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Business Entity Financial Valuation for Malaysia Oil & Gas Industry: A Qualitative Case Study Approach

Mohd Amy Azhar Mohd Harif* and Narresh Veerasingam

*Universiti Utara Malaysia, E-mail: *amyazhar@uum.edu.my; sean_n8@hotmail.com*

Abstract: The Oil & Gas sector has played a crucial role in Malaysia's economy in which 20% is contributed to the nation's gross domestic product (GDP). Hence, when the global oil price crisis begun in mid 2014, Malaysia's economy suffered a setback in terms of lower revenue being generated for the country and loss of investor confidence causing the FTSE Bursa Malaysia KLCI to fall as well. Therefore, with this in mind this paper examined a number of financial instruments with the aim of identifying the suitability of these instruments in evaluating business entity financial valuation of Oil & Gas companies before and after the oil price crisis. The literature review of this research presented five (5) financial instruments which are price to earnings (PE), enterprise multiplier (EM), discounted cash flow (DCF), net assets value (NAV) and net tangible assets (NTA) that can be used for business entity financial valuation of Malaysia Oil & Gas companies. Therefore, in order to confirm the literature findings, this study was conducted using a case study approach with the objective of contributing to the body of knowledge of the Oil & Gas industry both globally and locally. As a result of the findings, the study finds that the all five (5) financial instruments as mentioned above can be used before crisis periods but only four (4) financial instruments with the exclusion of the discounted cash flow (DCF) approach can be used after or during crisis periods. The exclusion of the discounted cash flow (DCF) valuation methodology is due to its inability to accurately produce consistent business entity financial valuations during times of crisis. In conclusion this research provides a conceptual framework which can be used as a guideline for business entity financial valuation of Malaysia Oil & Gas companies.

Key words: Gross Domestic Product (GDP), Business Entity Financial Value, Price to Earnings (PE), Enterprise Multiplier (EM), Discounted Cash Flow (DCF), Net Assets Value (NAV), Net Tangible Assets (NTA)

1. INTRODUCTION

1.1. Background of the Research

The Malaysia Oil & Gas industry faced one of its toughest periods at the end of 2015, as it reeled from a prolonged drop in oil prices (PwC, 2016). The oil price crisis also took a turn for the worse for Malaysia as

it lost RM40 billion in revenue due to drop in global oil prices as reported in the Malaysia paper News Straits Times (2016). This drop in price has also seen the FTSE Bursa Malaysia KLCI slump below the 1650 index benchmark in 2015 (Bloomberg, 2016). In spite of these challenges faced by Malaysia, they remain one of South East Asia's most dynamic producers of Oil & Gas reserves as seen by its production levels in figure 1.1.

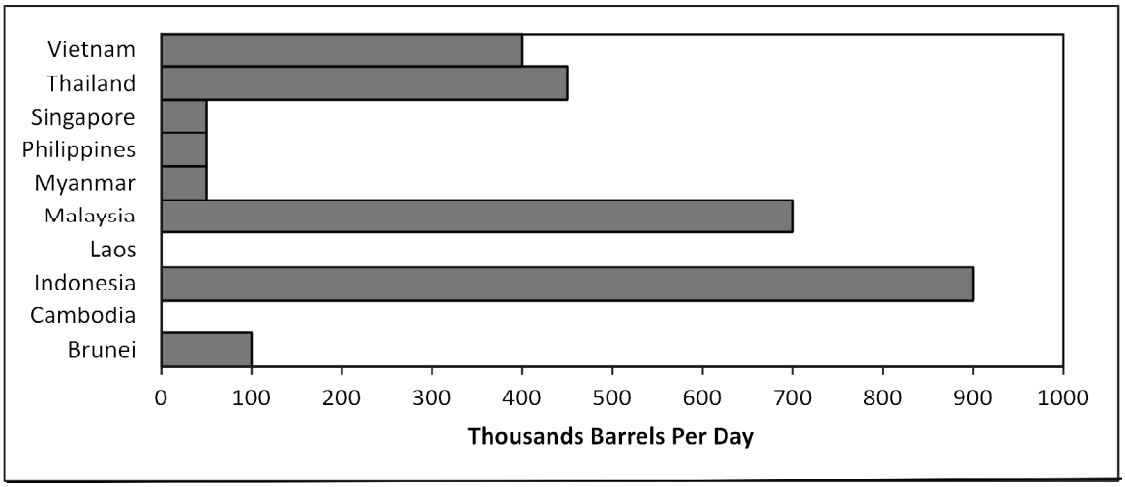

Figure 1.1: Southeast Asia Oil Production

Source: adapted based on International Energy Agency (2015)

However, due to the resulting global oil price crisis many Malaysia Oil & Gas companies have seen their revenues drop, which in turn caused the Malaysia economy to be affected as well (PwC, 2016). A more in depth view on the Oil & Gas industry history in Malaysia and its importance to the economy.

