

AN EMPIRICAL STUDY ON THE IMPACT OF INTANGIBLE ASSETS ON CASH FLOWS: A COMPARISON BETWEEN INDUSTRIAL PRODUCT SECTOR AND TRADING/SERVICE SECTOR IN MALAYSIA

Lee Seng Fatt
Vanitha A/P Loganathan
Vigneswary A/P Chandran

Department of Accounting
College of Business Management & Accounting
Universiti Tenaga Nasional
Kampus Sultan Haji Ahmad Shah
26700 Bandar Muadzam Shah
Pahang Darul Makmur
Malaysia
E-Mail: SengF@uniten.edu.my, Tel: 609-455 2022

ABSTRACT

With the intense competition taking place currently in globalised trading, sustainability of business has become a vital consideration for management. Conventional products and services will not suffice to satisfy the new needs of customers in respect of speediness, quality and cost. The manufacturing sector needs to undertake structural changes by incorporating more technological contents in producing high-end products. Industries do not operate in isolation. The supporting services will have to be developed in tandem with the advanced industrial sector. Innovation and sustainability necessitate research and development activities which give rise to intangible assets. Economic benefits in the form of cash are crucial for sustaining a business.

Issues on the recognition and measurement of intangible assets have been controversial for years. To what extent do intangible assets bring about economic benefits in the form of cash generation to business entities? By analysing secondary data extracted from published annual financial statements with the aid of statistical software, this study examines the relationship between intangible assets and cash flows of public listed companies classified under industrial product and trading/service sector in Malaysia. The results show that there is a significant relationship between intangible assets and operating/total cash flows in both sectors. This finding justifies the creation and recognition of intangible assets in the financial statements. The findings also indicate that there is a significant difference in operating cash flows over intangible assets between industrial product sector and trading/service sector.

Keywords: intangible assets, cash flows, industrial product sector, trading and service sectors, correlation and relationship.

INTRODUCTION

With the intense competition taking place currently in globalised trading, sustainability of business has become a vital consideration for management. Competition is getting stiffer as neighbouring developing economies such as China, Indonesia and Thailand continue to provide an abundant supply of low wage labour and endowed with other natural resources. The advent of a modern and dynamic technology era accelerates further the pace of business competition in varied dimensions. Conventional products and services will not suffice to satisfy the new needs of customers in respect of speediness, quality and cost. To stay competitive and maintain sustainability, innovation is inevitable to scale an entity to a higher level of playing field in order to tap a fair share of the vast globalized market.

Developing Malaysia into a knowledge based economy is pivotal not only bringing the country to achieve the nation's Vision 2020, but also pushing the country to be at par with other industrial nations in terms of economic performance and technological capability. The manufacturing sector needs to undertake structural changes by incorporating more technological contents in producing high-end products. Industries do not operate in isolation. The supporting services will have to be developed in tandem with the advanced industrial sector.

Innovation and sustainability are business buzzwords in modern business. Capital expenditure on physical infrastructure including property, plant and equipment alone would not be enough to enhance the competitiveness of businesses in the new economy. Investment in research and development (R&D) is equally critical to steer a company forward to withstand fierce competition from their business rivals. R&D activities indeed have become core activities of many large public listed companies in Malaysia and they are normally allocated with a fair amount in the companies' annual budget. R&D activities give rise to new intangible assets as reported in the companies' financial statements.

Intangible assets are assets that are not physical in nature. Corporate intellectual property such as patents, trademarks, copyrights, and business methodologies, goodwill, and brand recognition are all common intangible assets in today's marketplace. Therefore,

firms must invest in intangible assets, as well as in tangibles, in order to be continuously innovative and to be able to sustain a competitive advantage leading to superb future performance.

Cash flow is a revenue or expense stream that changes a cash account over a given period. No business can survive without cash. Cash is a vital component in any profit generating business entity. Poor cash management will eventually lead to business failure. Compared to the accounting profit figure, cash flow is a useful parameter that reflects the sustainability of the business for two reasons. Firstly, cash flow information avoids the shortcomings of accrual-based performance measures in assessing the ability of a firm to generate positive cash flow from its operating cycle to meet its financial commitments as they fall due. Secondly, the information content of earning based performance measures is vulnerable to alteration by earning management practices. Consequently, they do not provide relevant information on predicting the future cash flow level. Furthermore, the relevance of cash flow based approach to an array of decision-making purposes has been widely demonstrated to be an acceptable approach by prior researches including Al-Attar, A., Hussain, S. and Zuo, L.Y. (2008), Call, A.C., Chen, S. and Tong, Y.H. (2009) and Orpurt, S. and Zang, Y. (2009).

