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Integration Model In Premium Life Table Of Family Takaful

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ABSTRACT

Education plan takaful is one of the product plans in Family Takaful. This writer strongly believes that form of amendment for it to be a more reasonable plan for all categories of income earner. The new proposed amendment in the education plan in family takaful have to be more reasonably price and must also include all the riders. There are two basic models (mudharabah and wakala model) uses in Takaful Companies nowadays but the models need of amendment to be the best product to their customers. In this research, the writer introduces 8 types of models in life premium tables which use in education plan takaful.

Key words: Mudharabah model, wakala model, riders and premium life table.

Introduction

According to Zainol (2005) in the Contingencies January/February as, 2 operations are differences in conventional insurance and takaful insurance; the investments of the assets and the treatment of expenses and surplus. In Takaful insurance all the investments are made in halal (permissible) assets. The takaful operator's fund is based on two models of family takaful. They are mudharabah model and wakala model.

Mudharabah gives the right to the contracting parties to share the profit while liability for losses is borne by the participants. The product is based on profit sharing to cover the acquisition expenses, included commissions. The contract specifies how the profit (surplus) from the operations of the takaful managed by the takaful operator is to be shared, in accordance with the principle of al-Mudharabah, between the participants as the providers of apital and the takaful operator as the entrepreneur (Billah, 2003). The sharing of such profit may be in a ratio 50:50, 60:40, 70: 30 and others as mutually agreed between the contracting parties.

Wakala is a form of representative relationship between Takaful Company and a participant, takaful operator earns a fee for services rendered while liability for losses is borne by the participants. The operating company does not share in the underwriting result, but rather it is compensated by a fee deducted from contributions made by participants and/or investment profits generated by the takaful fund. The fee rate is fixed annually in advance in consultation with the Shariah committee of the company (Billah, 2003).

In order to give incentive for good governance, the management fee is related to the level of performance. The surplus of the takaful fund belongs to the members; the operating company does not have a claim on it under any circumstances. If the takaful operator is to generate a profit from its efforts, it must manage the operations (including salaries, overhead, selling commissions, sales and marketing expenses, etc) entirely within the disclosed wakala fees (Fazli, 1996).

Existing Premium Life Table:

Mudharabah Existing Model:

Premium life table uses Mudharabah Existing model in education plan takaful shown as below.

Table 2.1: Client Quotation of Mudharabah Existing Model

Child Age	Money outlay	Insured Account (P$_i$)	Special Account	Profit	Total	Child Death	Insured Death
4	600	544	56	27	571	1571	8800
5	1200	1088	112	83	1171	2171	8200
6	1800	1633	167	169	1801	2801	7600
7	2400	2177	223	386	2463	3463	7000
8	3000	2721	279	436	3157	4157	6400
9	3600	3265	335	621	3887	4887	5800

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10	4200	3809	391	843	4652	5652	5200
11	4800	4354	446	1103	5456	6456	4600
12	5400	4898	502	1403	6301	7301	4000
13	6000	5442	558	1745	7187	8187	3400
14	6600	5986	614	2132	8118	9118	2800
15	7200	6530	670	2565	9095	10095	2200
16	7800	7075	725	3047	10121	11121	1600
17	8400	7619	781	3580	11199	12199	1000

The premium life table shows that premium coverage the participant and a child in the death coverage and death benefit. The weakness in this model, it not cover for other riders such as health, accident, hospital costs, loss an effort to work, critical illnesses, education and also pension (Ghazali, 2010).

Based on the client quotation of a family takaful as shown in table 2.1, we find that the table has detailed information. We see that the total payment for 14 years is RM8 400.The participant can earn RM11 199 for his child's education with the management fee of RM150. Therefore, the net maturity value is RM11 199 – RM150 which comes to RM11 049. (Ghazali *et al*., 2011a)

Wakala Existing Model:

Premium life table uses wakala model in education plan takaful shown as below.

Table 2.2: of Illustration Plan of Wakala Existing Model

Number of Year	Monthly Payment in a Year M	Cumulative Payment Outlay	Cumulative Profit of Personal Account Cn	Basic Death Coverage Y	Total Death Coverage T
1	1 800	1 800	0	141 000	141 000
2	1 800	3 600	190	141 000	141 190
3	1 800	5 400	1 150	141 000	142 150
4	1 800	7 200	2 637	141 000	143 637
5	1 800	9 000	4 207	141 000	145 207
6	1 800	10 800	5 862	141 000	146 862
7	1 800	12 600	7 609	141 000	148 609
8	1 800	14 400	9 452	141 000	150 452
9	1 800	16 200	11 396	141 000	152 396
10	1 800	18 000	13 447	141 000	154 447
11	1 800	19 800	15 611	141 000	156 611
12	1 800	21 600	17 894	141 000	158 894
13	1 800	23 400	20 302	141 000	161 302
14	1 800	25 200	22 843	141 000	163 843
15	1 800	27 000	25 523	141 000	166 523
16	1 800	28800	28 351	141 000	169 351

The premium life table shows that premium cover only a child in the death coverage and death benefit but not the participant. So another weakness in this model, it also not cover for other riders such as health, accident, hospital costs, loss an effort to work, critical illnesses and also pension (Ghazali, 2010).