Furthermore, as mentioned earlier there is an ongoing global oil price crisis which caused turmoil in the global financial markets (International Energy Agency, 2015). The oil bust created a steep decline of investment in the global energy industry in nearly half a century. The decline of 20% of Oil & Gas investment in 2015 to just $550 billion as compared to $700 billion in 2014 is indeed a cause for concern as seen in Figure 1.2.

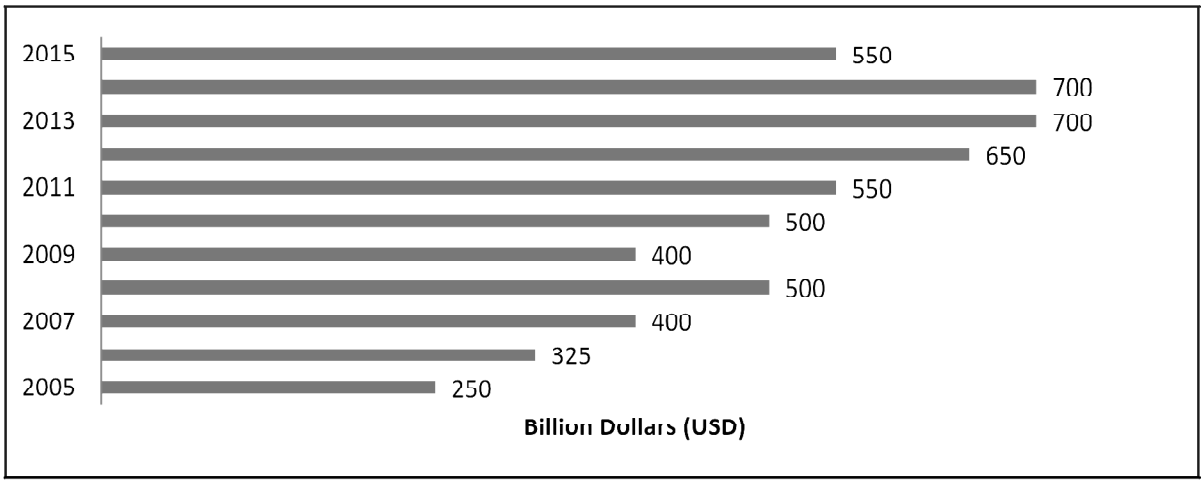

Figure 1.2: Global Oil and Gas investment (2005 – 2015)

Source: modified based on International Energy Agency (2015)

An in-depth look into the reasons why oil prices started sliding were hiding in plain sight; increase in growth of U.S. Oil & Gas production, sputtering demand for oil from Europe and China, and the continued violence from the Middle East civil war's threatened to disrupt supplies but it never did (Tverberg, 2015). However, according to the International Energy Agency (2015) the main cause of the emergence of the oil price crisis is the shale oil boom in the United States of America which turned the world's biggest consumer of energy into its most significant producer. Therefore with this a global oil price crisis was born. An in depth look into the timeline of the oil price crisis is explored using synthesized literature. In turn, with the decline in the oil prices affecting the oil rich Malaysia and no impending end of the global oil price crisis as of the end of 2015, there exists a need to understand on how to evaluate the impact of the oil price crisis for Malaysia's Oil & Gas industry. However, to asses any impact there must first be a framework or theoretical knowledge on how to evaluate Oil & Gas business entity financial value.

A business entity financial value is basically how much will be paid by a person/entity to acquire the corresponding business (Investopedia, 2015). While there are a number of methodologies and techniques used within the business valuation industry, they can typically be categorized into three core approaches according to Damodaran (2006) which are the asset based, income based and market comparison based methodologies.

1.2. Research Problem

As seen in the previous section the oil and gas sector plays an important role in Malaysia. Moreover, it is obvious that there exist a serious problem in the Malaysia Oil & Gas industry due to the emergence of the oil price crisis which has left a negative impact to the economy growth in the country. As a consequent to these problems, a need has arisen in which to assess how the Oil & Gas industry in Malaysia has been impacted by the oil price crisis. However, as there has been limited literature or research previously done on how to evaluate Malaysia Oil & Gas entities, a framework must first be created in order to address this problem in a systematic manner before any impact analysis can be conducted.