Apart from the above, traditional performance measures have been based on the historical cost convention and they are insensitive to the time lags necessary for realizing the potential of capital investments. This can be problematic especially for intangible investment valuation that may necessitate several years to become visible in bottom line performance as illustrated by Bharadwaj, A.S., Bharadwaj, S.G. and Konsynski, B.R. (1999).

Issues on the recognition and measurement of intangible assets have been controversial for years. To what extent do intangible assets bring about economic benefits in the form of cash generation to business entities? This paper aims to study the impact of intangible assets on the generation of cash flows of public listed companies in Malaysia companies classified under Industrial Product (IP) and Trading/Service sectors (TS).

LITERATURE REVIEW

Intangible investment represents outlays by the firm made in the expectations of the future benefits. Therefore, when the researchers evaluate a firm's value, they not only consider the tangible assets, but also must respect the power of intangible assets in recent years (Chan, L. K. C.; Lakonishok, J.; Sougiannis, T. (2001)).

Intangible assets are firm's dynamic capability created by core competencies and knowledge resources, including organization structure, employment expert skills, employment centripetal force, Research & Development innovation capability, customer size, brand recognition, and market share. It represents the future growth opportunities and profitability toward firm value (Ittner, C. D. (2008)).

Chauvin and Hirschey (1993) examined the cross-sectional influence of both advertising and R&D on the market value of the firms over a 3 year period. The researchers demonstrated that the traditionally recognized valuation effect of current cash flow, growth, risk and market share increase when both advertising and R&D expenditures are considered as potentially important source of intangible capital. Further the researchers also highlighted the influence of the firm size over the effectiveness advertising and R&D. Lev and Sougiannis (1996) said that value relevance of R&D capitalization by estimating the relationship between R&D capital and subsequent stock returns. The researchers also proved that R&D expenditures are significantly associated with both stock price and returns. By performing an analysis, the researchers found a significant association between stock return and lagged R&D capital. Bharadwaj (1999) studied the link between IT investment and long run firm performance and proved that they have a significant relationship.

Studies (Klock and Megna, 2000; Rao Agarwal, 2004) reveal that there is a strong relationship between firm performance and intangible capital stocks. Huang and Jiu (2005) indicate that the innovation capital has a non-linear relationship (inverted U-shape) with firm performance. R&D and advertising expenses are viewed as investments which can increase a firm's intangible assets with predictably positive effects on future cash flow and firm value (Gleason and Klock, 2006). Fukui and Ushijima, (2007) used firm value as a forward-looking performance measure. This value represents the market's valuation of the expected future stream of profits which are based on an assessment of the return that can be generated from a firm's tangible and intangible assets. They found that intangible investment increases firm's value in the same fashion that tangible assets increase value.

Givoly, Hayn & Lehavy (2009) examined the adjustments analysts make when forecasting cash flow. They began their research by reviewing 45 randomly-sampled full-text analyst reports. The analysis revealed that the majority of these analysts include explicit adjustments for working capital and other accruals in their cash flow forecasts. Andrew, Shuping Chen, Yen (2010) argued that analysts' cash flow forecasts lack sophistication. Specifically, they conclude that analysts derive their cash flow forecasts by simply adding depreciation expense back to their own earnings forecasts. Understanding the nature of the adjustments analysts make (or do not make) when forecasting cash flow is central to understanding the nature of analysts' forecasting activities.

THEORETICAL FRAMEWORK

The Agency Theory

Michael Jensen and William Meckling (1976) defined an agency relationship as a contract under one or more people (the principal) hire another person (the agent) to perform some services and then delegate decision-making authority to that agent. In

this respect, an agency relationship exists between the shareholders and managers. The agency theory assumes that the agents would behave according to their own self-interest. The firm's management (the agent) would accordingly take actions which benefit himself but at the expense of the shareholders (the principal).

The corporate reward system emphasizes generally more on the profitability rather than the liquidity. Unethical managers are lured seeking loopholes for practicing creative accounting for a better portrayal of their performance that does not reflect the firm's true economic reality. Short-term manipulations of performance measures are often used to paint a good picture of the corporate performance without a corresponding improvement on its liquidity position.