Based on the client quotation of a family takaful as shown in table 2.2, we find that the table has detailed information. We see that the total payment for 16 years is RM28 800. But the participant can earn RM28 351 for his child's education. Management fees not includes in this model because it already has Wakala fees. From the Table 2.2, we found that in Wakala model, the participants needed to pay more premiums because wakala fees have to pay every month (Ghazali *et al*., 2011a).

New Idea Of Premium Life Table Model:

The proposed model of new premium life table in education plan has to combine all the riders in one plan and the name be changed to Economic Education Plan Takaful. The rider should include health, accident, hospital costs, loss an effort to work, critical illnesses, education, death benefit, death coverage and also pension. Life insurance or family takaful is needed for everyone in the modern, so the product must affordable to every category of income earners.

This new plan offers complete riders for two persons in one product plan; participant and a child. The monthly premium is reasonable to all categories income earners. The plan offers buying multiple units for the product business. If the participant buys more than 1 unit, the value of premium, riders, surrender value and maturity value have to be multiplied by the numbers of units bought by the participant.

Methodology:

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Regarding to the muslin people, they need a new insurance or takaful which it can coverage mostly of their risk. In this method, clients proposal need to add more riders as shown in the Table 4(a).

Table 4(a): Client Proposal

NUMBERS	THINGS	VALUES
1	Monthly payment	RMY
2	Female un smoker	K year old
3	Period Term	N year
4	Interest Rate	R per year
5	Monthly saving	RMp
6	Tabarru Account	RMj
7	Surrender Values	RMt
8	Death Coverage	RM10x
9	Khiarat	RM2x
10	Loss An Effort To Work/ 40 critical illnesses	RM10x
11	Hospital Bills	RM5x
12	Pension	0.3x

From the table 4(a), client proposal need many riders such as death coverage, death benefit, khiarat, loss an effort to work or 40 critical illnesses, hospital bills and pension. After discussion with many Muslim people, they need a detail client premium life table to avoid uncertainty in their business as shown in Table 4(b). (Ghazali, 2010)

Let Q_1 is the year, Q_2 is the age, Q_3 is the layout payment, Q_4 is the tabarru account, Q_5 is the personal account, Q_6 is the surrender value, Q_7 is the khiarat, Q_8 is the loss an effort to work or 40 critical illnesses, Q_9 is the death coverage, Q_{10} is the hospital bills, Q_{11} is the pension and Q_{12} is the death benefit. (Ghazali *et al.*, 2011b)

Table 4(b): Client Quotation for i= 1,2,3,………,17 (Mudharabah Model)

Q_1	Q_2	Q_3	Q_4	Q_5	Q_6	Q_7	Q_8	Q_9	Q_{10}	Q_{11}	Q_{12}
n_i	k_i	12iy	$i(12y - w)$	p_i	t_i	2x	10x	10x	5x	0.3x	

The Table 4(b) is used for mudharabah model because the wakala fees is not include in the above table.

Table 4(c): Client Quotation for i= 1,2,3,………,17 (Wakala Model)

Q_1	Q_2	Q_3	Q_4	Q_5	Q_6	Q_7	Q_8	Q_9	Q_{10}	Q_{11}	Q_{12}	Q_{13}
r_i	k_i	12iy	$i(12y - w)$	p_i	t_i	2x	10x	10x	5x	0.3x		

The Table 4(c) is used for wakala model because it has the wakala fees has shown as Q_{13}. From Table 4(b) and Table 4(c), the value of Q_7 to Q_{11} are in ratio items where if the value of x is RM1000 so that the value of hospital bills is RM5000. (Ghazali *et al.*, 2011b)

Numerical Result:

In numerical result, the writer wants to construct the Integration model of premium life tables which have according to the basic models in family takaful (Mudharabah and Wakala).

Mudharabah Integration Model:

In Mudharabah Integration model, there are four types of model in premium life table shown as below.

Static Premium and Static Benefit of Mudharabah Integration Model in Premium Life Table:

Monthly payment = RM50 (1 unit)
Term = 17 years
Interest Rate = 5 % per year (i)
Tabbarru` Account = RM 20
Saving Account = RM30

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Below are the symbols of elements in mudharabah Integration model where the static premium of life table (Q3, Q4 and Q5) and static benefit (Q6 to Q13) shown in the Table 5.1.1(a). (Ghazali *et al.*, 2012)

1. Q1 is year
2. Q2 is age
3. Q3 is layout payment
4. Q4 is tabarru account
5. Q5 is personal account
6. Q6 is monthly profit
7. Q7 is yearly profit
8. Q8 is total surrender value
9. Q9 is khiarat
10. Q10 is loss an effort to work or 40 critical illnesses
11. Q11 is death coverage
12. Q12 is hospital bills
13. Q13 is pension
14. Q14 is death benefit