Therefore, in alignment to these thoughts, this research is guided by the research problem statement as per the following. 'how & why the business entity financial valuation framework could be established for the Oil & Gas industry in Malaysia?'. By identifying the financial instruments that can be considered to evaluate Oil & Gas companies in Malaysia, the Oil & Gas industry will be better prepared to assess the impact of any sorts of crisis (Deutsche Bank, 2004). In brief this section has discussed the development of the research problem for this research based on the background of the research in the previous section.

2. LITERATURE REVIEW

2.1. Underpinning Theory

This research is underpinned by the global oil price crisis and the 3 approaches to Business Entity Valuations (Copeland, Koller & Murrin, 2000). Firstly this research pinpoints from a broad perspective what is the global oil price crisis and the timeline of the oil price crisis is outlined.

The oil price crisis is seen as a decline in global oil prices, and this is where the trouble lies within. The oil price drop is a simple matter of supply and demand, in which the United States domestic production has nearly doubled over the last several years, pushing out oil imports that need to find another home

(Krauss, 2016). Based on the International Energy Agency (2015) the United States of America (USA) have become the biggest Oil & Gas producer as opposed to before 2014 where Saudi Arabia and Russia controlled the global supply.

The rise in USA's production is due to the development of the shale oil technique which had increased productions of Brent crude oil to an uncharted level in the market (Baumeister, 2016). In simple terms there is an oversupply of oil in the global market and until the demand of oil rises significantly or supply of oil reduces the oil prices are expected to remain low. This indicates that prior to 2014 there was no crisis, hence a more in depth look was taken in which the research synthesised six representative authors literature to identify the oil price crisis timeline. These six (6) authors were selected on one very crucial ground that was appropriate for the determination of this timeline, which is the background of the researcher in which all authors specialize in the oil and gas industry which can be seen in the next section in table 2.1. A look into the price of oil from 2012 till 2015 has shown the same result as the synthesised literature seen in figure 2.1 below.

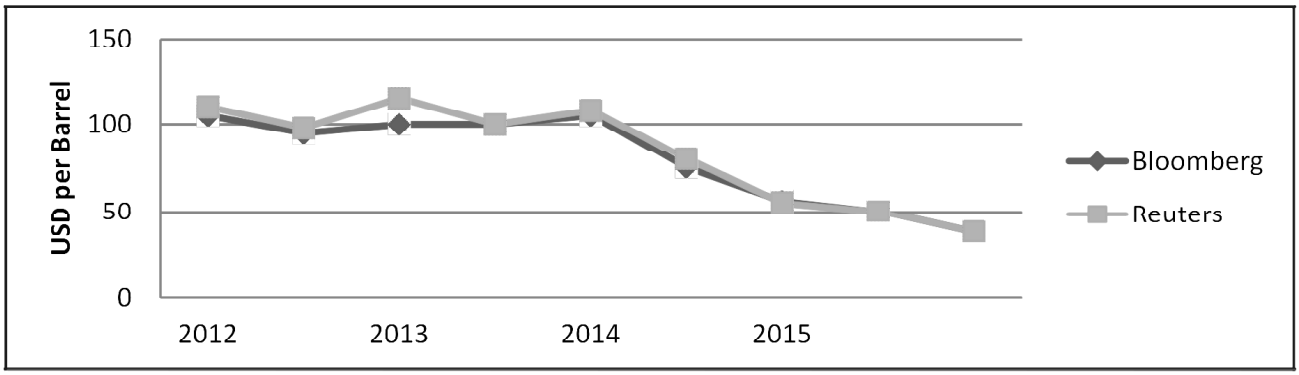

Figure 2.1: Oil's big dive

Source: developed based on Reuters (2015) & Bloomberg (2015)

In the year 2011 the price of crude oil was at a high of USD 110 and was hovering between USD 90 to USD 100 from that point onwards till mid of 2014. In the middle of 2014 where there has been a sharp drop in the price of oil where it had dropped from USD 100 to a low of USD 60 by the end of 2014, which is a 40% drop in the prices. In 2015 the oil prices continued its steady but sharp decline towards the USD 40 level by the end of 2015. Therefore it is confirmed based on table 2.2 and figure 2.4 that the oil price crisis begun in 2014 and as of end of 2015 the world is still in crisis as the price of oil is still below its traditional levels. In summary, the synthesised literature as well as a look at actual global oil price's has helped established the timeline of the crisis which begun in the middle of the 2014.