The Financial Reporting Standards

An intangible asset is an identifiable non-monetary asset without physical substance (*MFRS 138 Intangible Assets*). The Financial Reporting Standard stipulates that an intangible asset shall be recognized if, and only if:

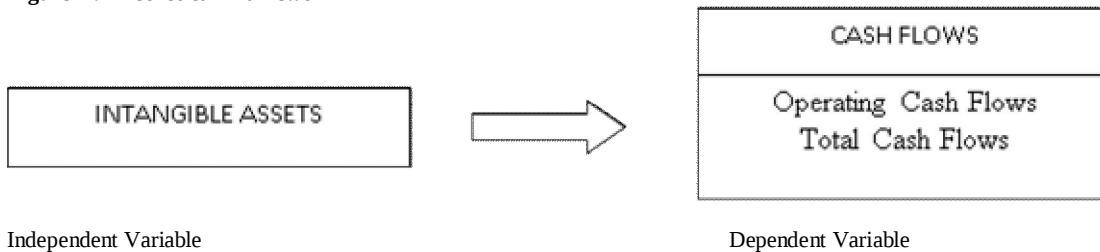
- It is probable that the expected future economic benefits that are attributable to the asset will flow to the entity; and
- The cost of the asset can be measured reliably.

Users of an entity's financial statements are interested in how the entity generates and uses cash and cash equivalents. An entity shall prepare a cash flow statement and shall present it as an integral part of its financial statements for each period for which financial statements are presented (*MFRS 107 Cash Flow Statements*).

Cash flow activities can broadly be classified into the three activities, namely operating, financing and investing. Operating activities are the principal revenue-producing activities of the entity and other activities that are not investing or financial activities. The amount of cash flows arising from operating activities is a key indicator of the extent to which the operations of the entity have generated to repay its financial obligations and maintain its operating capability without further external financing. This information is useful in forecasting future operating cash flows. Total cash flows is the net increase in cash and cash equivalents of the operating, investing and financing activities after taking into account the amount of cash generated and used in the three business activities.

After reviewing the literature, this study proposes a theoretical model to show the relationship between intangible assets and cash flows with a comparison between IP sector and TS sector in Malaysia. This study focuses on both the operating and total cash flows figures.

Figure A: Theoretical Framework



Research Objectives and Hypothesis Development

The previous research (Boujelben, S., and Fedhila, H., 2011) examined manufacturing firms in Tunisia and found that intangible assets have a significant effect on future cash flows from operation. Their findings further reveals that while the effect of R&D activities persists until the third lagged period, the effect of advertising expenditures is rapid and temporary.

This study examines the impact of intangible assets on cash flows in two different sectors of our interest in Malaysia. This leads to the development of the following hypotheses:

- H1: There is a significant relationship between intangible assets and operating cash flows in TS sector.
- H2: There is a significant relationship between intangible assets and operating cash flows in IP sector.
- H3: There is a significant relationship between intangible assets and total cash flows in TS sector.
- H4: There is a significant relationship between intangible assets and total cash flows in IP sector.
- H5: There is a significant difference in the mean (operating cash flows over intangible assets ratio) between TS and IP sectors.

METHODOLOGY

Relevant secondary data from three years' annual financial statements starting from 2009 to 2011 are used for this study. The IP sector sample and TS sector sample are made up of 35 companies each selected randomly from Bursa Malaysia.

The intangible assets of each company are measured by their carrying value in the respective Statements of Financial Position while the cash flow figures are extracted from the Cash Flows Statements.

Statistical Package of Social Science (SPSS) version 18.0 for window is used to conduct statistical analysis seeking answers for the research objectives. Normality of data distribution is first assessed for the purpose of deciding on the appropriate statistical test. Correlation test is used to determine the direction ie positive or negative, and to what extent intangible assets and cash flows are associated with each other.

Hypothesis testing is conducted to determine if there is any significant relationship exists between the independent and dependent variables. The significant level or p value will indicate whether the null hypothesis should be accepted or rejected. Based on 5% level of significance, we shall reject the null hypothesis when the p value is less than 5% (p value < 0.05). When the p value is greater than 5% (p value > 0.05), the null hypothesis is to be accepted.

Depending on the outcome of the normality test on the data, a suitable statistical test is to be run to test the difference of mean (measured by operating cash flows over intangible assets) between the two sectors. An independent sample T-test is used if the data distribution meets the underlying normality distribution assumption. Mann-Whiney U Test would be used otherwise.

