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Efficiency of General Takaful Operators in Malaysia: Post Implementation of IFSA 2013

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ABSTRACT

This study aims to measure the efficiency of the general *takaful* operators in Malaysia with the selected inputs, labor cost and management fees. On the other hand, the output used is gross contribution. General *takaful* operators are the institutions governed by the Islamic Financial Services Act 2013 (IFSA). IFSA 2013 is the key statute governing the Islamic finance sector, which replaced statutes such as the Islamic Banking Act 1983 and the Takaful Act 1984. Based on the annual data gathered from 2014 to 2018 (post implementation of IFSA 2013), the efficiency is analysed using Data Envelopment Analysis (DEA) on four selected institutions in the general *takaful* business. DEA results show that Etiqa General Takaful Berhad, Syarikat Takaful Malaysia Am Berhad are considered as the most efficient. The rest of general *takaful* operators in the sample were deemed technical inefficient. The results also indicate that inefficient institutions including those with the lowest performance which are Takaful Ikhlas General Berhad and Zurich General Takaful Malaysia Berhad have inefficient management in resource utilisation. In conclusion, the findings have confirmed the market share theory and infer to the expense-preference behaviour on the part of the general *takaful* operator. Perhaps, the general *takaful* operators are posed with an expedient manner trying to satisfy their own benefits. In order to achieve full efficiency, any *takaful* operators have to increase its market share segments by increasing its gross income and contribution through developing demand for general *takaful* products and mostly on *takaful* product itself.

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1. Introduction

Previous studies have emphasised on the importance of financial performance of *takaful* operators, which can be viewed from lens of profit and loss or the monetary implication, as well as the efficiency of the companies that can be assessed from the identified input and output. *Takaful* is considered as slightly 'under privileged' in comparison to Islamic banking since much studies focused on the latter including the efficiency aspect of the Islamic banks. Likewise, some studies had focused on *takaful* in term of efficiency but not much have explored to discuss on the specialisation of the *takaful* businesses, either family or general *takaful* businesses. In addition, to emphasise the importance of the paper, the Islamic Financial Services Act (IFSA) 2013, which is to replace the Islamic Banking (IBA) Act 1983 has paved way for segregation of the *takaful* business.

Among the reasons for specialisation of *takaful* operators are to ensure the *takaful* operators are able to focus on the core business (either family or general *takaful* business), to ensure proper governance process is in place as well as to foster creativity and product innovation especially for general *takaful* business since composite *takaful* operators tend to focus more on family *takaful* business due to higher projection of earnings and "less risky" in the context of general *takaful* that registered high claims from the policyholders. Apart from that, the liberalisation of tariff for the general *takaful* especially for the motor policy is interesting to explore further since this segment apart from being risky due to high claims, but it is also a main contributor for the general *takaful* business due to the mandatory requirement by the government for the vehicle owners.

The article is organized as follows; the following chapter is discussion on the previous literature on efficiency-*takaful* related studies including the relevant theories and previous findings. Next is the research method section that this study has adopted in order to address the research objective. It is then followed by discussion on the findings and last but not least conclusion.

2. Literature Review

This study specifically focuses on the general *takaful* business by assessing their efficiency, because this is one of the critical components that influence the *takaful* operators' financial performance, apart from technology efficiency, technical efficiency and profit efficiency (Ismail et al., 2012). Likewise, the efficiency measurement is one of the precursor that can depict the competitiveness level of the industry (Antonio et al., 2013).

The RAM Rating Services Bhd (one of the prominent rating agencies in Malaysia) estimated that in 2019, the *takaful* business is expected to decelerate in their performance due to the constant increase in the cost of living and weaker consumer purchasing power. Worse still, by March 2020 the Malaysian government has implemented Movement Control Order (MCO) to curb the spread of Covid-19 pandemic and this has impacted the *takaful* sector as well.