Table 5.1.1(a): Static Premium and Static Benefit of Mudhrabah Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
1	1	600	240	360 (P_1)	8	18	386 (T_1)	2000	10000	10000	5000	300	
2	2	1200	480	720 (P_2)	57	36	813 (T_2)	2000	10000	10000	5000	300	
3	3	1800	720	1080 (P_3)	110	54	1244 (T_3)	2000	10000	10000	5000	300	
4	4	2400	960	1440 (P_4)	164	72	1676 (T_4)	2000	10000	10000	5000	300	
5	5	3000	1200	1800 (P_5)	218	90	2108 (T_5)	2000	10000	10000	5000	300	
6	6	3600	1440	2160 (P_6)	272	108	2540 (T_6)	2000	10000	10000	5000	300	
7	7	420 0	1680	2520 (P_7)	326	126	2972 (T_7)	2000	10000	10000	5000	300	
8	8	4800	1920	2880 (P_8)	380	144	3404 (T_8)	2000	10000	10000	5000	300	
9	9	5400	2160	3240 (P_9)	434	162	3836 (T_9)	2000	10000	10000	5000	300	
10	10	6000	2400	3600 (P_{10})	488	180	4286 (T_{10})	2000	10000	10000	5000	300	
11	11	6600	2640	3960 (P_{11})	542	198	4700 (T_{11})	2000	10000	10000	5000	300	
12	12	7200	2880	4320 (P_{12})	596	216	5132 (T_{12})	2000	10000	10000	5000	300	
13	13	7800	3120	4680 (P_{13})	650	234	5564 (T_{13})	2000	10000	10000	5000	300	
14	14	8400	3360	5040 (P_{14})	704	252	5996 (T_{14})	2000	10000	10000	5000	300	
15	15	9000	3600	5400 (P_{15})	756	270	6426 (T_{15})	2000	10000	10000	5000	300	
16	16	9600	3840	5740 (P_{16})	812	288	6840 (T_{16})	2000	10000	10000	5000	300	
17	17	10200	4080	6120 (P_{17})	863	306	7289 (T_{17})	2000	10000	10000	5000	300	

The derivation of Q6 to Q8 in the Table 5.1.1(a) shows as below.

1. $.360 + (30*5/100 * (66 + 0)) * 1/12) + (360 * 5/100) = 360 + 8 +18 = 386$
2. $720 + (30* 5/100 * (66 + 386)) + (720 * 5/100) = 720 + 57 + 36 = 813$
3. $1080 + (30 * 5/100 * (66 + 813)) + (1080 * 5/100) = 1080 + 110 + 54 = 1244$
4. $1440 + (30 * 5/100 * (66 + 1244)) + (1440 * 5/100) = 1440 + 164 +72 = 1676$
5. $1800 + (30 * 5/100 * (66 + 1676)) + (1800 * 5/100) = 1800 + 218 + 90 = 2108$

$P_n + (P * i/100 * (66 + T_{n-1})) + (P_n * 5/100)$ where n = 1, 2, 3, 4, 5, ……….

$$= P_n(1+0.05)+\left(\frac{Pi}{100}\right)\left(\frac{66+T_{n-1}}{12}\right)$$ where P is the personal account, and n =1,2,3,…

The general formula of Table 5.1.1(a) shown in the Table 5.1.1(b) given as follows (Ghazali *et al.*, 2011b).

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Table 5.1.1(b): General Formula of Static Premium and Static Benefit of Mudharabah Integration Model in Premium Life Table

Symbols of elements	Q3	Q4	Q5	Q6 To Q8	Q9	Q10	Q11	Q12	Q13
Formula of elements	600n	0.4(600n)	0.6(600n)	$P_n(1+0.05)+\left(\dfrac{Pi}{100}\right)\left(\dfrac{66+T_{n-1}}{12}\right)$ where P is the personal account, and n =1,2,3,…	2x	10x	10x	5x	0.3x

Static Premium and Dynamic Benefit of Mudhrabah Integration Model in Premium Life Table:

Monthly payment = RM50 (1 unit)
Term = 17 years
Tabbarru` Account = RM 20
Saving Account = RM30

Below are the symbols of elements in Mudharabah model where the static premium of life table (Q3, Q4 and Q5) and dynamic benefit (Q6 to Q13) and assume that the customer price index increases 1% per year shown in the Table 5.1.2(a).
  1. Q1 is year
  2. Q2 is age
  3. Q3 is layout payment (Static)
  4. Q4 is tabarru account (Static)
  5. Q5 is personal account (Static)
  6. Q6 is saving profit (dynamic)
  7. Q7 is monthly + yearly profit (dynamic)
  8. Q8 is total surrender value (dynamic)
  9. Q9 is khiarat (dynamic)
  10. Q10 is loss an effort to work or 40 critical illnesses (dynamic)
  11. Q11 is death coverage (dynamic)
  12. Q12 is hospital bills (dynamic)
  13. Q13 is pension (dynamic)
  14. Q14 is death benefit (dynamic)
  15. CPI is a customer index (assume increase 1% per year)

Table 5.1.2(a): Static Premium and Dynamic Benefit of Mudharabah Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
1	1	600	240	360	364	26	390	2020	10100	10100	5050	303	
2	2	1200	480	720	734	95	829	2040	10200	10200	5100	306	
3	3	1800	720	1080	1112	169	1281	2060	10300	10300	5150	309	
4	4	2400	960	1440	1498	245	1743	2080	10400	10400	5200	312	
5	5	3000	1200	1800	1890	324	2213	2100	10500	10500	5250	315	
6	6	3600	1440	2160	2290	424	2714	2120	10600	10600	5300	318	
7	7	4200	1680	2520	2696	484	3180	2140	10700	10700	5350	321	
8	8	4800	1920	2880	3110	566	3676	2160	10800	10800	5400	324	
9	9	5400	2160	3240	3532	650	4182	2180	10900	10900	5450	327	
10	10	6000	2400	3600	3960	735	4695	2200	11000	11000	5500	330	
11	11	6600	2640	3960	4396	821	5217	2220	11100	11100	5550	333	
12	12	7200	2880	4320	4838	909	5747	2240	11200	11200	5600	336	
13	13	7800	3120	4680	5288	999	5287	2260	11300	11300	5650	339	
14	14	8400	3360	5040	5746	1044	6790	2280	11400	11400	5750	342	

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15	15	9000	3600	5400	6210	1180	7390	2300	11500	11500	5800	345	
16	16	9600	3840	5740	6658	1276	7934	2320	11600	11600	5850	348	
17	17	10200	4080	6120	7160	1368	8528	2340	11700	11700	5900	351	

The general formula of Table 5.1.2(a) shown in the Table 5.1.2(b) given as follows.

