTRIBUTION USING MAKEHAM'S MORTALITY LAW WITH THE COST OF INSURANCE METHOD AT PT SUN LIFE MEDAN

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ABSTRACT

Based on the mitigation method, insurance is divided into conventional insurance and sharia insurance. In sharia insurance, the principle of risksharing is applied. In the concept of risksharing, all participants are obliged to pay contributions to the insurance manager. This contribution consists of three elements, namely ujrah, tabarru, and tijarah. Life insurance product xxx is a discrete n-year term life insurance that includes tijarah elements in the unit link. Life insurance product xxx has three elements of contribution, namely ujrah, tabarru, and tijarah. The ujrah fund has been determined by the insurance manager and is explained in detail in the policy agreement. The tijarah fund depends on the investment level assumption chosen by the prospective insurance participant. In addition to these two elements, the insurance manager must calculate tabarru to pay the insurance participant's claim. In this study, an estimate will be made for the gross contribution of the tabarru fund. To estimate the gross contribution of tabarru funds, the Cost of Insurance (COI) method is used which involves the variable (the probability of death of a person aged years obtained from the mortality table), discount factor, and assumptions of management fees. The Gompertz mortality law approach is used to refine the mortality table. The results are in the form of a table of gross contributions of tabarru funds for prospective male and female participants with an assumption of insurance compensation of Rp. 250,000,000 for the age range of 1-111 years with nine combinations of three investment return assumptions and three management fees that can be chosen by prospective insurance participants.

Keywords: sharia insurance, contribution, COI,

INTRODUCTION

Sharia insurance has several types of insurance, including accident insurance, education insurance, and life insurance. Sharia life insurance is insurance that covers losses caused by the death of a person. Sharia life insurance based on the fund management mechanism is divided into two, namely insurance without savings elements (nonsaving) and savings element insurance (saving). Insurance with savings elements, premiums will be divided into two savings, namely savings accounts and tabarru accounts. Insurance without savings elements does not have a special division of funds for tabarru funds, so it will be difficult to determine the operational costs that customers will receive from a sharia insurance company.

The amount of sharia life insurance contribution is calculated by calculating insurance costs.makeham mortality law with the cost of insurance method or also called risk premium. In sharia insurance, the amount of funds paid by insurance participants to bind the manager's obligation to pay compensation for risks is called a premium or contribution. Sharia life insurance determines the amount of the premium using a mortality table.

Mortality table is a tool used by insurance companies to calculate the mortality rate of each age group. Gompertz and Makeham's mortality laws are often used, but Makeham's mortality law is more appropriate because Makeham's mortality law not only takes into account deaths caused by age factors, but also because there are other factors such as accidents.

In actuarial science, Makeham's mortality law is used to determine life and health insurance premiums, calculate technical reserves, and conduct risk assessments. In demography, the model helps in projecting future populations, planning health care needs, and developing social policies.In addition, this model is also important in scientific research to understand the factors that influence mortality and develop strategies to improve the health and well-being of populations. For example, analyzing mortality data using the Makeham model can identify trends and dominant causes of death across age groups, which in turn can help in designing more effective health interventions. Overall, Makeham's mortality law theory is an important and useful tool in understanding and predicting mortality patterns in populations. By combining constant and exponential components, this model provides a

more comprehensive picture of the risk of death across the lifespan, thus supporting a variety of applications in actuarial, demographic, and health policy.

Insurance is a written agreement in the form of a policy that is the basis for premium payments by the insured customer in return for the transfer of risk to the insurance company as the underwriter. Insurance provides compensation to the insured for losses agreed upon in the policy, both material and non-material losses. Insurance based on the risks covered is divided into general insurance and life insurance. General insurance covers risks that are not related to the death of the customer such as health insurance, motor vehicle insurance, building insurance, etc. Life insurance covers the risk of the death of the insured customer.

Based on the mitigation method, this insurance is divided into conventional insurance and sharia insurance. In this insurance, sharia principles are applied, so that conventional company mitigation that applies risk transfer changes to risk sharing. In the application of the risk sharing concept, all participants are obliged to pay contributions to the insurance manager. This contribution has three elements. The first element is ujrah which is a fund intended for the insurance manager as a reward for managing the funds. The second element is tabarru or mutual assistance, this tabarru fund is a fund that functions as a joint fund or reserve, this joint fund will be used to pay claims submitted by insurance participants. The third element is an additional element that is not mandatory, namely tijarah. Tijarah is a fund that with the approval of insurance participants will be invested in investment instruments based on Islamic law. Due to the non-mandatory nature of the tijarah element, in general insurance products that include the tijarah element will add the description "-unitlink" behind the type of insurance product in the summary of general product and service information.