News Strait Times (2019) predicted that performance of general *takaful* business will expand at a slower pace due to the moderation in the economic growth and the impact of the tariff liberalisation which in turn affecting the efficiency performance of the *takaful* sector. Nevertheless, overall, *takaful* sector is growing amid the challenges as depicted in Figure 1.

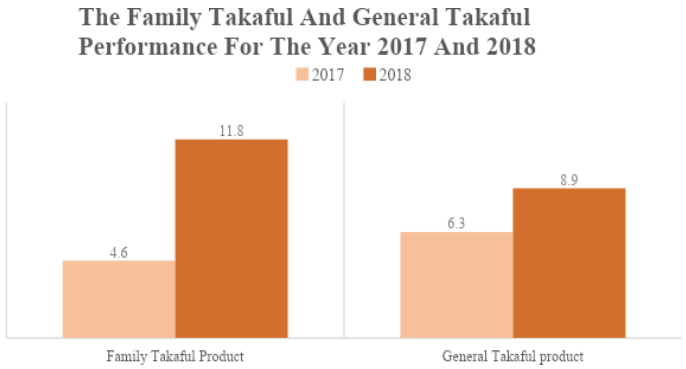


Figure 1. The Family Takaful and General Takaful Performance for the Year 2017 and 2018

Source:https://www.theedgemarkets.com/article/malaysias2019-takaful-growth-stay-moderate

The IFSA 2013 has caused the separation of the composite *takaful* business into two separate companies: general *takaful* and family *takaful* operators. To reiterate previous highlights, the IFSA 2013, one of the features is to overcome the declination of growth experienced by the general *takaful* business (Zainudin, 2013; The Star Online, 2019).

A period of 5 years have been given to the *takaful* operators in Malaysia to move towards the separation of line of business (Zainudin, 2013). Consequently, there are only four *takaful* operators that presently offering the general *takaful* policies or products in Malaysia which can be dubbed as "the brave *takaful* operators" because a few composite *takaful* operators abandon their general *takaful* business by focusing only on family *takaful* products.

It is understandable their decisions were based on the strategic planning of their companies, however to some extent, it has caused the competition lesser with the withdrawal of some player from the general *takaful* business. The Insurance Development Department (BNM, 2018) suggested that one of the possible reasons that cause the low penetration rate is due to the unattainable efficiency. Penetration rate refers to contribution gain from the participant or the customers. The *takaful* operator is categorised as cost efficient when the firm is able to positively allocate their expenses and achieve the gross contribution at the most with a minimum cost (Khan and Noreen, 2014).

This component is critical because the efficiency is related to the firm's performance and productivity. Lack of awareness among the public on the importance of having *takaful* policy is one of the reasons of low contribution as well as penetration rate of the business (The Star Online, 2019). Likewise, this needs to be balanced with the management of cost by realizing its efficiency so that the slow penetration rate can be matched with the management of costs.

Therefore, against the setting of efficiency of the *takaful* operators, this study aims to assess the efficiency of general *takaful* operators and their level of productivity post the implementation of IFSA 2013.

2.1 Theoretical Insights on Efficiency

Commonly, company's financial performance can be measured by looking at the financial indicators such as return on investment (ROI) and return on equity (ROE) but to some extent is not sufficient to reveal their operating efficiency (Chuweni and Eves, 2017). Moffatt (2018) clarifies that financial performance measured in terms of profit earned by a company does not always reflect the company's resources such as capital and labor – whether they have been used efficiently. A company is regarded as more efficient if it could produce more output, given the same or less input with the availability of technology (Shahooth, et al., 2006; Moffatt, 2018). Specifically, the efficiency can be analysed through two concepts consist of technology efficiency and economic efficiency.