OBSERVATIONS AND ANALYSIS

Descriptive statistics depict an overview of the sample data collected. Mean value indicates the average of the variable's value while standard deviation shows how much is the variation or "dispersion" of data from the average mean or expected value. A low standard deviation indicates that the data points tend to be very close to the mean, whereas high standard deviation implies that the data points are spread out over a large range of values.

Descriptive statistics

Table 1: Descriptive statistics of mean and standard deviation for Trading/Service and Industrial Product sector

Year	Variables	TS Sector		IP Sector	
		Mean (RM'000)	Standard Deviation (RM'000)	Mean (RM'000)	Standard Deviation (RM'000)
2009	Intangible Assets	94,690	287,161	844,629	2,467,877
2010	Intangible Assets	94,421	290,172	713,100	2,262,563
2011	Intangible Assets	95,087	288,541	641,866	2,223,925
2009-2011	Intangible Assets	94,733	285,839	733,198	2,299,720
2009	Operating Cash Flows	77,441	231,501	304,374	783,054
2010	Operating Cash Flows	166,748	627,816	344,360	973,118
2011	Operating Cash Flows	112,093	323,751	321,299	887,992
2009-2011	Operating Cash Flows	118,761	426,625	323,344	876,415
2009	Total Cash Flows	253,653	836,109	218,328	594,913
2010	Total Cash Flows	329,202	1,242,255	337,024	1,068,812
2011	Total Cash Flows	378,323	1,364,203	90,359	759,877
2009-2011	Total Cash Flows	320,393	1,159,364	154,997	843,029

There is not much variation in the means of intangible assets of both sectors over the period. The average mean value of the IP sector is RM733,198,000 compared to RM94,733,000 of TS sector overall from 2009 to 2011. This shows that the IP sector employs a larger amount of intangible assets than TS sector between the two samples. This is not surprising as the IP sector is expected to incur more expenditure on the acquisition, development or enhancement of intangible resources that include scientific, technical knowledge and implementation of new processes or systems. The standard deviation value shows the intangible assets of TS sector (RM285,839,000) is closer to the mean compared to IP sector (RM2,299,720,000) over the three years.

Generally the operating cash flows of the IP sector are higher than the TS sector (2009-2011, IP: RM323,344,000, TS: RM118,761,000). This is consistent with the larger capital generally required for IP sector.

The total cash flows are derived from cash flows from investing and financing activities apart from operating activities. The average mean value of the TS sector is higher than the IP sector (2009-2011, TS: RM320,393,000, IP: 154,997,000). This is partly due to the larger cash used in asset investments and repaying the financial obligations in the case of IP sector.

Normality test

Table 2: Test of normality

Year	Variables	TS Sector		IP Sector	
		Kolmogorov-Smirnov	Shapiro-Wilk	Kolmogorov-Smirnov	Shapiro-Wilk
		Sig.	Sig.	Sig.	Sig.
2009	Intangible Assets	0.000	0.000	0.000	0.000
2010	Intangible Assets	0.000	0.000	0.000	0.000
2011	Intangible Assets	0.000	0.000	0.000	0.000
2009-2011	Intangible Assets	0.000	0.000	0.000	0.000
2009	Operating Cash Flows	0.000	0.000	0.000	0.000
2010	Operating Cash Flows	0.000	0.000	0.000	0.000
2011	Operating Cash Flows	0.000	0.000	0.000	0.000
2009-2011	Operating Cash Flows	0.000	0.000	0.000	0.000
2009	Total Cash Flows	0.000	0.000	0.000	0.000
2010	Total Cash Flows	0.000	0.000	0.000	0.000
2011	Total Cash Flows	0.000	0.000	0.000	0.000
2009-2011	Total Cash Flows	0.000	0.000	0.000	0.000

If the significant level is greater than 0.05, then normality is assumed. The Shapiro-Wilks statistic is used if the sample size is small or less than one hundred (Uma Sekaran & Roger Bougie, 2010). Table 2 shows that both the Shapiro-Wilks and Kolmogorov-Smirnov statistics of all the three variables from 2009 to 2011 are less than 0.05. This implies that the normality of data of our study has been violated. Since the data are not normally distributed, non-parametric statistics would be used for further analysis.

Correlation measurement using Spearman Correlation Coefficient and tests of hypothesis

Spearman correlation coefficient is used to assess the strength of the relationship between the parameters. The Spearman Correlation Coefficient value ranges between +1 and -1. A positive coefficient indicates that the variables are positively correlated and vice versa. A zero coefficient would mean there is no relationship between the two variables.