Contribution as compensation in insurance legal relations. Contribution is an important factor in determining the existence of a company. A company can continue to exist if the marketed product gets a positive response. A positive response can be seen from the decision to buy the product or prefer to buy a similar product from another insurance company. The decision to take insurance is largely determined by how the insurance company processes claims submitted by its participants, so that ease in the claim settlement process is the most important action in an insurance company to instill public trust in the insurance company. In insurance companies there are always claims from customers. Claims are demands for rights from policyholders to insurance companies to obtain compensation or guarantees because the requirements for fulfilling their rights have been met.

In Indonesia there are two types of insurance, namely conventional insurance. Most Indonesian people use conventional insurance products more because conventional insurance has more product choices and sometimes provides greater benefits. So that the Indonesian people do not know about sharia insurance, which is very helpful for the community in terms of protecting worship and investing which is free from usury or interest and professional profit sharing by means of profit sharing based on sharia based on the Qur'an and Hadith. Then in the application of contributions and claims provided by sharia insurance, it can be said to help the community, especially Muslims in Indonesia, in choosing products, sharia insurance products that can protect the long term in worship and investment. Products provided by PT. Sun Life Financial Syariah Medan according to customer needs, namely protection in worship and investment based on sharia without any usury elements.

This study aims to calculate the contribution of sharia insurance using Makeham's mortality law with the Cost of Insurance method. Where the formulation of the problem is: how to estimate the contribution for life insurance products using Makeham's mortality law with the Cost of Insurance method?. The calculation of contributions based on the Makeham distribution begins by determining the age of the sharia insurance participant and assuming the interest rate used to determine the discount factor. Then calculate the value of the probability of death and the probability of life of the insured through Makeham's mortality. The last step is to calculate the contribution of sharia life insurance. This study uses data from the 2019 Indonesian Mortality Table.

Theoretical basis

1. Sharia Insurance

Sharia Insurance (Ta'min, Takaful, or Tadhamun) is an effort to protect each other between a number of people/parties through investment in the form of assets and/or Tabarru' which provides a return pattern to face certain risks through a contract that is in accordance with sharia. Sharia Insurance was born as a solution to the doubts of Muslims towards conventional insurance products which have been feared to contain Gharar (Fraud), Maisir (Gambling), Usury, and other things that are not in accordance with sharia. Because insurance talks about something that is uncertain, some people conclude that

insurance is something that cannot be justified because it contains gharar, maisir, and usury. Because of that, an insurance program was born that eliminates elements that are not in accordance with sharia by implementing a contract that is in accordance with Islamic sharia.

Life insurance is an effort to protect a number of people against disasters that may occur in the future. In life insurance there are various types of products that can be offered, namely whole life insurance, term life insurance, dual-purpose life insurance (endowmentinsurance), pure endowment life insurance, and others.

2. Cost of Insurance

*Cost of Insurance*is one method to calculate gross contribution with several components, namely mortality table, investment yield assumption (i), and management fee assumption. From RIPLAY Life Insurance xxx, it is known that there are three investment yield assumptions offered by insurance managers, namely 5%, 10%, 15%. Also included are three management fees, namely 1.65%, 1.85%, and 2.10%.

COI: Cost of Insurance for participants aged$x$year

q: The probability of death of a person aged$x$year

:Investment level assumption

:Management fee

Since there are three assumptions of investment returns and three management fees , then for each age category for men and women, 9 (Nine) equations will be displayed to be used and will be arranged into a table to make it easier for users. In the calculation of, the probability of death will be used according to Gompertz's law which is taken from the Gompertz mortality table that has been prepared. The COI table obtained will be used to compile the gross contribution table.

Gross contribution is calculated by multiplying the value of according to gender, age, and assumptions of investment results and management fees with insurance benefits. In this study, the example of insurance benefits listed in the RIPLAY Life Insurance xxx benefit simulation will be used, amounting to 250,000,000. The results of the multiplication will be visualized in the form of a table for each gender, age, and assumptions of investment results and management fees.