Literatures on the efficiency of the *takaful* industry have grown exponentially for the emerging economies. The measurement of *takaful* efficiency can be based on the two different approaches, specifically the parametric and the non-parametric method (Cummins and Zi, 1998; Cummins et al., 1999). Parametric methods consist of Stochastic Frontier Approach (SFA), Distribution Free Approach (DFA) and the Thick Frontier Approach (TFA). In addition, the non-parametric methods are in the forms of Data Envelopment Analysis (DEA) and the Free Disposable Hull (FDH). The most commonly used are narrowed down to Stochastic Frontier Approach (SFA) and Data Envelopment Analysis (DEA).

The measurement of SFA, which is also known as the econometric frontier approach specifies a functional form for cost, profit or production relationship among inputs, outputs and environmental factors while allowing for random error. Thus, it allows the issue between the existing and the best performance of the *takaful* operators to be discussed such as study by Ahmad et al. (2012) on the efficiency of the general insurance industry in Malaysia, and Alshammari et al. (2019) on the cost efficiency of insurance and *takaful* sectors in Gulf Cooperation Council (GCC) markets also that are also based on the SFA.

While for the DEA, a non-parametric approach estimates efficiency under some assumptions such as the Constant Returns to Scale (CSR) and the Variable Returns to Scale (VRS). The Data Envelopment Analysis evaluate the Decision Making Units (DMUs) which can retain the multiple inputs to produce outputs.

Thus, this research measures the efficiency by using the non-parametric approach, the Data Envelopment Analysis (DEA) by assessing the DMUs of the general *takaful* operators. Previous studies that are relevant to this research have been reviewed and summarised as in the Table 1.

Table 1. Summary of the Previous Studies on the Efficiency of *Takaful* and Insurance Companies

No.	Author(s)/year	Methods
1	(Abbas et al., 2018)	Using DEA to assess the efficiency of conventional insurance and *takaful* companies in Pakistan
2	(Faruk and Rahaman, 2015)	Using DEA to assess the efficiency and Malmquist Productivity Index for insurance companies in Bangladesh and *takaful* companies in Malaysia
3	(Khan and Noreen, 2014)	Using DEA and Malmquist Productivity Index to assess the efficiency of insurance companies in Pakistan
4	(Antonio et al., 2013)	Using DEA and Malmquist Productivity Index to assess the efficiency of insurance and *takaful* companies in Malaysia
5	(Islam et al., 2013)	Using DEA and Malmquist Productivity Index to assess the *takaful* companies' efficiency in Bangladesh
6	(Saad, 2012)	Using DEA and Malmquist Productivity Index for the non-life insurance and general *takaful* companies in Malaysia
7	(Ismail et al., 2012)	Using DEA and Malmquist Productivity Index to measure the efficiency of insurance and *takaful* companies in Malaysia
8	(Ansah-Adu et al., 2011)	Using DEA to assess the efficiency of insurance companies in Ghana
9	(Kader et al., 2010)	Using DEA to assess the efficiency of *takaful* companies across the GCC
10	(Luhnen, 2009)	Using DEA and Malmquist Productivity Index to assess the efficiency of insurance companies in German
11	(Saad et al., 2006)	Using DEA and Malmquist Productivity Index to assess the insurance and *takaful* companies efficiency in Malaysia

2.2 Empirical Evidence on the Data Envelopment Analysis (DEA)

This section highlights the existing studies on the efficiency of the insurance and *takaful* companies that used DEA. Saad et al. (2006) measure the efficiency of the life insurance industry in Malaysia during period of 2002 to 2005. They indicated that the bigger the market share of the companies then the higher the probability of the companies to be more efficient in utilizing their inputs to generate more outputs. This is parallel with the findings by Ismail et al. (2012), Akhtar (2018) and Ilyas

and Rajasekaran (2019) that a *takaful* operator or a firm market share is one of the important factors to determine the level of efficiency. Coelli (1996) has suggested that for DEA, the efficiency can be explained through three components: technical efficiency, scale efficiency and allocation efficiency.