The next underpinning theory is the three approaches to business entity financial valuation. Firstly the use of the income approach, which attempts to estimate the present value of future cash flow. Next, the asset approach which establishes the net fair market value of a company's existing assets. Lastly, the market approach, which uses data gathered from similar companies or industry transactions to apply metrics to the subject company. When deriving a final value of the business it is common to use all three approaches to make a decision rather than using only a single approach (Fernandez, 2001).

2.2. Synthesization of Literature Review

Based on the articles and journals of Business Entity Financial Valuation from all industry to the specific valuation instruments of Western Oil & Gas industry a total of 9 financial instruments were selected and 5 are deemed to be suitable to be used in the context of Malaysian Oil & Gas industry as shown in Table 2.2 below. However, prior to that the synthesized literature of the oil price crisis timeline can be seen in table 2.1.

Table 2.1
Synthesis of the literature for timeline of the Oil price crisis

Source/ Year	*2013*	*2014*	*2015*
Baumeister (2016)	x	✓	X
Mohadess & Raissi (2015)	x	✓	X
Bafes, Kose, Ohnsorge & Stocker (2015)	x	✓	X
Manescu & Nuno (2015)	x	✓	X
Killian (2015)	x	✓	X
International Energy Agency (2015)	x	✓	X

Source: developed for this research

The above literature synthesis demonstrates the timeline of the oil price crisis, in which all six sources have unanimously agreed that the oil price crisis begun in 2014. Furthermore as of end of 2015 these authors from the synthesised literature in figure 2.4 have also agreed that the world is still in crisis as the price of oil is still below its traditional levels. This is in line with the summary of global oil prices as seen in figure 2.1 in the previous section.

Now that the oil price timeline is established and fortified with the above synthesis, the below summarizes the business entity financial valuations from this research paper.

Table 2.2
Synthesis of literature for business entity financial valuation instruments to be used in Malaysia Oil & Gas Companies

No	*Financial Instruments*	*Stage 3*	*Stage 4*	*Stage 5*
1	Price to Earnings Ratio/Multiple	√	√	√
2	Enterprise Multiple	√	√	√
3	Discounted Cash Flow	√	√	√
4	Net Asset Valuation	√	√	√
5	Net Tangible Asset Valuation	√	√	√
6	Capitalization of Earnings	√	x	-
7	Dividend Payout Model	√	x	-
8	Enterprise Value /EBITDAX Multiple	-	√	x
9	Real Options	-	√	x
	Total	7	7	5

Source: developed for this research

From Table 2.2, the literature review had finally narrowed down from an overall industry perspective in section 2.4 and narrowed down the nine (9) financial instruments seen in table 2.4 and concluded with the seven (7) financial instruments which can be used for the valuations of western Oil and Gas business entities. Next these seven (7) financial instruments as identified in table 2.5 are drilled down based on the literature for Malaysia Oil & Gas industry as seen in this section. Consequently, these financial instruments combined with the timeline established for the oil price crisis have provided the basis to create a conceptual preliminary framework for this research, which is established as per figure 2.2.