RESEARCH METHODS

The type of research used by the researcher is quantitative research. This method is called a quantitative method because the research data is in the form of numbers and the analysis uses Makeham's mortality law with the cost of insurance method (Nurdin and Hartati 2019). The reason researchers use this research is because the method used to complete a scientific research with the aim of solving the problem being studied (Trilaksono and Prabowo 2022), The data in this study uses the Indonesian Mortality Table IV data for 2019. The steps in analyzing the data are as follows: Studying literature studies that examine sharia insurance, Makeham's mortality law and the cost of insurance method, Discussing the concept of calculating sharia insurance tabarru' funds, Calculating tabarru' funds using Makeham's Mortality Law based on TMI IV 2019 with the cost of insurance method.

Research methods related to Cost of Insurance (COI) in the insurance context can include various approaches to evaluate and analyze the cost factors involved in providing insurance products. The following are some research methods that can be used to understand or calculate COI:

a. Cost Study: This approach involves an in-depth study of the costs incurred by the insurance company in providing life insurance coverage. This may include administrative costs, risk assessment costs, marketing costs, and other related costs.
b. *Comparative Cost Analysis*: This method involves comparing insurance costs between several insurance products or insurance companies. The goal is to determine which one offers more competitive premiums considering the COI costs and benefits offered.
c. Actuarial Studies: These studies involve collecting and analyzing historical data to identify cost trends and other factors that affect COI. These studies help in developing mathematical models to project future costs.
d. Risk Factor Influence Analysis: This method studies how factors such as age, gender, health status, and lifestyle can affect the COI cost. This analysis helps in understanding how individual risk affects insurance premiums.
e. Operational Efficiency Evaluation: This approach examines the operational efficiency of an insurance company in managing and reducing COI costs. This includes an assessment of administrative processes, technology used, and other cost management strategies.

The above research methods can be used separately or combined depending on the research objectives and the complexity of the analysis desired in exploring and understanding COI in the life insurance industry.

RESULTS AND DISCUSSION

The following is the Male Mortality Table IV for ages 0-111 years:

Table 1. Mortality Table IV Male

x	qx	px	lx	dx
0	0.00524	0.99476	100000	524
1	0.00053	0.99947	99476	52.72228
2	0.00042	0.99958	99423.27772	41.75777664
3	0.00034	0.99966	99381.51994	33.78971678
4	0.00029	0.99971	99347.73023	28.81084177
5	0.00026	0.99974	99318.91938	25.82291904
⋮				
107	0.49429	0.50571	42.58505428	21.04936648
108	0.52467	0.47533	21.5356878	11.29912932
109	0.55733	0.44267	10.23655848	5.705141139
110	0.59244	0.40756	4.531417343	2.684592891
111	1	0	1.846824452	1.846824452

The following is the Mortality Table IV for Women aged 0-111 years:

Table 2. Mortality Table IV Female

x	qx	px	lx	dx
0	0.00266	0.99734	100000	266
1	0.00041	0.99959	99734	40.89094
2	0.00031	0.99969	99693.1091	30.90486381
o3	0.00024	0.99976	99662.2042	23.91892901
4	0.00021	0.99979	99638.2853	20.92403991
5	0.0002	0.9998	99617.3612	19.92347225
⋮				
107	0.46604	0.53396	306.25462	142.7269031
108	0.50427	0.49573	163.527717	82.46212178
109	0.54477	0.45523	81.0655951	44.16210423
110	0.58702	0.41298	36.9034908	21.6630872
111	1	0	15.2404036	15.24040365

The COI calculation is continued until the age category = 111 years, for men and women until the COI table for men and women can be compiled.

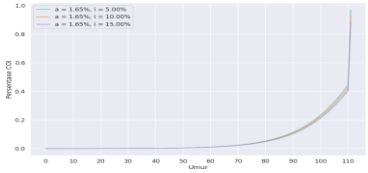
The following is a table of Cost of Insurance for Men with a value of 1.65%, 1.85%, and 2.10% with i having a value of 5%, 10%, and 15% respectively:

Table 3. Male COI Table*Ujrah*Management

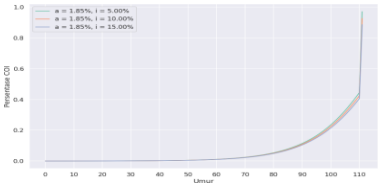
	1.65%			1.85%			2.10%		
x	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%
0	0.00009778	0.0000933	0.0000892	0.0000979	0.0000935	0.0000894	0.0000982	0.0000937	0.0000896
	9	44	86	88	34	68	38	73	96
1	0.00010584	0.0001010	0.0000966	0.0001060	0.0001012	0.0000968	0.0001063	0.0001014	0.0000970
	5	33	41	60	39	38	31	98	85
2	0.00011456	0.0001093	0.0001046	0.0001147	0.0001095	0.0001048	0.0001150	0.0001098	0.0001050
	4	56	02	97	79	15	90	59	82
3	0.00012400	0.0001183	0.0001132	0.0001242	0.0001186	0.0001134	0.0001245	0.0001189	0.0001137
	1	65	18	54	06	49	71	09	39
4	0.00013421	0.0001281	0.0001225	0.0001344	0.0001283	0.0001227	0.0001348	0.0001287	0.0001231
	6	15	45	89	76	94	33	04	08
5	0.00014527	0.0001386	0.0001326	0.0001455	0.0001389	0.0001329	0.0001459	0.0001393	0.0001332

	2	68	39	68	51	10	39	06	49
⋮									
107	0.37029631	0.3534646	0.3380966	0.3710508	0.3541849	0.3387855	0.3719983	0.3550893	0.3396507
	9	68	39	71	22	78	96	78	10
108	0.39357435	0.3756846	0.3593504	0.3943763	0.3764501	0.3600827	0.3953834	0.3774114	0.3610022
	6	12	99	41	44	46	31	57	63
109	0.41775009	0.3987614	0.3814239	0.4186013	0.3995740	0.3822012	0.4196702	0.4005943	0.3831772
	4	54	99	43	09	26	94	72	25
110	0.44277284	0.4226468	0.4042708	0.4436750	0.4235080	0.4050946	0.4448080	0.4245895	0.4061291
	9	11	62	86	37	44	67	18	04
111	0.96835887	0.9243425	0.8841537	0.9703320	0.9262260	0.8859553	0.9728099	0.9285913	0.8882177
	4	61	54	96	92	92	62	27	91

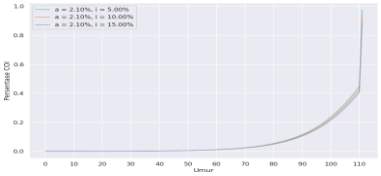
Graph 1.COI Percentage Chart based on male age with a= 1.65%



Graph 2.COI Percentage Graph by Age of men with a = 1.85%



Graph 3.COI Percentage Chart based on Age Male with a= 2.10%



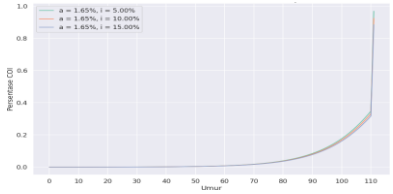
The following is a table of the Cost of Insurance for Women with a values of 1.65%, 1.85%, and 2.10% with i values of 5%, 10%, and 15% respectively:

Table 4. Female COI Table

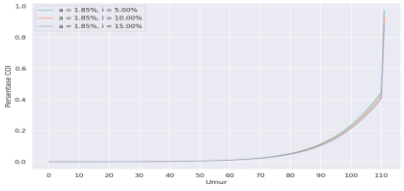
	*Ujrah*Management								
	1.65%			1.85%			2.10%		
X	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%
0	0.00007179	0.0000685	0.0000655	0.0000719	0.0000686	0.0000656	0.0000721	0.0000688	0.0000658
	5	31	52	41	71	85	25	46	53
1	0.00007770	0.0000741	0.0000709	0.0000778	0.0000743	0.0000710	0.0000780	0.0000745	0.0000712
	1	69	44	59	20	89	58	10	71
2	0.00008409	0.0000802	0.0000767	0.0000842	0.0000804	0.0000769	0.0000844	0.0000806	0.0000771
	3	71	81	65	35	37	80	40	34
3	0.00009101	0.0000868	0.0000830	0.0000911	0.0000870	0.0000832	0.0000914	0.0000872	0.0000834
	2	75	98	97	52	67	30	74	80
4	0.00009849	0.0000940	0.0000899	0.0000987	0.0000942	0.0000901	0.0000989	0.0000944	0.0000903
	9	22	34	00	14	17	52	54	47
5	0.00010660	0.0001017	0.0000973	0.0001068	0.0001019	0.0000975	0.0001070	0.0001022	0.0000977
	3	57	33	20	64	31	93	25	80
⋮									
107	0.28599377	0.2729940	0.2611247	0.2865765	0.2735503	0.2616568	0.2873083	0.2742488	0.2623250
	9	62	55	48	41	48	57	86	22
108	0.30536473	0.2914845	0.2788112	0.3059869	0.2920784	0.2793794	0.3067683	0.2928243	0.2800928
	9	24	84	80	81	17	57	41	47
109	0.32571026	0.3109052	0.2973876	0.3263739	0.3115387	0.2979936	0.3272074	0.3123343	0.2987545
	8	56	36	67	87	22	04	40	86