Table 5.1.2(b): General Formula of Static Premium and Dynamic Benefit of Mudharabah Integration Model in Premium Life Table

Symbols of elements	Q3	Q4	Q5	Q6 To Q8	Q9	Q10	Q11	Q12	Q13
Formula of elements	600n	0.4(600n)	0.6(600n)	$P_n(1+0.05)+\left(\dfrac{Pi}{100}\right)\left(\dfrac{66+T_{n-1}}{12}\right)$ P is the personal account, and n =1,2,3,…	2x. (CI)	10x. (CI)	10x. (CI)	5x. (CI)	0.3x. (CI)

Dynamic Premium and Static Benefit of Mudharabah Integration Model in Premium Life Table:

Term = 17 years
Interest Rate = 5 % per year (i)

Below are the symbols of elements in Mudharabah model where the dynamic table premium of life table (Q3, Q4 and Q5) and static benefit (Q6 to Q13) and assume that the customer index increases 1% per year shown in the Table 5.1.2(a).

1. Q1 is year
2. Q2 is age
3. Q3 is premium payment (dynamic)
4. Q4 is layout payment (dynamic)
5. Q5 is tabarru account (dynamic)
6. Q6 is personal account (static)
7. Q7 are monthly + yearly profit (static)
8. Q8 is total surrender value (static)
9. Q9 is khiarat (static)
10. Q10 is loss an effort to work or 40 critical illnesses (static)
11. Q11 is death coverage (static)
12. Q12 is hospital bills (static)
13. Q13 is pension (static)
14. Q14 is death benefit
15. CP I is a customer index (assume increase 1% per year)

Table 5.1.3(a): Dynamic Premium and Static Benefit of Mudharabah Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
1	1	50.5	606	246	360 (P_1)	26	386 (T_1)	2000	10000	10000	5000	300	
2	2	51	1224	504	720 (P_2)	93	813 (T_2)	2000	10000	10000	5000	300	
3	3	51.5	1854	774	1080 (P_3)	164	1244 (T_3)	2000	10000	10000	5000	300	
4	4	52	2496	1056	1440 (P_4)	236	1676 (T_4)	2000	10000	10000	5000	300	
5	5	52.5	3150	1350	1800 (P_5)	308	2108 (T_5)	2000	10000	10000	5000	300	
6	6	53	3816	1656	2160 (P_6)	380	2540 (T_6)	2000	10000	10000	5000	300	
7	7	53.5	4494	1974	2520 (P_7)	452	2972 (T_7)	2000	10000	10000	5000	300	
8	8	54	5184	2304	2880 (P_8)	524	3404 (T_8)	2000	10000	10000	5000	300	
9	9	54.5	5886	2646	3240 (P_9)	596	3836 (T_9)	2000	10000	10000	5000	300	

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10	10	55	6600	3000	3600 (P$_{10}$)	668	4286 (T$_{10}$)	2000	10000	10000	5000	300	
11	11	55.5	7326	3366	3960 (P$_{11}$)	740	4700 (T$_{11}$)	2000	10000	10000	5000	300	
12	12	56	8064	3744	4320 (P$_{12}$)	812	5132 (T$_{12}$)	2000	10000	10000	5000	300	
13	13	56.5	8814	4134	4680 (P$_{13}$)	884	5564 (T$_{13}$)	2000	10000	10000	5000	300	
14	14	57	9576	4536	5040 (P$_{14}$)	956	5996 (T$_{14}$)	2000	10000	10000	5000	300	
15	15	57.5	10350	4950	5400 (P$_{15}$)	1026	6426 (T$_{15}$)	2000	10000	10000	5000	300	
16	16	58	11136	5376	5760 (P$_{16}$)	1100	6840 (T$_{16}$)	2000	10000	10000	5000	300	
17	17	58.5	11934	5814	6120 (P$_{17}$)	1169	7289 (T$_{17}$)	2000	10000	10000	5000	300	

The general formula of Table 5.1.3(a) shown in the Table 5.1.3(b) given as follows.

