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The *Hybrid* Model Algorithm on Sharia Insurance

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Abstract. Sharia insurance operational model was developed with the approach of trial and error by scholars and industry as a process to obtain the ideal format which can be used as a foundation for Islamic insurance operations. Models that are formed are: *mudharabah* model, *wakalah* model, and *hybrid* model. The development of the operational model of islamic insurance still continue because there are still many problems and Islamic issues that must be resolved. The *hybrid* model is the incorporation of the *wakalah* and *mudharabah* model. This model is mostly used in shariah insurance company in Indonesia because it is considered fair enough for policyholders and companies. In this paper, will do research on *hybrid* model by taking one example of Hajj travel insurance products, that is Mitra Mabur Plus (AJB Bumiputera 1912) through the algorithm as follows: 1) translate the *hybrid* model scheme of Mitra Mabur Plus into mathematical equations 2) drafting table of *hybrid* insurance Mitra Mabur Plus model using mathematical equations on stage 1 and some initial value that set by the insurance company. This *hybrid* model table will show the details of the management of funds sourced from the contribution of the policyholders, including the quantity percentage of personal account, the percentage of *tabarru' account*, the percentage of *ujrah*, magnitudes of profit and benefit that be accrues to the policyholders. Through this table, are expected that management of the fund contribution is shariah insurance will be more transparent and fair for companies or policyholders.

Keywords: shariah insurance, hybrid model, personal account, tabarru' account, ujrah

1. Background

Insurance is an economic institution that aims to reduce risk, with combined within one management a number of objects that the numbers are fairly large, so that the overall losses can be foreseen within certain limits. [2]



Other definitions about insurance on UU No. 12 of 1992 about Venture of Insurance according to Dahlan Siamat in his book about management of the financial institution are: "Insurance or the bearing is an agreement between two or more parties, with which the insurer committing yourself to the insured, by accepting the insurance premiums, to provide reimbursement to the insured because of the loss, damage or lost profits expected, or legal liability to third parties which may be suffered by the insured, arising from an event which is uncertain, or to provide a payment based upon died or life a person who paid". [5]

Overall, insurance in Indonesia can be distinguished into two types: conventional insurance and syariah insurance. Both have the same purpose, which is the management and mitigation of risks. The National Shariah Council MUI assign that definition of syariah insurance (*ta'min, takaful, tadhamun*) as an effort to protect each other and help each other among of peoples or party through investment funds in the form of assets or *tabarru'* which gives the pattern of returns to face certain risks through a contract that accordance with the shari'ah (Fatwa No. 21 MUI DSN/DSN-MUI/X/2001 about sharia insurance general guidelines).

Sharia insurance operational model that was already well known, that is: *wakalah* model, *mudharabah* model, *hybrid* model. According to the Fiqh terms, *mudharabbah* is a contract agreement between the two sides, one of which as a giver of the capital to the other so that developed, while its profits will be divided between them in accordance with the agreement that has been approved in advance [6]. Meanwhile, *wakalah* according to *fiqh* means submission, delegation, or the granting of a mandate. According to fatwa No. 52 DSN/DSN-MUI/III/2006 about *wakalah bil ujah*, *wakalah* contract can be done between the insurance companies with policyholders. *Wakalah bil ujah* contract for insurance, which is one of *wakalah* contract where the policyholder provides authority to the insurance company in exchange for awarding *ujrah*. Furthermore, the *hybrid* is the amalgamation of the *wakalah* model and *mudharabah* model, in which the magnitude of the fee *wakalah* revamped based on contributions and profit sharing on investment. This model is mostly used in syariah insurance company in Indonesia because it is considered fair enough for policyholders and insurance companies.

In this paper, will do research on *hybrid* model by taking one example of Hajj travel insurance products from AJB Bumiputera 1912, that is Mitra Mabrur Plus insurance. The stages of this research generally done through the algorithm as follows: 1) translate the *hybrid* model scheme of Mitra Mabrur Plus into mathematical equations 2) drafting the *hybrid* table of Mitra Mabrur Plus insurance.