The corresponding significant level or p -value would indicate if there is any significant relationship between the independent and dependent variable.

Table 3: Results of correlation relationship between intangible assets and operating cash flows for Trading/Service sector

Year	Independent Variable	Dependent Variable	Correlation Coefficient	Sig. (2-tailed) Level
2009	Intangible Assets	Operating Cash Flows	0.662**	0.000
2010	Intangible Assets	Operating Cash Flows	0.639**	0.000
2011	Intangible Assets	Operating Cash Flows	0.490**	0.003
2009-2011	Intangible Assets	Operating Cash Flows	0.599**	0.000

**. Correlation is significant at the 0.01 level (2-tailed)

H1: There is a significant relationship between intangible assets and operating cash flows for Trading/Service sector

Based on 5 percent significant level, the results in Table 3 suggest rejecting the null hypotheses which states that there is no significant relationship between intangible assets and operating cash flows in TS sector. The correlation coefficients are relatively strong (2009: 0.662, 2010: 0.639, 2011: 0.490). Statistical evidence is adequate to accept the alternative hypothesis that

there is a significant relationship between intangible assets and operating cash flows at 0.05 significant level. The overall correlation coefficient for the three years (2009-2011) is 0.599.

Table 4: Results of correlation relationship between intangible assets and operating cash flows in Industrial Product sector

Year	Independent Variable	Dependent Variable	Correlation Coefficient	Sig. (2-tailed) Level
2009	Intangible Assets	Operating Cash Flows	0.263	0.127
2010	Intangible Assets	Operating Cash Flows	0.309	0.071
2011	Intangible Assets	Operating Cash Flows	0.285	0.098
2009-2011	Intangible Assets	Operating Cash Flows	0.276**	0.004

**. Correlation is significant at the 0.01 level (2-tailed)

H2: There is a significant relationship between intangible assets and operating cash flows for Industrial Product sector

Table 4 shows that the correlation coefficients are moderate and weaker than those of the TP sector (2009: 0.263, 2010: 0.309, 2011: 0.285). The overall coefficient for the three years is 0.276 (TP sector: 0.599). Over a longer period of three years, the significant level of 0.004 (<0.05) indicates there is a significant relationship between the two variables though this observation is not evident yearly. This may be due to the larger standard deviation or dispersion of the IP data.

Table 5: Results of correlation relationship between intangible assets and total cash flows in Trading/Service sector

Year	Independent Variable	Dependent Variable	Correlation Coefficient	Sig. (2-tailed)
2009	Intangible Assets	Total Cash Flows	0.473**	0.004
2010	Intangible Assets	Total Cash Flows	0.096	0.585
2011	Intangible Assets	Total Cash Flows	0.019	0.912
2009-2011	Intangible Assets	Total Cash Flows	0.204	0.037

**. Correlation is significant at the 0.01 level (2-tailed)

H3: There is a significant relationship between intangible assets and total cash flows in Trading/Service sector

The correlation coefficients in Table 5 are weak generally except for the year 2009. The correlation coefficients for total cash flows are also weaker compared to the operating cash flows in Table 3. This implies that intangible assets in the TS sector have a greater impact on its operating activities but less significant impact on the investing and financing activities.

Based on the overall figure of three years, the two variables are correlated moderately and the significant level of 0.037 (<0.05) suggests that there is a significant relationship between them.

Table 6: Results of correlation relationship between intangible assets and total cash flows in Industrial Product sector

Year	Independent Variable	Dependent Variable	Correlation Coefficient	Sig. (2-tailed)
2009	Intangible Assets	Total Cash Flows	0.558**	0.000
2010	Intangible Assets	Total Cash Flows	0.523**	0.001
2011	Intangible Assets	Total Cash Flows	0.416	0.013
2009-2011	Intangible Assets	Total Cash Flows	0.496**	0.000

**. Correlation is significant at the 0.01 level (2-tailed)

H4: There is a significant relationship between intangible assets and total cash flow in Industrial Product sector

The correlation coefficients in Table 6 are stronger than those shown in Table 5. This implies that there is a stronger correlation between intangible assets and total cash flows for companies in the IP sector than those in the TS sector. Statistical evidence from the significant levels is adequate throughout to suggest there is a significant relationship between intangible assets and total cash flows in the IP sector. This explains further that a larger of cash generated in the IP sector has probably been used in the investing and financing activities as compared to the TS sector.