Table 5.1.3(b): General Formula of Static Premium and Dynamic Benefit of Mudharabah Integration Model in Premium Life Table

Symbols of elements	Q3	Q4	Q5	Q6 To Q8	Q9	Q10	Q11	Q12	Q13
Formula of elements	600n .(CI)	0.4(600n) .(CI)	0.6(600n) (CI)	$P_n\left(1+0.05\right)+\left(\dfrac{Pi}{100}\right)\left(\dfrac{66+T_{n-1}}{12}\right)$ P is the personal account, and n =1,2,3,…	2x.	10x	10x	5x	0.3x

Dynamic Premium and Dynamic Benefit of Mudharabah Integration in Premium Life Table:

    Term = 17 years
    Interest Rate = 5 % per year (i)
    1. Q1 is year
    2. Q2 is age
    3. Q3 is premium payment (dynamic)
    4. Q4 is layout payment dynamic)
    5. Q5 is tabarru account (dynamic)
    6. Q6 is personal account (dynamic)
    7. Q7 is monthly + yearly profit (dynamic)
    8. Q8 is total surrender value (dynamic)
    9. Q9 is khairat (dynamic)
    10. Q10 is loss an effort to work or 40 critical illnesses (dynamic)
    11. Q11 is death coverage (dynamic)
    12. Q12 is hospital bills (dynamic)
    13. Q13 is pension (dynamic)
    14. Q14 is death benefit (dynamic)
    15. CPI is a customer index (assume increase 1% per year)

Below are the symbols of elements in Mudharabah model where the dynamic premium of life table (Q3, Q4 and Q5) and dynamic benefit (Q6 to Q13) and assume that the customer index increases 1% per year shown in the Table 5.1.4(a).

Table 5.1.4(a): Dynamic Premium and Dynamic Benefit of Mudharabah Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
1	1	50.83	610	246	364	26	390	2020	10100	10100	5050	303	
2	2	51.58	1238	504	734	95	829	2040	10200	10200	5100	306	
3	3	52.39	1886	774	1112	169	1281	2060	10300	10300	5150	309	
4	4	53.21	2554	1056	1498	245	1743	2080	10400	10400	5200	312	
5	5	54	3240	1350	1890	324	2213	2100	10500	10500	5250	315	
6	6	54.81	3946	1656	2290	424	2714	2120	10600	10600	5300	318	

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7	7	55.60	4670	1974	2696	484	3180	2140	10700	10700	5350	321	
8	8	56.40	5414	2304	3110	566	3676	2160	10800	10800	5400	324	
9	9	57.20	6178	2646	3532	650	4182	2180	10900	10900	5450	327	
10	10	58	6960	3000	3960	735	4695	2200	11000	11000	5500	330	
11	11	58.80	7762	3366	4396	821	5217	2220	11100	11100	5550	333	
12	12	59.60	8582	3744	4838	909	5747	2240	11200	11200	5600	336	
13	13	60.40	9422	4134	5288	999	5287	2260	11300	11300	5650	339	
14	14	61.20	10282	4536	5746	1044	6790	2280	11400	11400	5750	342	
15	15	62	11160	4950	6210	1180	7390	2300	11500	11500	5800	345	
16	16	62.68	12034	5376	6658	1276	7934	2320	11600	11600	5850	348	
17	17	63.60	12974	5814	7160	1368	8528	2340	11700	11700	5900	351	

The general formula of Table 5.1.4(a) shown in the Table 5.1.4(b) given as follows.

Table 5.1.4(b): General Formula of Dynamic Premium and Dynamic Benefit of Mudharabah Integration Model in Premium Life Table

Symbols of elements	Q3	Q4	Q5	Q6 To Q8		Q9	Q10	Q11	Q12	Q13
Formula of elements	600n .(CI)	0.4(600n).(CI)	0.6(600n).(CI)	$P_n(1+0.05)+\left(\dfrac{Pi}{100}\right)\left(\dfrac{66+T_{n-1}}{12}\right)$ P is the personal account, and n =1,2,3,…		2x. (CI).	10x. (CI)	10x. (CI)	5x. (CI)	0.3x. (CI)

Wakala Integration Model:

In Wakala Integration model, there are four types of model in premium life table shown as below.

Static Premium and Static Benefit of Wakala Integration Model in Premium Life Table:

Monthly Payment = RM50   (1 unit)
Term = 17 years
Interest Rate = 5 % per year (i)
Below are the symbols of elements in Wakala model where the static premium of life table (Q3 to Q6) and static benefit (Q7 to Q14) shown in the Table 5.2.1(a) (Ghazali *et al*., 2012).
Q1 is year
Q2 is age
Q3 is layout payment
Q4 is tabarru account
Q5 is wakala fees
Q6 is personal account   .
Q7 is monthly profit
Q8 is yearly profit
Q9 is total surrender value
Q10 is khiarat
Q11 is loss an effort to work or 40 critical illnesses
Q12 is death coverage
Q13 is hospital bills
Q14 is pension
Q15 is death benefit