The combination of technical and allocation efficiency will produce cost efficiency (Khan and Noreen, 2014), while Ismail et al. (2012) describe that the cost efficiency measures the ability of firms to allocate the inputs at the optimal proportion given their respective prices and they conclude that from 2004 to 2009, the *takaful* industry is less cost efficient than their rival, the insurance industry. In another study by Antonio et al. (2013), their study indicate that the Malaysian insurance industry is more efficient than the *takaful* industry based on the period of 2010 and 2011, due to external cost, as well as other factors such as the low level of awareness and acceptance among the customers as a result of brand trust and fluctuation of the economic conditions.

Khan and Noreen (2014) suggest that based on the Malmquist Productivity Index (MPI) that relies on results of the DEA, shows that in Pakistan, the conventional insurance companies are cost inefficient compared to the *takaful* firms for the period of 2006-2010. Likewise, Abbas et al. (2018), they adopted the same measurement like Khan and Noreen (2014) for the period of 2010-2015 and denote that the *takaful* and insurance companies are almost equal in term of efficiency level. This shows that within a year, the insurance and *takaful* companies are able to improve their expenses.

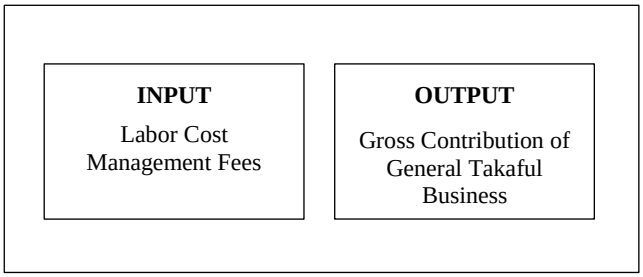
Table 2. Summary of the DEA's Input and Output Variables Used in the Previous Studies

Study by	Sample and period	Input	Output
Ilyas and Rajasekaran (2019)	Indian non-life (general) insurance (2005-2016)	Labor, business services and material and capital	Total investments
Abbas et al. (2018)	32 conventional insurance firms and 5 *takaful* firms of Pakistani (2010-2015)	Labor, total fixed asset and equity capital	Net premium, invested assets and investment income
Akhtar (2018)	25 *Takaful* and conventional insurance companies in Saudi Arabia (2010-2015)	Equity, Net claims incurred, General and administrative expenses	Investment income, Net premium earned Investment and management fee income
Faruk and Rahaman (2015)	10 Bangladeshi insurance and 5 Malaysia *takaful* operators (2009-2011)	Commission and management expenses	Premium and net income investment
Khan and Noreen (2014)	17 Pakistani insurance operators (2006-2010)	labor, total fixed assets, business services, equity capital	Invested assets, net premium
Antonio et al. (2013)	21 Malaysian *takaful* and insurance operators (2009-2011)	Management expenses fees and commission	Premium and investment income
Islam et al. (2013)	6 Bangladeshi insurance and *takaful* companies	Commission and Management Expenses	Premium and net investment income
Saad (2012)	28 Malaysian *takaful* and insurance operators (2007-2009)	Commission and management expenses	Premium and investment income
Ismail et al. (2012)	18 Malaysian *takaful* and insurance operators (2004 to 2009)	Management expenses, labor costs and invested assets	Gross income and investment income
Ansah-Adu et al. (2011)	30 Ghanaian Insurance operators (2006-2008)	Total capital, total operating cost and total investments	Net premium and investment income
Kader et al. (2010)	26 *takaful* firms from 10 Islamic Countries	labor and Capital cost	Premium income
Luhnen (2009)	295 Insurance companies in German	Operational expenses and equity and debt capital	Premiums
Saad et al. (2006)	13 Malaysian life insurance in conventional insurances and *takaful* companies (2002-2005)	Commission and management expenses	Premium and net investment income

3. Research Method

The selection of input and output for DMUs explain the relationship between the efficient and inefficient unit. There are two inputs in this study, which are the labor cost and management fees as the inputs for the *takaful* operators to achieve the output that is the gross contribution for the general *takaful* business.