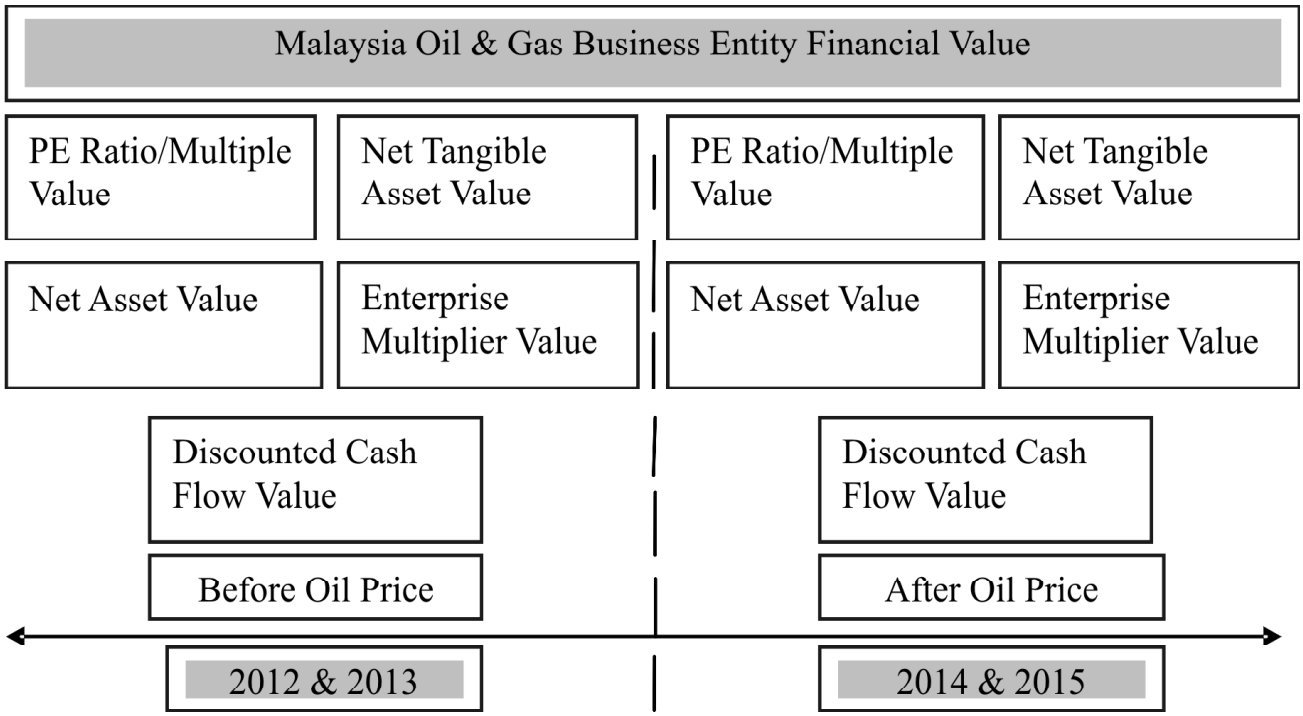

Figure 2.2: Preliminary theoretical framework developed for this research

Source: developed for this research

With reference to the preliminary theoretical framework developed for this research as shown in Figure 2.1 above, a two primary research issues for this research is derived as below;

1) What are the financial instruments to be used to evaluate Malaysia Oil & Gas business entities before the oil price crisis?

2) What are the financial instruments to be used to evaluate Malaysia Oil & Gas business entities after the oil price crisis?

3. METHODOLOGY

3.1. Qualitative Approach

Consequently, the main reason why a qualitative research is appropriate for this research is the objective of this paper. The objective of this research is to explore and provide a deeper insight and understanding into

a very little-researched area of how and why to evaluate business entity valuation for Oil & Gas industry in Malaysia before and after the oil price crisis. In other words, this research is about the exploratory of a certain phenomena (oil price crisis) rather than hypothesis or theory testing. Hence, in aligning to this research objective a qualitative approach is best for gathering as much information as possible in a research topic which is very limited (Hair, Bush and Ortinau. 2006). In brief, this research adopted qualitative research to gain more in-depth information and understanding into the complex process of how and why to evaluate business entity valuation for Oil & Gas industry in Malaysia before and after the oil price crisis.

3.2. Case Study Methodology for Data Collection

This research employed the case study methodology for data collection. Firstly, in order to use this methodology a proper definition of a case study must be outlined. The case study methodology as defined by Yin (2011) is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between object of study and context are not clearly evident. Moreover, Eisenhardt (1989) says that case studies are well suited for new research areas or research areas where existing theories are inadequate. This type of work is highly complementary to incremental theory building from normal science research (Dul & Hak, 2008). the elements used in a case study are somewhat similar with an empirical research analysis as the elements identified can be used for theory testing, refutation, refining illustration, classification, hypothesis development prediction and identification of further research needs (Gummesson, 2005.; Woodside & Wilson, 2003;). Moreover, the case study approach according to Yin (2011) allows theories to be expanded and generalized by combining the existing theoretical knowledge with new empirical insights. This is especially important in studying topics that have not attracted much previous research attention such as this research which has not been thoroughly understood in Malaysia. Furthermore, the application of this approach can be useful for transcending the local boundaries of the investigated cases, capturing new layers of reality, and developing new, testable and empirically valid theoretical and practical insights (Eisenhardt & Graebner, 2007). On the other hand, the use of multiple cases may be used to achieve replication of a single type of incident in different settings, or to compare and contrast different cases. Hence, a multi-case study approach towards data analysis will allow this research to gather comparative data from a minimum of four case studies (Creswell, 1998) to be examined.