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Table 5.2.1(a): Static Premium and Static Benefit of Wakala Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
1	1	600	240	60	(P_1) 300	7	15	(P_1) 322	2000	10000	10000	5000	300	
2	2	1200	480	120	(P_2) 600	40	30	(P_2) 670	2000	10000	10000	5000	300	
3	3	1800	720	180	(P_3) 900	77	45	(P_3) 1022	2000	10000	10000	5000	300	
4	4	2400	960	240	(P_4) 1200	113	60	(P_5) 1373	2000	10000	10000	5000	300	
5	5	3000	1200	300	(P_5) 1500	150	75	(P_5) 1725	2000	10000	10000	5000	300	
6	6	3600	1440	360	(P_6) 1800	187	90	(P_6) 2077	2000	10000	10000	5000	300	
7	7	4200	1680	420	(P_7) 2100	223	105	(P_7) 2428	2000	10000	10000	5000	300	
8	8	4800	1920	480	(P_8) 2400	260	120	(P_8) 2780	2000	10000	10000	5000	300	
9	9	5400	2160	540	(P_9) 2700	296	135	(P_9) 3131	2000	10000	10000	5000	300	
10	10	6000	2400	600	(P_{10}) 3000	333	150	(P_{10}) 3483	2000	10000	10000	5000	300	
11	11	6600	2640	660	(P_{11}) 3300	370	165	(P_{11}) 3835	2000	10000	10000	5000	300	
12	12	7200	2880	720	(P_{12}) 3600	406	180	(P_{12}) 4186	2000	10000	10000	5000	300	
13	13	7800	3120	780	(P_{13}) 3900	443	195	(P_{13}) 4538	2000	10000	10000	5000	300	
14	14	8400	3360	840	(P_{14}) 4200	480	210	(P_{14}) 4890	2000	10000	10000	5000	300	
15	15	9000	3600	900	(P_{15}) 4500	516	225	(P_{15}) 5241	2000	10000	10000	5000	300	
16	16	9600	3840	960	(P_{16}) 4800	553	240	(P_{16}) 5593	2000	10000	10000	5000	300	
17	17	10200	4080	1020	(P_{17}) 5100	589	255	(P_{17}) 5944	2000	10000	10000	5000	300	

The derivation of Q7 to Q9 in the Table 5.1.1(a) shows as below.

1. $300 + (25 * 5/100 * (66 + 0)) + (300 * 5/100) = 300 + 7 + 15 = 322$
2. $600 + (25 * 5/100 * (66 + 322)) + (600 * 5/100) = 600 + 40 + 30 = 670$
3. $900 + (25 * 5/100 * (66 + 670)) + (900 * 5/100) = 900 + 77 + 45 = 1022$
4. $1200 + (25 * 5/100 * (66 + 1022)) + (1200 * 5/100) = 1200 + 113 + 60 = 1373$
5. $1500 + (25 * 5/100 * (66 + 1373)) + (1500 * 5/100) = 1500 + 150 + 75 = 1725$

$P_n + [P * i/100 * (66 + T_{n-1})] + (P_n * 5/100)$ where n = 1, 2, 3, 4, 5, …………..

$$= P_n(1+0.05)+\left(\frac{Pi}{100}\right)\left(\frac{66+T_{n-1}}{12}\right)$$ where P is the personal account, and n =1,2,3,…

The general formula of Table 5.2.1(a) shown in the Table 5.2.1(b) given as follows (Ghazali *et al.*, 2011b).

Table 5.2.1(b): General Formula of Static Premium and Static Benefit of Wakala Integration Model in Premium Life Table

Symbols of elements	Q3	Q4	Q5	Q6	Q7 to Q9	Q10	Q11	Q12	Q13	Q14
Formula of elements	600n	0.4n. (600n)	0.1n. (600n)	0.5n. (600n)	$P_n(1+0.05)+\left(\frac{Pi}{100}\right)\left(\frac{66+T_{n-1}}{12}\right)$ where P is the personal account, and n =1,2,3,…	2x	10x	10x	5x	0.3x

Static Premium and Dynamic Benefit of Wakala Integration Model in Premium Life Table:

Monthly Payment = RM50 (1 unit)
Term = 17 years

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Interest Rate = 5 % per year (i)

Below are the symbols of elements in Wakala model where the static premium of life table (Q3 to Q6) and dynamic benefit (Q7 to Q14) and assume that the customer price index increases 1% per year shown in the Table 5.2.2(a).

Q1 is year
Q2 is age
Q3 is layout payment (Static)
Q4 is tabarru account (Static)
Q5 is wakala fees (Static)
Q6 is personal account (static) .
Q7 is saving profit (dynamic)
Q8 are monthly + yearly profit (dynamic)
Q9 is total surrender value (dynamic)
Q10 is khiarat (dynamic)
Q11 is loss an effort to work or 40 critical illnesses (dynamic)
Q12 is death coverage (dynamic)
Q13 is hospital bills (dynamic)
Q14 is payment benefit (dynamic)
Q15 is pension (dynamic)
 CPI is a customer price index (assume increase1% per year)

Table 5.2.2(a): Static Premium and Dynamic Benefit of Wakala Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
1	1	600	240	60	(P_1) 300	303	22	325	2020	10100	10100	5050	303	
2	2	1200	480	120	(P_2) 600	612	71	683	2040	10200	10200	5100	306	
3	3	1800	720	180	(P_3) 900	927	126	1053	2060	10300	10300	5150	309	
4	4	2400	960	240	(P_4) 1200	1248	245	1493	2080	10400	10400	5200	312	
5	5	3000	1200	300	(P_5) 1500	1575	323	1898	2100	10500	10500	5250	315	
6	6	3600	1440	360	(P_6) 1800	1908	403	2311	2120	10600	10600	5300	318	
7	7	4200	1680	420	(P_7) 2100	2247	434	2731	2140	10700	10700	5350	321	
8	8	4800	1920	480	(P_8) 2400	2592	566	3158	2160	10800	10800	5400	324	
9	9	5400	2160	540	(P_9) 2700	2943	650	3593	2180	10900	10900	5450	327	
10	10	6000	2400	600	(P_{10}) 3000	3300	735	4035	2200	11000	11000	5500	330	
11	11	6600	2640	660	(P_{11}) 3300	3663	821	4484	2220	11100	11100	5550	333	
12	12	7200	2880	720	(P_{12}) 3600	4032	909	4941	2240	11200	11200	5600	336	
13	13	7800	3120	780	(P_{13}) 3900	4407	1090	5406	2260	11300	11300	5650	339	
14	14	8400	3360	840	(P_{14}) 4200	4788	1090	5878	2280	11400	11400	5700	342	
15	15	9000	3600	900	(P_{15}) 4500	5175	1180	5878	2300	11500	11500	5750	345	
16	16	9600	3840	960	(P_{16}) 4800	5568	1276	6844	2320	11600	11600	5800	348	
17	17	10200	4080	1020	(P_{17}) 5100	5967	1368	7335	2340	11700	11700	5850	351	