Table 3. Theoretical Framework



Source: Research finding.

Table 3 shows the two inputs; management fees and labor cost which are commonly used to assess the efficiency of *takaful* operators in the forms of management expenses and personnel expenses respectively as the proxies, consistent with Saad (2012), Antonio et al. (2013), and Faruk and Rahaman (2015). The output is gross income of general *takaful* business; the gross income is as the proxy.

Table 4. Summary of Input, Output and Proxy of this Study

No	Variables		Proxy
1	Input	labor Cost	Personnel Expenses
		Management Fees	Management Expenses
2	Output	Gross Income of General *Takaful* Business	Gross Income

Source: Research finding.

The input and output as the proxies in this study is by referring to the annual reports and financial reports from the year 2014 to 2018 (post implementation of IFSA 2013) from the respective *takaful* operators, as well as statistics and financial data from the Bank Negara Malaysia's website.

- **Sampling**

All general *takaful* operators in Malaysia are included in the study, thus, it reflects the whole population or *takaful* operators that offers general *takaful* in Malaysia and depicts the efficiency of the firms post IFSA 2013. The *takaful* operators are:

1. Etiqa General *Takaful* Berhad
2. Syarikat *Takaful* Malaysia Am Berhad
3. *Takaful* Ikhlas General Berhad
4. Zurich General *Takaful* Malaysia Berhad

- **Estimation Techniques and Analysis**

Ismail et al. (2017) illustrated that efficiency is defined as the performance measurement by assessing an individual firm according to the cost, technical and revenue against the best practice firms that have been selected.

In order to evaluate the efficiency, the cost is chosen on the basis that efficiency signifies the ability of the firm to utilize the inputs at the optimal proportion at their respective prices. Kader et al. (2010) mentioned that *takaful* operators operating in various jurisdictions with different degrees of regulation and tax rules that can affect their efficiency. Likewise, this study focused on the efficiency based on the management fees and labor cost. The analysis will be simulated through DEAP Version 2.1 to determine the efficiency as well as the changes of Malmquist productivity index (MPI).

4. Findings

The results of DEA are in the forms of Constant Return to Scale (CRS) and Variable Return to Scale (VRS) respectively based on the multi-stage method. Overall, the Technical Efficiency (TE) is the measurement of the output of the CRS technical efficiency. Again, by excluding the inefficiencies aspect, VRS is able to evaluate pure technical efficiency. The ratio of evaluated CRS to VRS effectiveness delivers the estimation of scale efficiency. Likewise, a productive firm ought to get a record score of one, or one hundred percent (1.000 or 100%).

Table 5. Results of DEA – General *Takaful* Business Operators

General *Takaful* Business Operators	CRSTE	VRSTE		SCALE		
		Input Oriented	Output Oriented	Input Oriented	Output Oriented	RTS
Etiqa General *Takaful* Berhad	1.000	1.000	1.000	1.000	1.000	-
Syarikat *Takaful* Malaysia Am Berhad	1.000	1.000	1.000	1.000	1.000	-
Takaful Ikhlas General Berhad	0.870	0.953	0.943	0.914	0.923	irs
Zurich General *Takaful* Malaysia Berhad	0.824	1.000	1.000	0.824	0.824	irs
Average	0.924	0.988	0.986	0.935	0.937	

Source: Research finding.
Note: CRSTE = technical efficiency from CRS DEA; VRSTE = technical efficiency from VRS DEA; SCALE = scale efficiency = CRSTE/VRSTE

This study adopts the output orientation approach; nevertheless, for comparison, the input orientation approach is also included. In addition, scale efficiency and Return to Scale (RTS) results are included, thus, when the report shows decreasing RTS it means that the output increases by less than that proportional change in inputs. In contrast, when the report shows increasing RTS, it indicates the output increases by more than the proportional change in inputs.