3.3. Research Design

Unit of Analysis for this Research. The unit of analysis is the basis for the case study it can be an individual person, or an event, or an organisation or team or department within the organisation (Pamela & Susan, 2008). However, it can sometimes be difficult to identify the boundaries of the unit of analysis. A key issue highlighted by Stake (1995) is that case study seeks to ask questions about the unit of analysis, and any sub-units; sources of evidence and the evidence gathered will be determined by the boundaries that define these units of analysis. Therefore, selecting the unit of analysis, or the case is crucial (Stake, 1995 & Yin, 2003). In this research the unit of analysis to be used, will be the Malaysia Oil & Gas business entities. Due to the use of the multiple case study approach, Creswell (1998) suggested a minimum of four (4) case studies to be examined based on the unit of analysis. To study less than four (4) case studies in a particular research is not recommended (Creswell, 1998). Furthermore, the timeline identified in this research had provides two (2) separate events to be investigated which is before crisis (2012 & 2013) and after crisis

(2014 & 2015). This means that each unit of analysis will be examined four times; hence only two Malaysia business entities should be selected for this research where there will now be eight (8) case studies to be examined. Moreover as both companies are listed on the share market there are no ethical issues concerned with using both business entity in this case study as all data to be collected and analysed are based on public records. Furthermore, this research aims to identify the usefulness of the financial instruments to be used for valuation of Malaysia Oil & Gas business entities. Hence there will be no comments made regarding both companies business entity values against each other, which could influence an individual or company either positively or negatively.

Selection of Companies for this Research. Table 3.1 provides a detailed breakdown of Malaysia Oil & Gas Company's market capitalization as of end of 2015. Only the companies with market capitalization of more than RM 500 million are considered for this research. Also foreign entities such as Shell, Chevron, Petron and British Petroleum are not considered because this research focuses specifically on Malaysia Oil & Gas business entities. However, table 3.1 did not include Malaysia's biggest Oil & Gas Company, Petronas. The reason for its exclusion is simple, Petronas was formed by the government to regulate and boost the economy which makes them a government linked company (Barlow, 2001). This would mean Petronas will/might have intervention by the Malaysia government to help boost its business entity value which makes analysing their business entity value against others Malaysia Oil & Gas business entities unfair. Hence for the purpose of this research Petronas will not be considered due to this factor. Therefore, based on table 3.1 on the two (2) business entities that will used in this research are Bumi Armada Berhad and Sapura Kencana Petroleum Berhad.

Table 3.1
Top five (5) Malaysia Oil and Gas business entities based on market capitalization

Malaysia Oil & Gas Business Entities	*Market Capitalization*	*This Research*
Bumi Armada	RM 5.92 billion	Yes
SapuraKencana	RM 12.1 billion	Yes
Scomi	RM 585.5 million	No
UMW Oil & Gas Corporation Berhad	RM 2.31 billion	No
Barakah Offshore Petroleum Berhad	RM 734.2 million	No

Source: developed for this research. Based on KLCI 31st December 2015

Both companies conduct a similar business model in their Oil & Gas activities as well and have market capitalization of more than RM 1 billion.

Reliability and Validity of data. Corbin and Strauss (2008) define reliability, as the ability of a data collection instrument to yield the same results when used in a similar setting. On the other hand, validity refers to how accurate a data collection instrument can be in measuring what it was developed to measure (Cooper & Schindler, 2008). In qualitative research, internal validity is the congruency of the researcher's findings with reality, where reality is the researcher's interpretation of the participant's perceptions or understanding of the topic of interest (Merriam, 2002). Table 3.2 summarizes the approach deployed in this research.

Table 3.2
Reliability and validity approach for this research

Approach	*Phase Approach Occurred*	*Tests*
Triangulation	Data Collection & Research Design	Internal Validity & Reliability

Source: developed for this research. Based on Brian McDermott (2010)

Triangulating the data lends internal validity and reliability to a research (Gay, 1996; Merriam, 2002; Yin, 2003). In triangulation, researchers make use of multiple and different sources, to provide supporting evidence (Lincoln & Guba, 1985; Merriam, 2002; Miles & Huberman, 1994; Patton, 1990). Therefore, when collecting case study data the use of triangulation helps establish converging lines of evidence of the data to make the findings of the study as robust as possible (Green, Camilli & Elmore, 2006).In a nut shell, the use of triangulation aims to eliminate biasness and increase trustworthiness of a research (Merriam, 2002).