Table 7: Results of Mann Whitney U Test

	Sector	N	Mean Rank
OCFIA09	TS	35	30.4
	IP	35	40.5
	Asymp. Sig. (2-tailed)	0.038	

OCFIA10	TS	35	29.7
	IP	35	41.2
	Asymp. Sig. (2-tailed)	0.019	
OCFIA11	TS	35	31.2
	IP	35	39.7
	Asymp. Sig. (2-tailed)	0.078	
OCFIA091011	TS	105	90.7
	IP	105	120.2
	Asymp. Sig. (2-tailed)	0.000	

OCFIA: Operating Cash Flows / Intangible Assets

H5: There is a significant difference in the mean (operating cash flows over intangible assets ratio) between TS and IP sector

In this study, the Mann-Whitney U test is used to test if there is a significant difference in the means of OCFIA (Operating Cash Flow over Intangible assets) between TS sector and IP sector in Malaysia. Except for year 2011 ($p=0.078$), overall p value of IAOCF091011 ($p=0.000$), IAOCF09 ($p=0.038$) and IAOCF10 ($p=0.019$) are all less than 0.05, the null hypotheses is to be rejected at 5% significant level. This result infers that there is a significant difference in the means as measured between the TS sector and IP sector in Malaysia. The IP sector is having a consistently higher mean rank than the TS sector in all the four series. This implies that the intangible assets in the IP sector does generate a higher amount of operating cash flows for the amount of its investment in intangible assets compared to the TS sector.

CONCLUSIONS

From the observations above, we can conclude that there is a significant relationship between intangible assets and operating cash flows as well as total cash flows for both the TS and IP sectors. The correlation between intangible assets and cash flows is stronger in the TS sector looking at the operating activities alone. From the perspective of total cash flows, however, IP sector shows a stronger correlation with intangible assets. This indicates the impact of intangible assets for companies classified under IP is not just confined to their operating activities but also extended to their investing and financing activities as far as cash flows are concerned. After all, IP sector is generally more capital intensive as compared to the TS sector.

The ability of intangible assets to generate economic benefits as supported by the findings of this study justifies the creation and recognition of this category of non-physically existence assets as reported in the financial statements. The positive relationships as revealed by this study should enhance public confidence in the financial information pertaining to intangible assets as published in the financial statements in Malaysia. Users of financial statements can be rest assured research and development expenditure is appropriately expensed off and intangible assets are fairly recognized. There is no statistical evidence of under expensed and overstatement of this category of assets. Companies in Malaysia should step up their R & D activities which have proven to yield positive cash flows in the past for sustaining their business survival and thus giving them a competitive edge over their rivals.

The statistical result also reveals that there is a significant difference of mean in term of intangible assets over operating cash flows between TS and IP sector in Malaysia. The higher mean rank in IP sector is probably due to its more effective utilization of the intangible assets in generating cash resources. Companies from the IP sector are commonly having significant intellectual properties in the form of copyrights, patents, design and implementation of new processes or systems. The creation and existence of intangible assets do play an important role for the continued survival of their business.

LIMITATIONS AND RECOMMENDATIONS

With dynamic changes in the business environment, findings of this study are to be interpreted with certain limitations. The data used for this study was extracted from the financial statements for only three years from 2009 to 2011 and the sample selection was confined only to companies listed on Bursa Malaysia. A similar study on non-listed companies might provide a different perspective.

The cash flows information extracted from the financial statements are less subjective compared to figures depicting the financial performance. Nevertheless, information for the preparation for the cash flows statements is usually sourced from the accounting figures. Hence, the observations made from this study would depend indirectly on the appropriate accounting recognition policy adopted by the companies and also the measurement accuracy in their financial reporting.

The financial reporting arena is now shifting to fair value accounting from the conventional historical cost accounting. Compared to book value or carrying amount as disclosed in the financial statements, fair value of intangible assets are certainly more

superior and relevant information for decision making. The fair value would reflect better on the potential of a resource controlled by an enterprise that is expected to bring future economic benefits to the enterprise. The use of fair or market value of intangible assets instead of carrying value presented in the financial statements would certainly shed more light on an in-depth perspective.

Notwithstanding any limitation, the statistical procedures and tests used in this study may be adopted and refined further for similar studies for different sectors in Malaysia or other regional bourses.

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