Table 5 is based on the CRS, there are two *takaful* operators considered efficient under CRS, which are Etiqa General *Takaful* Berhad and Syarikat *Takaful* Malaysia Am Berhad. The less efficient *takaful* operators based on the CRS are *Takaful* Ikhlas General Berhad and Zurich General *Takaful* Malaysia Berhad with the scores of 87% and 82.4% respectively.

The result also showed that both the inefficient *takaful* operators in term of optimisation of their size of operations with 92.3% for *Takaful* Ikhlas General Berhad and 82.4% Zurich General *Takaful* Malaysia Berhad. The likely reasons for the least perfomer, the Zurich General *Takaful* Malaysia Berhad in term of the scale of inefficiency might be contributed from mismatched between the activities and operations, possibly due to the over-staffed or overpaid salary scale for the staff as well as other costs related activities.

By excluding the scale of inefficiencies, under the VRS, three *takaful* operators are considered efficient except the Zurich General *Takaful* Malaysia Berhad. The situation is different for CRS since the only *takaful*

operator with the lowest score is *Takaful* Ikhlas General Berhad with 94.3%.

Table 6. Results of Malmquist Productivity Index – All General *Takaful* Business Operators

General *Takaful* Business Operators	Technical Efficient Change	Technological Change	Pure Technical Change	Scale Efficiency Change	Total Factor Productivity (TFP) Change
Etiqa General *Takaful* Berhad	1.009	0.952	1.000	1.009	0.961
Syarikat *Takaful* Malaysia Am Berhad	1.000	1.068	1.000	1.000	1.068
Takaful Ikhlas General Berhad	1.027	0.955	1.045	0.983	0.981
Zurich General *Takaful* Malaysia Berhad	0.953	0.924	1.000	0.953	0.880
Average	0.997	0.973	1.011	0.986	0.970

Source: Research finding.
Note: All Malmquist index averages are geometric means.

Based on the result shown in Table 6, the technical efficiency change index indicates that two of the general *takaful* business operators increased their average annual technical efficiency. As in a declining state, only one of the samples in this category. Meanwhile, there is also one general *takaful* business operators signifies no changes between 2014 and 2018.

The results show that among the general *takaful* business operators that make the greatest improvement throughout the year from 2014 until 2018 in technical efficiency are *Takaful* Ikhlas General Berhad with (2.7%) and Etiqa General *Takaful* Berhad with (9%). The results have shown the most relapsed *takaful* operator is Zurich General *Takaful* Malaysia Berhad with 4.7% below constant of one (1.000). The only general *takaful* business operator that has constant technical efficiency result is Syarikat *Takaful* Malaysia Am Berhad.

As for the technological changes as can be seen in Table 6, it is the only one improved their performance but the rest of the *takaful* operators suffered declination. The most improved *takaful* operator for technological change is Syarikat *Takaful* Malaysia Am Berhad with a score of 6.8%. While, the listed *takaful* operators that have declined the most in terms of technological change is Zurich General *Takaful* Malaysia Berhad (7.6%), Etiqa General *Takaful* Berhad (4.8%) and *Takaful* Ikhlas General Berhad (4.5%).

It should be noticed that Total Factor Productivity (TFP) Change is considered the most important measurement of the outputs of the Malmquist Productivity Index. It can be seen that individually the best-performing *takaful* operator for TFP is also Syarikat *Takaful* Malaysia Am Berhad with a score of 6.8%. The result shows the worst performing *takaful* operator includes Zurich General *Takaful* Malaysia Berhad with a decline of (12.0%), Etiqa General *Takaful* Berhad with a decline of (3.9%) and *Takaful* Ikhlas General Berhad with a decline of (1.9%).

