Journal of Social Sciences & Humanities

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Pertanika is an international peer-reviewed journal devoted to the publication of original papers, and it serves as a forum for practical approaches to improving quality in issues pertaining to tropical agriculture and its related fields. Pertanika began publication in 1978 as the Journal of Tropical Agricultural Science. In 1992, a decision was made to streamline Pertanika into three journals to meet the need for specialised journals in areas of study aligned with the interdisciplinary strengths of the university.

The revamped Journal of Social Sciences & Humanities (JSSH) aims to develop as a pioneer journal for the Social Sciences with a focus on emerging issues pertaining to the social and behavioural sciences as well as the humanities, particularly in the Asia Pacific region. Other Pertanika series include Pertanika Journal of Tropical Agricultural Science (JTAS); and Pertanika Journal of Science and Technology (JST).

JSSH is published in **English** and it is open to authors around the world regardless of the nationality. It is currently published four times a year i.e. in **March**, **June**, **September** and **December**.

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Pertanika is the official journal of Universiti Putra Malaysia. The abbreviation for Pertanika Journal of Social Sciences & Humanities is *Pertanika J. Soc. Sci. Hum.*

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& HUMANITIES

A special issue devoted to
Contemporary Issues on Management and Social Science Research

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Guest Editor
Kashan Pirzada

Guest Editorial Board
Danture Wickramasinghe, Gabriël A Moens
and Ahmad Fauzi Abdul Hamid

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ABSTRACTING/INDEXING
Pertanika is now over 35 years old; this accumulated knowledge has resulted the journals being indexed in SCOPUS (Elsevier), Thomson (ISI) Web of Knowledge [BIOSIS & CAB Abstracts], EBSCO, DOAJ, Google Scholar, AGRICOLA, ISC, Citefactor, Rubriq and MyAIS.

Preface

It is our pleasure to put together this special issue of *Pertanika Journal of Social Sciences & Humanities (JSSH)* that offers accepted papers that were presented at the *Global Conference on Business and Social Science (GCBSS)* held on 15 and 16 December, 2014 in Kuala Lumpur, Malaysia.

GCBSS received a large number of abstracts for presentations, many of which were of a high quality. As a result, the selection panel had to exercise considerable care in choosing papers deemed worthy of publication. We are grateful to the authors for their enthusiasm, and to the reviewers for their painstaking work.

The Conference provided a platform for sharing novel ideas and inspiring research outcomes of academics from different countries including the UK, Australia, the Czech Republic, France, Finland, Poland, Malaysia, Iran, India, Indonesia, Nigeria, Pakistan, SriLanka, Vietnam and the UAE. It was also attended by two prominent keynote speakers, Professor Danture Wickramasinghe, University of Glasgow, UK and Professor Gabriël A Moens, Curtin University, Australia. We are grateful to them for their invaluable contribution.

Last but not least, we thank Dr. Nayan Kanwal, the Chief Executive Editor and his dedicated Pertanika team at the Journal Division for their generous guidance and commitment in bringing this special issue to print. This issue would not have been possible without their concerted effort.

We hope this conference will contribute to a meaningful paradigm shift in business and social science research, in general, and the delegates' career development, in particular.

Finally, we would like to thank everybody who contributed in any way to the success of the conference, especially to session chairs and members of the organising committee.

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Contents

Contemporary Issues on Management and Social Science Research

Practicality and Potential Value of Enterprise Risk Management in the Manufacturing Sector in China

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ABSTRACT

This paper examined the practicality and potential value of Enterprise Risk Management (ERM) in China through three aspects: the impacts of ERM on the relationship between different kinds of risk and whole risk portfolio; the influence of ERM on components of risk structure; and the function of ERM in correlation with risk portfolio and firm performance. A Multiple Indicator Multiple Causes (MIMIC) model was structured for a comprehensive determination of the connection between ERM and firm's performance. The results showed that ERM could reduce the relevance of the kinds of risk to risk portfolio, and the interactions between risk categories are minimised as well. As ERM makes the risk structure more significant to firm's performance, thus, the firm can benefit from risk portfolio and realise profit potentials.

Keywords: Enterprise Risk Management, Firm Performance, Risk Portfolio, Risk Structure

INTRODUCTION

Enterprise risk management (ERM) has been served as a new structured and disciplined approach to help firms predict risks and make tradeoffs between costs and profits. Compared to traditional risk management, not only does ERM allow firms to tread business risks in an organised and integrated manner, it also holistically controls each risk exposure within a portfolio context (Arena, Arnaboldi, & Azzone, 2011). Today, ERM has become an important instrument for event identification, risk evaluation and portfolio optimisation. Meanwhile, it can generate benefits for corporate governance and internal control, which allows management

to effectively deal with uncertainties, consequent risks, and opportunities, as a result of promoting the firm's capacity to generate value.