The general formula of Table 5.2.2(a) shown in the Table 5.2.2(b) given as follows.

Table 5.2.2(b): General Formula of Static Premium and Dynamic Benefit of Wakala Integration Model in Premium Life Table

Symbols of elements	Q3	Q4	Q5	Q6	Q7 to Q9	Q10	Q11	Q12	Q13	Q14

Formula of elements	600n	0.4n. (600n)	0.1n. (600n)	0.5n. (600n)	$P_n(1+0.05)+\left(\dfrac{Pi}{100}\right)\left(\dfrac{66+T_n}{12}\right)$	2x (CI)	10x. (CI)	10x. (CI)	5x. (CI)	0.3x. (CI)
					P is the personal account, and n =1,2,3,…					

Dynamic Premium and   Static Benefit of Wakala Integration Model in Premium Life Table:

Term =   17 years
Interest Rate =   5 % per year (i)

Below are the symbols of elements in Wakala model where the dynamic premium of life table (Q3 to Q6) and static benefit (Q7 to Q14) and assume that the customer price index increases 1% per year shown in the Table 5.2.3(a).
Q1 is year
Q2 is age
Q3 is layout payment (dynamic)
Q4 is tabarru account (dynamic)
Q5 is wakala fees (dynamic)
Q6 is personal account (dynamic)   .
Q7 is saving account (Static)
Q8 are monthly + yearly profit (Static)
Q9 is total surrender value (Static)
Q10 is khiarat (Static)
Q11 is loss an effort to work or 40 critical illnesses (Static)
Q12 is death coverage (Static)
Q13 is hospital bills (Static)
Q14 is pension (Static)
Q15 is payment benefit (Static)
CPI is a customer price index (assume increase 1% per year)

Table 5.2.3(a): Dynamic Premium and Static Benefit of Wakala Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
1	1	606	242	61	303	(P_1) 300	22	(P_1) 322	2000	10000	10000	5000	300	
2	2	1224	490	122	612	(P_2) 600	70	(P_2) 670	2000	10000	10000	5000	300	
3	3	1854	742	185	927	(P_3) 900	122	(P_3) 1022	2000	10000	10000	5000	300	
4	4	2496	998	250	1248	(P_4) 1200	173	(P_5) 1373	2000	10000	10000	5000	300	
5	5	3150	1260	315	1575	(P_5) 1500	225	(P_5) 1725	2000	10000	10000	5000	300	
6	6	3816	1526	382	1908	(P_6) 1800	277	(P_6) 2077	2000	10000	10000	5000	300	
7	7	4494	1794	449	2247	(P_7) 2100	328	(P_7) 2428	2000	10000	10000	5000	300	
8	8	5184	2074	518	2592	(P_8) 2400	380	(P_8) 2780	2000	10000	10000	5000	300	
9	9	5886	2354	589	2943	(P_9) 2700	431	(P_9) 3131	2000	10000	10000	5000	300	
10	10	6600	2640	660	3300	(P_{10}) 3000	483	(P_{10}) 3483	2000	10000	10000	5000	300	
11	11	7326	2930	733	3663	(P_{11}) 3300	535	(P_{11}) 3835	2000	10000	10000	5000	300	
12	12	8064	3226	806	4032	(P_{12}) 3600	586	(P_{12}) 4186	2000	10000	10000	5000	300	
13	13	8814	3526	881	4407	(P_{13}) 3900	638	(P_{13}) 4538	2000	10000	10000	5000	300	
14	14	9576	3830	958	4788	(P_{14}) 4200	690	(P_{14}) 4890	2000	10000	10000	5000	300	
15	15	10350	4140	1035	5175	(P_{15}) 4500	741	(P_{15}) 5241	2000	10000	10000	5000	300	
16	16	11136	4454	1114	5568	(P_{16}) 4800	793	(P_{16}) 5593	2000	10000	10000	5000	300	
17						(P_{17})		(P_{17})						

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| | 17 | 11934 | 4774 | 1193 | 5967 | 5100 | 844 | 5944 | 2000 | 10000 | 10000 | 5000 | 300 | |

The general formula of Table 5.2.3(a) shown in the Table 5.2.3(b) given as follows.

Table 5.2.3(b): General Formula of Dynamic Premium and Static Benefit of Wakala Integration Model in PremiumLife Table

Symbols of elements	Q3	Q4	Q5	Q6	Q7 to Q9	Q10	Q11	Q12	Q13	Q14
Formula of elements	600n. (CI)	0.4n. (600n). (CI)	0.1n. (600n) .(CI)	0.5n. (600n) .(CI)	$P_n(1+0.05)+\left(\dfrac{Pi}{100}\right)\left(\dfrac{66+T_n}{12}\right)$ P is the personal account, and n =1,2,3,….	2x.	10x.	10x.	5x.	0.3x.