Data Collection. For this case study the data collection will be based on secondary data only. The common sources of secondary data for research are censuses, government department data, organisational records and any data that was originally collected for other research purposes. On the other hand primary data are collected by the investigator conducting the research. Therefore, as mentioned above this research will use only secondary data as the base for data collection and data analysis using the multiple case study approach. As per the findings from chapter two's literature review, 4 financial instruments which can be considered in the valuation of Malaysia Oil & Gas business entities have been identified. In order to use the financial instruments outlined in the preliminary framework, all of the data in table 3.4 is needed. These data which are collected are from two (2) or more sources to ensure reliability by means of triangulation of the data to be used (Merriam, 2002). Furthermore, to add to the reliability of the data, the financial reports collected are audited and have a true and fair view of its statements. The data to be obtained in order to successfully identify business entity financial valuations are outlined in table 3.3.

The accessibility of these data is open to public use; hence there is no consent form or ethics compliance form needed in order to obtain all of the data in table 3.3. All of the data collected will be reviewed together and any difference between the sources in which the data had been obtained will be highlighted (if any).

Table 3.3
Data collection summary table

Data to be Collected	*Sources*
Financial Reports	Bursa Saham & Respective Company
Market Risk rates	Bursa Saham & Bloomberg
Beta rates	Bursa Saham & Bloomberg
Long Term Inflation Rate	Jabatan Statisitk Malaysia (Malaysia Department of Statistics), World Bank & Bank Negara Malaysia
Malaysia Govt Bonds Rate	Bank Negara Malaysia & World Bank

Source: developed for this research

Data Analysis. According to Corner (2009), analyzing qualitative data requires the researcher to immerse in the data to become familiar with it and at the same time look for pattern and themes searching for various relationships between the data which can help the researcher to understand what they have. These analyzed data which is transferred into information can then be displayed and written up. For this research the main question which needs to be answered is how are Malaysia Oil & Gas business entities valued? The literature for this has provided five (5) financial instruments which can be considered to answer this question. Subsequently, the research issues identified aims to distinguish if these same financial instruments can be considered for business entity valuations before and after the oil price crisis. Therefore it is clear that *the usefulness of these financial instruments* in producing the business entity financial valuations is the key element for this research and will be the main focus of this research. Table 3.4 provides each detailed formulae for the financial instruments to be used in which the data will be analysed based on for all four (4) case studies.

4. DATA ANALYSIS

4.1. Results & Findings

This research adopted the multiple case study approach for data analysis. The results and findings are based on the financial information data collected for both case study companies. The case study companies are classified as case study 1 & 2 for before the oil price crisis and case study 2 & 4 for after the oil price crisis.

Table 3.4
Summary of formula for data analysis

Financial Instrument	*Formula*	*Approach*
Price Earnings Ratio/Multiplier	(Price per Share/Earnings per Share) x 100	**Market Approach**
Enterprise Value	(Market Capitalization + Total Debt – Cash and Cash Equivalents) (Earnings before Interest, Tax, Depreciation & Amortization)	**Market Approach**
Discounted Cash Flow (DCF)	(FCF1/ (1 + r^1) + FCF2/ (1 + r^2) + ... FCF10/ (1 + r^10) + (FCF10 x 1 + i)/ (r – i)) + Total Liabilities – Cash and Cash Equivalents r = Discount Rate from CAPM i = Long term Inflation rate The Capital Assets Pricing Model (CAPM) is used to identify the R for the DCF: *R = Rf + B (Rm – Rf)* Rf = Risk Free Rate B = Beta Rm = Return on the Market The Free Cash Flow (FCF) is obtained using the below: *Net Operating Cash Flow – Capital Expenditure (CAPEX)*	**Income approach** In order to use the Formulae the R and FCF must first be identified. Risk free rate is found from 10 year Malaysia treasury bonds. The Beta and Return on the market is obtained from the KLCI
Net Assets Value	Total Assets – Total Liabilities	**Asset Approach**
Net Tangible Assets Value	Net Assets Value – Intangible Assets	**Asset Approach**

Source: developed for this research

Table 4.1
Summary of findings from data analysis

	Research Issue	*Financial Instruments*
1)	What are the financial instruments to be used for the valuation of Malaysia Oil & Gas business entities before the oil price crisis begun in 2014?	• Price Earnings Ratio/Multiple • Enterprise Multiple • Discounted Cash Flow Value • Net Assets Value • Net Tangible Assets Value
2)	What are the financial instruments to be used for the valuation of Malaysia Oil & Gas business entities after the oil price crisis begun in 2014?	• Price Earnings Ratio/Multiple • Enterprise Multiple • Net Assets Value • Net Tangible Assets Value

Source: developed for this research

Based on the multiple case study conducted using the five (5) financial instruments identified in the literature, the below table 4.1 summarizes the results obtained. It had become clear from the analysis of the second research issue that the use of the discounted cash flow (DCF) approach after the oil price crisis should not be considered, because the business entity financial value's obtained are inconsistent for both case study subjects (case 3 & 4).