In recent years, a general argument in the ERM literature is that effective ERM programmes can enhance firm's performance (Farrell & Gallagher, 2014). However, though ERM has long been practiced and investigated in the U.S. and the Bermudian areas, the empirical evidence of ERM in Asia is quiet limited, especially for firms with primary operations in developing countries. In this context, the aimes of this paper are to overcome this gap and to explore whether ERM can improve the performance of firms in Asia. With data obtained from a sample of firms in the manufacturing sector in China, this paper is specifically designed to examine the practicality and potential value of ERM for Chinese manufacturers. The empirical evidence will contribute to the body of knowledge related to ERM specific to China in particular.

LITERATURE REVIEW

Risk Management and Internal Control

In 1992, the Committee of Sponsoring Organisations of the Treadway Commission (COSO) proposed that an integrated internal control system (ICS) should realise the goal of effective and efficient operations, reliability of financial reporting and compliance with applicable laws and regulations. On the basis of the internal control framework, in 2004, COSO announced another advanced concept known as the Enterprise Risk Management Integrated Framework and expanded the entity's objectives to include strategic, operating, reporting and compliance. As practiced by senior executives, COSO's two frameworks then became the criterion reference of risk management and internal control for all entities. It is not always clear whether risk management is a sub-division of internal control or vice versa. However, there should certainly be a close relationship between them.

Dr. Larry E. Rittenberg, the chairman of COSO viewed ERM as an extension of internal control. Nevertheless, the ERM framework has a relatively wide range of implication compared with the internal control framework. In real practice, although internal control does not involve establishing the ultimate operational objectives of a firm, it can take action in the evaluation and assessment of the objective making process (Dong, 2009). In this context, it is obvious that the emphasis of internal control should be based on the strategic decision of risk management, and an integrated ICS will do favour to the goal of attaining efficient risk management.

ERM and Firm Performance

Many scholars have emphasised the objective of risk management, that is, achieving a higher level of profitability; it should be made known that profitability is not necessarily the only indicator of improved firm performance. Some academics and industry commentators also support this view; it is argued ERM

benefits firms by mitigating external capital costs, improving capital efficiency, reducing earnings and stock price volatility, and enhancing synergies of management activities among departments (Beasley, Pagach, & Warr, 2008; Cumming & Hirtle, 2001; Lam, 2001; Meulbroek, 2002). From a wider perspective, ERM is considered to promote increased risk awareness which assists managers in better operational and strategic decision making.

A further advantage of ERM programmes arises from comprehensive information about a firm's risk profile. The current trend among academics is for ERM to be regarded as a fundamental paradigm for managing the portfolio of risks confronting a firm (Beasley *et al.*, 2008; Hoyt & Liebenberg, 2011). Therefore, the goal of risk management is no longer to minimise all risks within a firm, but to optimise the combination of risks to maximise shareholder value (Meulbroek, 2002). Thus, for a firm that wishes to implement effective ERM programmes, it has to firstly define and understand its risks.

However, most previous studies classify business risks into endogenous and exogenous categories, which are not appropriate for ERM study. As ERM is an extension of internal control, compared with risk external to the firm, its emphases are more on internal elements. As both COSO's two frameworks include financial and operational objectives, and as ERM even added strategic objectives into consideration, this paper would adopt a design to incorporate strategic risk, operational risk and financial risk to help evaluate the impacts of risk portfolio on firm's performance.

METHODOLOGY

The Sample

To control for biases generated by the differences in market and regulation across industries, this paper focuses on firms in the manufacturing sector. By the end of December 2013, there were 1,601 public listed firms in the manufacturing industry. Of the total number of listed companies in China, 64.35% are in manufacturing sector. Therefore, while this paper focuses only on the manufacturing firms, it can still provide the empirical evidence for future research on ERM in China.

Data streams used in this paper are limited to the period between 2003 and 2012, which covers ten fiscal years and includes both pre- and post-financial crisis periods. A comparison of the different scenarios among firms was conducted by categorising the data into two groups. The integrated ICS was chosen to estimate the engagement of firms in credible ERM. The identification of the integrated ICS is declared by the independent board of supervisors, which can be found in the financial reports, summaries, and other announcements of the firms.