110	0.34702676	0.3312528	0.3168505	0.3477339	0.3319278	0.3174961	0.3486218	0.3327754	0.3183069
	8	24	27	04	17	73	86	37	39
111	0.96835887	0.9243425	0.8841537	0.9703320	0.9262260	0.8859553	0.9728099	0.9285913	0.8882177
	4	61	54	96	92	92	62	27	91

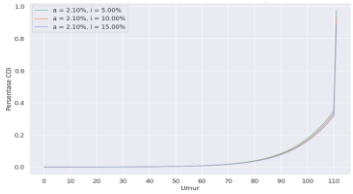
Graph 4.COI Percentage Chart based on the age of the woman



Graph 5.COI Percentage Chart based on Age of Women with



Graph 6.COI Percentage Chart based on Age of Women with a =2.10%



To compile a table of gross contributions of men and women as the output of this study, the COI table that has been compiled previously will be used to be multiplied by the insurance benefits provided by the insurance issuer manager. The assumption of insurance benefits as stated in the RIPLAY life insurance xxx is used, which is *Rp* 250,000,000.

Gross contribution of prospective male participant aged 0 years with management ujrah option of 1.65% and assumed investment return of 5%

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a} \; {}^0xRp250{,}000{,}000 = 1+0.05xRp250{,}000{,}000 = Rp24{,}447$$

$$1-0.0165$$

Gross contribution of prospective male participant aged 0 years with management ujrah option of 1.65% and assumed investment return of 10%

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a} \; {}^0xRp250{,}000{,}000 = 1+0.10xRp250{,}000{,}000 = Rp23{,}336$$

$$1-0.0165$$

For prospective male participants aged 0 years with a management fee option of 1.65% and an assumed investment return of 15%

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a} \; {}^0xRp250{,}000{,}000 = 1+0.15xRp250{,}000{,}000 = Rp22{,}321$$

$$1-0.0165$$

For prospective male participants aged 0 years with a management fee option of 1.85% and an assumed investment return of 5%

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a} \; {}^0xRp250{,}000{,}000 = 1+0.05xRp250{,}000{,}000 = Rp24{,}497$$

$$1-0.0185$$

For prospective male participants aged 0 years with a management fee option of 1.85% and an assumed investment return of 10%.

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a} \; {}^0xRp250{,}000{,}000 = 1+0.10xRp250{,}000{,}000 = Rp23{,}384$$

$$1-0.0185$$

For prospective male participants aged 0 years with a management fee option of 1.85% and an assumed investment return of 15%.

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a}$$

$${}^{0}xRp250{,}000{,}000 = \frac{1+0.15}{1-0.0185}xRp250{,}000{,}000 = Rp22{,}367$$

For prospective male participants aged 0 years with a management fee option of 2.10% and an assumed investment return of 5%.

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a}$$

$${}^{0}xRp250{,}000{,}000 = \frac{1+0.05}{1-0.0210}xRp250{,}000{,}000 = Rp24{,}560$$

For prospective male participants aged 0 years with a management fee option of 2.10% and an assumed investment return of 10%.

(1).(1).(0.000100984)

$$COI_0 = \frac{1+i}{1-a}$$

$${}^{0}xRp250{,}000{,}000 = \frac{1+0.10}{1-0.0210}xRp250{,}000{,}000 = Rp23{,}443$$