Dynamic Premium and Dynamic Benefit in Wakala Integration Model in Premium Life Table:

Term = 17 years
Interest Rate = 5 % per year (i)

Below are the symbols of elements in Wakala model where the dynamic premium of life table (Q3 to Q6) and dynamic benefit (Q7 to Q14) and assume that the customer price index increases 1% per year shown in the Table 5.2.4(a).

Q1 is year
Q2 is age
Q3 is monthly premium payment (dynamic)
Q4 is layout payment (dynamic)
Q5 is tabarru account (dynamic)
Q6 is wakala fees (dynamic)
Q7 is personal account (dynamic)   .
Q8 are monthly + yearly profit (dynamic)
Q9 is total surrender value (dynamic)
Q10 is khiarat (dynamic)
Q11 is loss an effort to work or 40 critical illnesses (dynamic)
Q12 is death coverage (dynamic)
Q13 is hospital bills (dynamic)
Q14 is pension (dynamic)
Q15 is payment benefit (dynamic)
CPI is a customer price index (assume increase 1% per year)

Table 5.2.4(a): Dynamic Premium and Dynamic Benefit of Wakala Integration Model in Premium Life Table

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
1	1	50.5	606	242	61	303	22	325	2020	10100	10100	5050	303	
2	2	51	1224	490	122	612	71	683	2040	10200	10200	5100	306	
3	3	51.5	1854	742	185	927	126	1053	2060	10300	10300	5150	309	
4	4	52	2496	998	250	1248	245	1493	2080	10400	10400	5200	312	
5	5	52.5	3150	1260	315	1575	323	1898	2100	10500	10500	5250	315	
6	6	53	3816	1526	382	1908	403	2311	2120	10600	10600	5300	318	
7	7	53.5	4494	1794	449	2247	434	2731	2140	10700	10700	5350	321	
8	8	54	5184	2074	518	2592	566	3158	2160	10800	10800	5400	324	
9	9	54.5	5886	2354	589	2943	650	3593	2180	10900	10900	5450	327	
10	10	55	6600	2640	660	3300	735	4035	2200	11000	11000	5500	330	
11														

	11	55.5	7326	2930	733	3663	821	4484	2220	11100	11100	5550	333
12	12	56	8064	3226	806	4032	909	4941	2240	11200	11200	5600	336
13	13	56.5	8814	3526	881	4407	1090	5406	2260	11300	11300	5650	339
14	14	57	9576	3830	958	4788	1090	5878	2280	11400	11400	5700	342
15	15	57.5	10350	4140	1035	5175	1180	5878	2300	11500	11500	5750	345
16	16	58	11136	4454	1114	5568	1276	6844	2320	11600	11600	5800	348
17	17	58.5	11934	4774	1193	5967	1368	7335	2340	11700	11700	5850	351

The general formula of Table 5.2.4(a) shown in the Table 5.2.4(b) given as follows.

Table 5.2.4(b): General Formula of Dynamic Premium and Dynamic Benefit of Wakala Integration Model in Premium Life Table

Symbols of elements	Q3	Q4	Q5	Q6	Q7 to Q9	Q10	Q11	Q12	Q13	Q14
Formula of elements	600n . (CI)	0.4n. (600n) . (CI)	0.1n. (600n) .(CI)	0.5n. (600n) .(CI)	$$P_n(1+0.05)+\left(\frac{Pi}{100}\right)\left(\frac{66+T_{n-}}{12}\right)$$ P is the personal account, and n =1,2,3,…	2x. (CI) .	10x. (CI).	10x. (CI).	5x.. (CI)	0.3x (CI) .

Discussion:

The present premium life table in family takaful or life insurance is use one way of method especially in maturity value but in new idea of model in premium table must give the alternatives table which show the increase of customer price index (Bureau of Labor Statistics, 2010) will affect the premium payment and also the lump sum of maturity value.

The value of money of RM10 000 is not the same value after 10 years and it has to find the solution in the maturity value. Education plan takaful used to pay the higher education fees for the children in the future. But if they received RM15 000 from takaful or insurance company after invested 17 years, it is the amount of maturity value can pay the education fees?. The value of RM15 000 after 17 years is the same value of RM5 000 in the present value and the parent only can pay just the registration fee. (Ghazali *et al*., 2011b)

This new plan offers complete riders for two persons in one product plan; participant and a child. The monthly premium is reasonable to all categories income earners. The plan offers buying multiple units for the product business. If the participant buys more than 1 unit, the value of premium, riders, surrender value and maturity value have to be multiplied by the numbers of units bought by the participant. The plan also gives the customer choice to choose the suitable premium life table for them which have four types of model (show in numerical result) whether in mudharabah or Wakala. (Ghazali *et al*., 2011b)

The new product in premium life table will give the better perception of family takaful business because the plan offers affordable price for all categories of income earners and it also includes almost complete riders' price to all income earner.

Conclusion:

The new idea in premium life table model also gives the customer choice to choose the suitable premium life table for them which have four types of model whether in mudharabah or wakala. The plan offers affordable price for all categories of income earners and it also includes almost complete riders' price to all income earner. The writer hopes that every family in Malaysia has at least one of family takaful plan to protect their family from risks.

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