The result in Table 6 also shows that only Syarikat *Takaful* Malaysia Am Berhad experienced growth across all the measurements under the Malmquist Productivity Index. Meanwhile, Etiqa General *Takaful* Berhad and *Takaful* Ikhlas General Berhad experienced up and down throughout the performance as they achieved some efficiency. While Zurich General *Takaful* Malaysia Berhad suffered regression in their performance for all the calculations of Malmquist Productivity.

According to Table 7 below, the average changes in term of technical efficiency for the whole population in the *takaful* industry is 99.7%. Throughout the economic development and digitalized era, the first increment can be seen in the year of 2016 with 6.9% while the biggest jump took place last year, 2018 with 23.6% increased.

Table 7. Results of Malmquist Productivity Index –General *Takaful* Business Operators

Year	Technical Efficient Change	Technological Change	Pure Technical Change	Scale Efficiency Change	Total Factor Productivity (TFP) Change
2015	0.936	0.907	1.033	0.906	0.849
2016	1.069	1.049	1.012	1.057	1.122
2017	0.799	1.307	0.878	0.910	1.043
2018	1.236	0.722	1.140	1.084	0.892
Average	0.997	0.973	1.011	0.986	0.970

Source: Research finding.

As for technological changes, the overall trend shows a pattern with a jump from -9.3% in 2015 to 30.7% in 2017. This signifies the increment of outputs produced by the similar amount of inputs. Sympathetically, under the technological changes, the lowest score is for the year 2018 with a sudden drop from 30.7% in 2017 to -27.8%. This may indicate that there is a huge decline in outputs produced.

It can be seen from Table 7, average Total Factor Productivity (TFP) Change shows that the general *takaful* business operator industry is from 2015 to 2018 is at 97% of efficient means below one (100% or 1.000). In addition, there is a decreased productivity happened twice in 2015 and 2018 with -15.1% and -10.85 respectively. Meanwhile, in 2016, the score reported that 12.2% increase which shows a positive change in the productivity of the general *takaful* business operator industry.

Table 8. Overall Results of DEA

Group	**Efficient General *Takaful* Business Operators**
Overall	Etiqa General *Takaful* Berhad, Syarikat *Takaful* Malaysia Am Berhad

Source: Research finding.

Based on the Table 8, the best performing *takaful* operators are Etiqa General *Takaful* Berhad and Syarikat *Takaful* Malaysia Am Berhad. This shows that the both super-efficient general *takaful* operators able to properly manage and allocating their management expenses and personnel expeses. Moreover, as they capable of internal managing expenses they may improve their quality services towards their beloved customers (Antonio et al., 2013). Thus, this will increase the *takaful* operator desire output of contribution from the general *takaful* participants. Hence, this may project that the general *takaful* operator able to achieve cost efficient in their management (Ilyas and Rajasekaran, 2019). This resulted in the finest performance for technical efficiency and scale efficiency.

Table 9. Malmquist Productivity Index –General *Takaful* Operators

Technical Efficient Change			**Technological Change**		**Total Factor Productivity (TFP) Change**	
Group	**Most developed**	**Most lapsed**	**Most developed**	**Most lapsed**	**Most developed**	**Most lapsed**
Overall	TKI	ZUR	STMB	ZUR	STMB	ZUR
	102.7%	95.3%	106.8%	92.4%	106.8%	88%

Source: Research finding.

Note: ETQ = Etiqa General Takaful Berhad, STMB = Syarikat Takaful Malaysia Am Berhad, TKI = Takaful Ikhlas General Berhad, ZUR = Zurich General Takaful Malaysia Berhad.

As for the Malmquist Productivity Index, the summary result in Table 9 shows only *Takaful* Ikhlas General Berhad had significant growth concerning technical efficient change. The technical efficiency

change explained the general *takaful* business able to produce the maximum output from available minimum input (Shahooth et al., 2006). Therefore, this depicts the situation of the general *takaful* operator able to adhere the technical changes over the 2014 until 2018. However, other *takaful* operators require improving further if they want to step up their business performances just like Etiqa General *Takaful* Berhad and Syarikat *Takaful* Malaysia Am Berhad that show a top performance based on the DEA results.