Table 5. Male Gross Contribution Table

x	Management Fee								
	1.65%			1.85%			2.10%		
	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%
0	Rp24,447	Rp23,336	Rp22,321	Rp24,497	Rp23,384	Rp22,367	Rp24,560	Rp23,443	Rp22,424
1	Rp26,461	Rp25,258	Rp24,160	Rp26,515	Rp25,310	Rp24,209	Rp26,583	Rp25,374	Rp24,271
2	Rp28,641	Rp27,339	Rp26,150	Rp28,699	Rp27,395	Rp26,204	Rp28,773	Rp27,465	Rp26,271
3	Rp31,000	Rp29,591	Rp28,305	Rp31,063	Rp29,651	Rp28,362	Rp31,143	Rp29,727	Rp28,435
4	Rp33,554	Rp32,029	Rp30,636	Rp33,622	Rp32,094	Rp30,699	Rp33,708	Rp32,176	Rp30,777
5	Rp36,318	Rp34,667	Rp33,160	Rp36,392	Rp34,738	Rp33,227	Rp36,485	Rp34,826	Rp33,312
⋮									
107	Rp92,574,080	Rp88,366,167	Rp84,524,160	Rp92,762,718	Rp88,546,231	Rp84,696,394	Rp92,999,599	Rp88,772,345	Rp84,912,677
108	Rp98,393,589	Rp93,921,153	Rp89,837,625	Rp98,594,085	Rp94,112,536	Rp90,020,687	Rp98,845,858	Rp94,352,864	Rp90,250,566
109	Rp104,437,524	Rp99,690,363	Rp95,356,000	Rp104,650,336	Rp99,893,502	Rp95,550,306	Rp104,917,574	Rp100,148,593	Rp95,794,306
110	Rp110,693,212	Rp105,661,703	Rp101,067,716	Rp110,918,772	Rp105,877,009	Rp101,273,661	Rp111,202,017	Rp106,147,380	Rp101,532,276
111	Rp242,089,718	Rp231,085,640	Rp221,038,439	Rp242,583,024	Rp231,556,523	Rp221,488,848	Rp243,202,490	Rp232,147,832	Rp222,054,448

The following is a table of Gross Contribution of Women with a values of 1.65%, 1.85%, and 2.10% with i values of 5%, 10%, and 15% respectively:

Table 6. Gross Contribution Table of Women Management Fee

X	1.65%			1.85%			2.10%		
	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%	i=5%	i=10%	i=15%
0	Rp17,949	Rp17,133	Rp16,388	Rp17,985	Rp17,168	Rp16,421	Rp18,031	Rp17,212	Rp16,463
1	Rp19,425	Rp18,542	Rp17,736	Rp19,465	Rp18,580	Rp17,772	Rp19,515	Rp18,628	Rp17,818
2	Rp21,023	Rp20,068	Rp19,195	Rp21,066	Rp20,109	Rp19,234	Rp21,120	Rp20,160	Rp19,283
3	Rp22,753	Rp21,719	Rp20,774	Rp22,799	Rp21,763	Rp20,817	Rp22,858	Rp21,819	Rp20,870
4	Rp24,625	Rp23,505	Rp22,484	Rp24,675	Rp23,553	Rp22,529	Rp24,738	Rp23,614	Rp22,587
5	Rp26,651	Rp25,439	Rp24,333	Rp26,705	Rp25,491	Rp24,383	Rp26,773	Rp25,556	Rp24,445
⋮									
107	Rp71,498,445	Rp68,248,515	Rp65,281,189	Rp71,644,137	Rp68,387,585	Rp65,414,212	Rp71,827,089	Rp68,562,222	Rp65,581,255
108	Rp76,341,185	Rp72,871,131	Rp69,702,821	Rp76,496,745	Rp73,019,620	Rp69,844,854	Rp76,692,089	Rp73,206,085	Rp70,023,212
109	Rp81,427,567	Rp77,726,314	Rp74,346,909	Rp81,593,492	Rp77,884,697	Rp74,498,405	Rp81,801,851	Rp78,083,585	Rp74,688,647
110	Rp86,756,692	Rp82,813,206	Rp79,212,632	Rp86,933,476	Rp82,981,954	Rp79,374,043	Rp87,155,471	Rp83,193,859	Rp79,576,735
111	Rp242,089,718	Rp231,085,640	Rp221,038,439	Rp242,583,024	Rp231,556,523	Rp221,488,848	Rp243,202,490	Rp232,147,832	Rp222,054,448

CONCLUSION

Gross contribution estimation can be done by multiplying COI by the insurance benefit assumption. It can be seen that the older the prospective insurance participant is, the greater the gross contribution that must be paid. This is due to the chance of death of the prospective participant which increases with age, thus affecting COI and gross contribution. Based on the COI' percentage table, it can be concluded that the higher the age of the insurance participant, the higher the percentage of COI' funds, this is because the higher the age of a person, the greater the risk that will occur. Meanwhile, the higher the investment level, the lower the COI' percentage. Inversely proportional to the management fee, the higher the management fee, the greater the COI' percentage.The amount of the COI contribution fee in sharia insurance can be calculated by multiplying the COI percentage using Makeham's mortality law by the amount of insurance costs when a claim occurs.

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