In summary the findings from this has shown that not all of the financial instruments identified can be used to evaluate the business entity financial valuation of oil & gas companies. Therefore, this finding answered the research issue of this research.

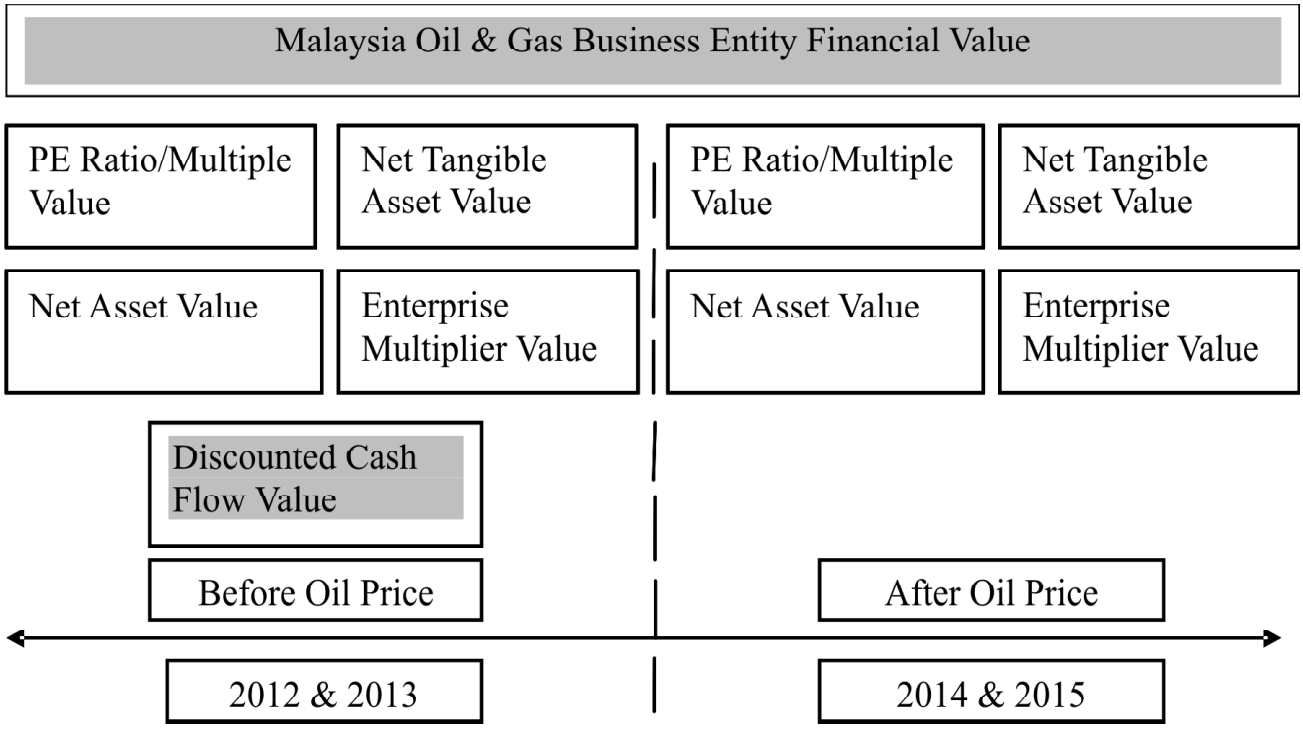

Figure 5.1: Revised theoretical framework

5. CONCLUSION

5.1. Conclusion on the Research Problem

With the above finding, it is now able to address the research problem of this research, that is: *How & why the business entity financial valuation framework could be established for the Oil & Gas industry in Malaysia?*

The preliminary theoretical framework has been amended accordingly to reflect the findings as seen in Figure 5.1.

From the above revised theoretical framework, the following conclusion is drawn in which this research successfully addressed the research issues and provides a conceptual framework of how to value Malaysia Oil & Gas business entities during a crisis period and during non crisis periods. In addition, this research also contributed to the body of knowledge of the Malaysia Oil & Gas industry. Lastly, the objectives of this research have been met.

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