2. Methodology

Stages of research conducted, including the following:

1. Visit and interview with actuary of AJB Bumiputera 1912 company about terms of insurance and Mitra Mabrur Plus insurance data.
2. Present the data from Mitra Mabrur Plus insurance in the form of table and scheme of *hybrid* model.
3. Translate the *hybrid* model scheme into mathematical equations.
4. Drafting the *hybrid* model table of Mitra Mabrur Plus insurance using mathematical equations in stage 3 and some initial value that set by the insurance company.

There are several terms that are often used in insurance, including:

1. Polis : The insurance agreement between the insurer and the policyholder.
2. Policyholders : A person or a group of people doing the alliance insurance contract (policy) with an insurance company.
3. Premium : An amount of money that is listed in the policy that approved by the policyholder, for paid to insurance companies according the agreement so that the policy remains active.
4. Personal Account : Collection of funds that belong to policyholders and payable if the agreement ends, the participant resigns, or dies.

5. *Tabarru' Account* : The collection of funds that intended by the policyholder as alms with the purpose to help each other and will be paid in the event of claims.
6. Contract : The alliance, the agreement, or conspiracy
7. Claims : Requests or demands for payment of benefits in accordance with the provisions that set in the polis.
8. Profit sharing : Profit sharing obtained proportionally based on the *nisbah* of profit Investment sharing that have been determined.
9. Surrender Value : The amount of money that have to be paid to policyholders, if the insurance agreement is terminated before the expiry of the agreement.
10. Rider : Conditions that attached to the insurance policy which gives additional benefits or restrictions.
11. Ujrah : Wages or rewards.
12. Hospital Bill : Rider (benefits) in the form of reimbursement of the cost of hospital.
13. Critical Illness : Rider (benefits) in the form of sum assured in case of critical illness.
14. Death Coverage : An amount of money that are prepared by the insurance company as compensation if the policyholder dies.
15. Death Benefit : An amount of money that will be paid if the policyholder dies before and or after the period of the insurance agreement terminates.

Mitra Mabur Plus insurance data are presented in tabular form as below:

Table 1 Mitra Mabur Plus insurance data

MITRA MABRUR PLUS INSURANCE (AJB BUMIPUTERA 1912)						
		Year				
	Year of Polis	1	2	3	4	5
1	Contributions per year	1,200,000				
	Contributions per month (P)	100,000				
2	% Basis of <i>Tabarru'</i> (A)	7.47	7.47	7.47	7.47	7.47
3	% <i>Ujrah</i> (B)	19.35	11.84	9.34	9.34	9.34
4	% <i>Personal Account</i> (C)	73.18	80.69	83.19	83.19	83.19

Some initial value assignment, such:

- Age of the Policyholder : 38 Years
 Death Coverage : 6,000,000
 Hospital Bill : 600,000
 40 Critical illness : 3,000,000

Mitra Mabur Plus insurance data are presented in scheme form as below:

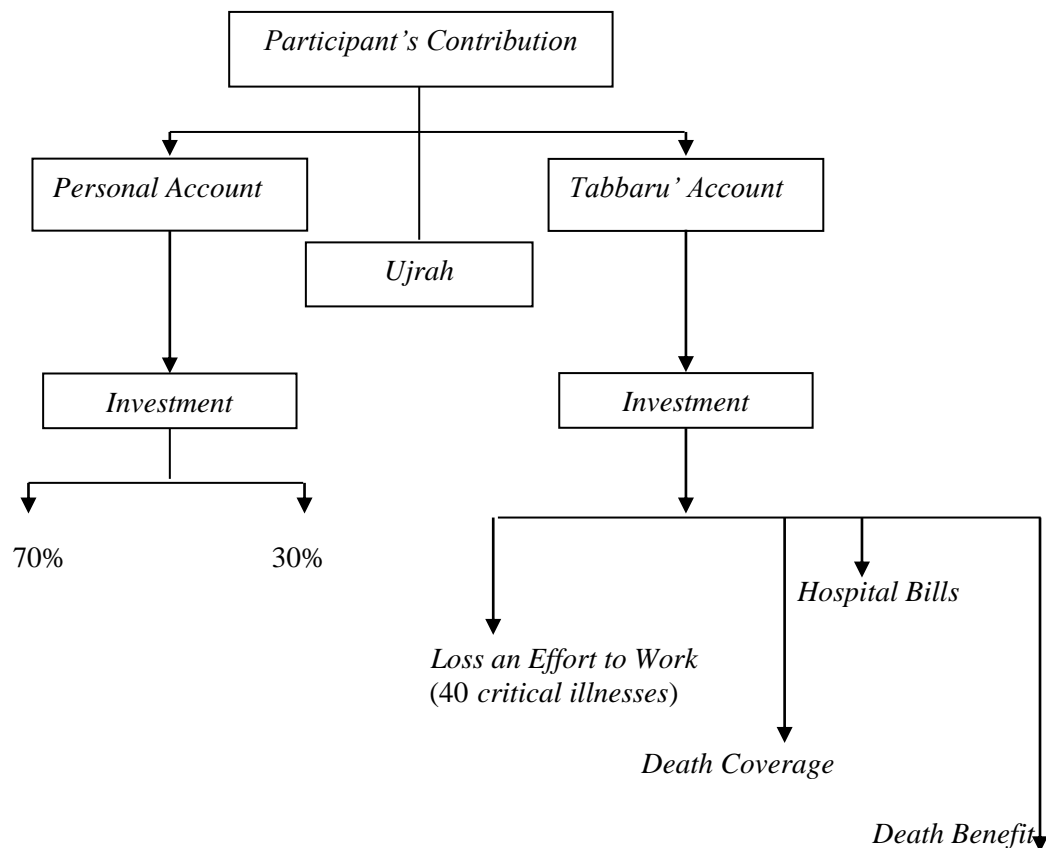


Figure 1 Hybrid model scheme of Mitra Mabur Plus insurance

3. Result

Using the scheme in Figure 1 and the data in Table 1 as well as initial values which have been determined by the insurance company, then the obtained mathematical equations needed to compose the table of *hybrid* model from Mitra Mabur Plus insurance as below:

Table 2 Mathematical equations for *hybrid* model scheme of Mitra Mabur Plus Insurance

1	2	3	4	5	6	7	8	9	10
Month	Age	Contribution	Tabarru' Account	Ujrah	Personal Account	Accumulation	monthly profit	Yearly Profit	Surrender Value
1	38	P	$0.0747 * P$	$0.1935 * P$	$0.7318 * P$	73,180	201		73,381
2-11	38	P	$0.0747 * P$	$0.1935 * P$	$0.7318 * P$	X_1	Y_1		$X_1 + Y_1$
12	38	P	$0.0747 * P$	$0.1935 * P$	$0.7318 * P$	X_1	Y_1	$0.05 * (0.7318 * P)$	$(X_1 + Y_1) + (0.05 * (0.7318 * P))$
13	39	P	$0.0747 * P$	$0.1184 * P$	$0.8069 * P$	$(0.7318 * P) + (0.8069 * P)$	Y_2		$((0.7318 * P) + (0.8069 * P)) + Y_2$
14-23	39	P	$0.0747 * P$	$0.1184 * P$	$0.8069 * P$	X_2	Y_2		$X_2 + Y_2$
24	39	P	$0.0747 * P$	$0.1184 * P$	$0.8069 * P$	X_2	Y_2	$0.05 * (0.8069 * P)$	$(X_2 + Y_2) + (0.05 * (0.8069 * P))$