In term of the technology changes, it shows how the general *takaful* operators overall process in technological development. Either developed or elapsed. However, only Syarikat *Takaful* Malaysia Am Berhad improved and upgraded their technology throughout 2014-2018 while Etiqa General *Takaful* Berhad, *Takaful* Ikhlas General Berhad and Zurich General *Takaful* Malaysia Berhad show a contrary development in their productivity index. The low productivity showed by the Etiqa General *Takaful* Berhad, *Takaful* Ikhlas General Berhad and Zurich General *Takaful* Malaysia Berhad indicate that the company may have lack of resource utilisation. So, the general *takaful* operators should polish their managerial skills (Ilyas and Rajasekaran, 2019).

Furthermore, for the Total Factor Productivity (TFP), only Syarikat *Takaful* Malaysia Am Berhad has proved an increase and being the most signs of progressive in performance for overall criteria of Malmquist Productivity Index. However, from Table 9, overall Zurich General *Takaful* Malaysia Berhad was the most regressed and suffered decline among general *takaful* business operators. Likewise, Etiqa General *Takaful* Berhad and *Takaful* Ikhlas General Berhad were having a declining trend. Even though Etiqa General *Takaful* Berhad and *Takaful* Ikhlas General Berhad are one of the best performers according to DEA results, their results in the Malmquist Productivity Index may give them the warning to improve in the wake of rivalry from their counterpart that is the insurance general industry in Malaysia (Saad et al., 2006).

As for Etiqa General *Takaful* Berhad and Zurich General *Takaful* Malaysia Berhad, they may to improve the productivity level by doing

merger and partnership activities with other insurance companies in Malaysia (Ilyas and Rajasekaran, 2019). This also may open a new path for the Shariah compliant *takaful* product to be diversifies under the insurance company. This also will improve the general side of the *takaful* business. As well as increase the market share which increase the participant contribution and thus the general *takaful* operators may achieve optimum output (Ismail et al., 2012).

Based on the Market Share theory, it indicates that larger companies are better than small companies to achieve operational and business excellence of the company (Kader et al., 2010; Trokic, 2017). Which this refers to a larger share market obtain by large companies influences the higher level of efficiency (Ismail et al., 2012; Kader et al., 2010). The results show that operators or companies with a larger amount of gross income, for instance, Etiqa General *Takaful* Berhad are more cost efficient from the other general *takaful* operators in Malaysia. A greater amount of gross income indicates greater market share in the *takaful* industry specifically the general business side. Thus, this proves that lower market share found to have cost inefficiency. This study is consistent with previous studies who agreed and found a positive relationship between market share and efficiency (Akhtar, 2018; Hao and Chou, 2005; Ilyas and Rajasekaran, 2019; Ismail et al., 2012).

5. Conclusion

In conclusion, the findings have confirmed the market share theory and infer to the expense-preference behaviour on the part of the general *takaful* operator. Perhaps, the general *takaful* operators are posed with an expedient manner trying to satisfy their own benefits. In order to achieve full efficiency, any *takaful* operators have to increase its market share segments by increasing its gross income and contribution through developing demand for general *takaful* products and mostly on *takaful* product itself. Since in this digitalisation era, *takaful* operators are stimulated to carry out a various channel of distribution to boost demand for general *takaful* business.

This study is limited to only small sample size *takaful* operators. Specifically, only four general business of *takaful* operators. Therefore, the interpretation of results and findings is probably suggestive but does not reflect the overall performance of the *takaful* industry. Thus, for future studies, researchers are suggested to include more samples of DMUs or more *takaful* operators, which possibly involve cross-countries comparison, or also comparison between the *takaful* and insurance industry on the specific issue.

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