25	40	P	$0.0747 * P$	$0.0934 * P$	$0.8319 * P$	$(0.8069 * P) + (0.8319 * P)$	Y_3		$((0.8069 * P) + (0.8319 * P)) + Y_3$
26-35	40	P	$0.0747 * P$	$0.0934 * P$	$0.8319 * P$	X_3	Y_3		$X_3 + Y_3$
36	40	P	$0.0747 * P$	$0.0934 * P$	$0.8319 * P$	X_3	Y_3	$0.05 * (0.8319 * P)$	$(X_3 + Y_3) + (0.05 * (0.8319 * P))$
37-47	41	P	$0.0747 * P$	$0.0934 * P$	$0.8319 * P$	X_4	Y_4		$X_4 + Y_4$
48	41	P	$0.0747 * P$	$0.0934 * P$	$0.8319 * P$	X_4	Y_4	$0.05 * (0.8319 * P)$	$(X_4 + Y_4) + (0.05 * (0.8319 * P))$
49-59	42	P	$0.0747 * P$	$0.0934 * P$	$0.8319 * P$	X_5	Y_5		$X_5 + Y_5$
60	42	P	$0.0747 * P$	$0.0934 * P$	$0.8319 * P$	X_5	Y_5	$0.05 * (0.8319 * P)$	$(X_5 + Y_5) + (0.05 * (0.8319 * P))$

advanced of Table 2,

1	2	11	12	13	14
<i>Month</i>	<i>age</i>	<i>40 critical illness</i>	<i>death coverage</i>	<i>Hospital Bills</i>	<i>Death Benefit</i>
1	38	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + 73,381$
2-11	38	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + (X_1 + Y_1)$
12	38	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + ((X_1 + Y_1) + (0.05 * (0.7318 * P)))$
13	39	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + (((0.7318 * P) + (0.8069 * P)) + Y_2)$
14-23	39	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + (X_2 + Y_2)$
24	39	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + ((X_2 + Y_2) + (0.05 * (0.8069 * P)))$
25	40	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + (((0.8069 * P) + (0.8319 * P)) + Y_3)$
26-35	40	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + (X_3 + Y_3)$
36	40	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + ((X_3 + Y_3) + (0.05 * (0.8319 * P)))$
37-47	41	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + (X_4 + Y_4)$
48	41	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + ((X_4 + Y_4) + (0.05 * (0.8319 * P)))$
49-59	42	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + (X_5 + Y_5)$
60	42	$0.5 * ((P * 12) * 5)$	$(P * 12) * 5$	$0.1 * ((P * 12) * 5)$	$((P * 12) * 5) + ((X_5 + Y_5) + (0.05 * (0.8319 * P)))$

In the table 2 above, showed that the contribution per month over the past five years are divided into three accounts, which is *tabarru'* account amounting to 7.47% per year, personal account 73.18% in the first year, 80.69% in the second year, 83.19% in the third year until the fifth year, and the leftover is *ujrah*. Next, assigned the initial value to surrender value amounted to 73.381 with gains in the first month of 201. As for the calculation of the surrender value for the next months is obtained from the magnitudes of the accumulation and profit per month or per year. The benefit that be accrues to the policyholders, which is assured if critical illness by 50% of contributions per year and assured the hospital costs of 10% of the contributions per year.

Substituting the P value of 100.000 to table 1, then resulting the *hybrid* table model as follows:

Tabel 3 *Hybrid* Model Table of Mitra Mabru Plus Insurance

1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Month</i>	<i>Age</i>	<i>Contribution</i>	<i>Tabarru' Account</i>	<i>Ujrah</i>	<i>Personal Account</i>	<i>Accumulation</i>	<i>Monthly Profit</i>	<i>Yearly Profit</i>	<i>Surrender Value</i>	<i>40 Critical Illness</i>	<i>Death Coverage</i>	<i>Hospital Bills</i>	<i>Death Benefit</i>
1	38	100,000	7,470	19,350	73,180	73,180	201		73,381	3,000,000	6,000,000	600,000	6,073,381
2	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
3	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
4	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
5	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
6	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
7	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
8	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
9	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
10	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
11	38	100,000	7,470	19,350	73,180	146,360	201		146,561	3,000,000	6,000,000	600,000	6,146,561
12	38	100,000	7,470	19,350	73,180	146,360	201	3,659	150,220	3,000,000	6,000,000	600,000	6,150,220
13	39	100,000	7,470	11,840	80,690	153,870	38,372		192,242	3,000,000	6,000,000	600,000	6,192,242
14	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
15	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
16	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
17	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
18	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
19	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
20	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
21	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
22	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
23	39	100,000	7,470	11,840	80,690	161,380	38,372		199,752	3,000,000	6,000,000	600,000	6,199,752
24	39	100,000	7,470	11,840	80,690	161,380	38,372	4,035	203,787	3,000,000	6,000,000	600,000	6,203,787
25	40	100,000	7,470	9,340	83,190	163,880	51,983		215,863	3,000,000	6,000,000	600,000	6,215,863
26	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
27	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
28	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
29	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
30	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
31	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
32	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363

33	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
34	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
35	40	100,000	7,470	9,340	83,190	166,380	51,983		218,363	3,000,000	6,000,000	600,000	6,218,363
36	40	100,000	7,470	9,340	83,190	166,380	51,983	4,160	222,523	3,000,000	6,000,000	600,000	6,222,523
37	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
38	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
39	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
40	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
41	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
42	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
43	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
44	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
45	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
46	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
47	41	100,000	7,470	9,340	83,190	166,380	56,744		223,124	3,000,000	6,000,000	600,000	6,223,124
48	41	100,000	7,470	9,340	83,190	166,380	56,744	4,160	227,284	3,000,000	6,000,000	600,000	6,227,284
49	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
50	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
51	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
52	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
53	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
54	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
55	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
56	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
57	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
58	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
59	42	100,000	7,470	9,340	83,190	166,380	57,953		224,333	3,000,000	6,000,000	600,000	6,224,333
60	42	100,000	7,470	9,340	83,190	166,380	57,953	4,160	228,493	3,000,000	6,000,000	600,000	6,228,493

In the table 3, showed the details of the management of the fund contribution to policyholders during a five-year contract. Through this table could be seen nominal magnitudes each account, made per month or per year, and the benefits that become accrues of policyholders in case of claims during the year of polis runs or if the contract is stopped in the middle for some reason.

4. Summary and Advice

The *hybrid* model at the Mitra Mabur Plus insurance considered good enough in terms of the mechanism. Shown at the percentage of the quantity of personal accounts that increased annually, and *ujrah* that was decreased. This conditions would be profitable for policyholders. Meanwhile, the percentage of quantity *tabarru' account* that stable during the contract years is profitable too for the insurance company because it has minimize loss that caused by fluctuations in investment result.

Hence, a *hybrid* model is considered fairer to policyholders as well as insurance companies. As research continued, it is advisable to perform this *hybrid* model optimization by changing the percentage of *tabarru' accounts* with the expectation of the raw quantity obtained as the ideal format that can maximize benefits to policyholders as well as profits for insurance companies.

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References

- [1] Cahyandari, R, et.al. “ *A design of mathematical modelling for the mudharabah scheme in syariah insurance*”. IOP Conference Series: Materials Science and Engineering, Volume 166. 2017.
- [2] Djojosoedarso, S. “*Prinsip-prinsip Manajemen Risiko dan Asuransi*”. Salemba Empat. Jakarta. 1999.
- [3] Ghazali, P . L, et.al. “*Mathematical Modelling in Family Takaful*”. Journal of Applied Science, 11: 3381-3388. 2011a.
- [4] Ghazali, P . L, et.al. “*Integration Model In Premium Life Table Of Family Takaful*”. Journal of Applied Science, 8(7): 3763-3776. 2012.
- [5] Siamat, Dahlan. “*Manajemen Lembaga Keuangan*”. Lembaga Penerbit FE UI. Jakarta. 1999.
- [6] Sula, M. S. “*Asuransi Syariah (Life and General) Konsep dan Sistem Operasional*”. Gema Insani. Jakarta. 2004.