After excluding firms with missing values, the sample was ultimately reduced to 335 manufacturing firms, or 3,350 firm-year observations, operating in each year during the 10-year period. Eventually, among the sample, there were 2,310 firm-

year observations with credible ERM and 1,040 firm-year observations without credible ERM.

The Key Risk Indicators (KRIs)

One objective of this paper is to ascertain the risk structure by classifying risk portfolio into various categories. Mercer Management Consulting (MMC) shows that most Fortune 1,000 firms suffered stock declines due to their failure in strategic decisions (58%), operational decisions (31%) and financial decisions (6%). Therefore, the risk portfolio in this paper is quantified in terms of strategic risks, operational risks and financial risks.

According to Andersen (2008), firms are facing strategic risks because of the imperfections in terms of resource and output markets, where firm's abilities to organise and distribute resources to generate valuable products and services differ. While operational risk is not a well-defined concept, the most popular definition of the concept is the one given by the Basel Committee. They defined operational risk as the losses incurred as a result of inadequate or failed internal processes, people and technology, or external events. In contrast, financial risks would influence the average cost of capital and effectiveness of investments (Verbano & Venturini, 2011).

As all categorical risks exist in business, it is common that some of the risks might overlap or interplay. Based on an understanding of the concept of strategic risk, operational risk and financial risk, this

paper chose Net Profit Margin, Return on Invested Capital, Return on Total Assets, Operating Costs, Managing Costs and Financing Costs as matrixes of strategic risk. It applies Operating Cycle, Inventory Turnover, Receivables Turnover, Fixed Assets Turnover, and Total Assets Turnover to quantify operational risk, and regards Debt Ratio, Equity Ratio, Real Ratio, Acid Test Ratio, Solvency Ratio, and Operating Cash Flow Ratio as measurements of financial risks.

The Key Performance Indicators (KPIs)

Another important target of this paper is to determine the relationship between risk portfolio and firm value. Hence, a comprehensive method in the evaluation of corporate level performance is essential. Consistent with the general practice in corporate finance, most empirical studies of risk management use Tobin's Q as a proxy for firm value. Due to the existence of a large amount of non-tradable shares in most Chinese firms, however, the market value of this kind of share cannot be directly evaluated by the equity market, which impairs function of Tobin's Q for analysis in China (Wu & Zhang, 2009).

So assessment using Tobin's Q alone is not accurate enough to quantify a firm's performance. Therefore, a Structural Equation Model, which consists of a set of key performance indicators that is believed to have impacts on firm value, is adopted to compensate for this deficiency. Based on a review of related literature, the target KPIs selected are related to Firm Size, Return on

Assets, Tobin's Q, Market Position, Weight Average Cost of Capital, Sales Growth, Stock Price Volatility and Value Change. According to the descriptions of these eight aspects, firm's performance is represented by a much more comprehensive expression.

The Multiple Indicators Multiple Causes Model

To assess the potential impacts of risk management on firm performance, this paper uses a Multiple Indicators Multiple Causes (MIMIC) model to estimate paths linking firm performance and the categorical risks (strategic, operational and financial). As a variation under the umbrella of the SEM, MIMIC can model latent variables that cannot be directly estimated by a single observed measure and can model measurement errors, rather than assuming measurements made without error (Finch & French, 2011). Generally, the MIMIC model was utilised to describe the relationship between observable variables and unobservable variables by minimising the distance between the covariance matrix of the sample and the covariance matrix predicted by the model.
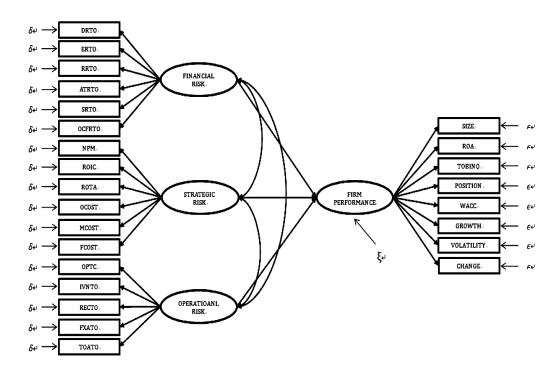
Fig.1: Framework of the MIMIC model

Fig.1 shows the framework of a full structural equation model, in which the MIMIC model used in this paper can be quantified into three levels, with the following mathematical representations:

Level 1: $y_{ij} = \lambda \, \eta_{ij} + \varepsilon$

Level 2: $\eta_{ij} = \gamma \, \chi_{ij} + \xi$

Level 3: $\alpha_{ij} = \mu \, \chi_{ij} + \delta$

Where y_{ij} = (size, roa, tobinq, position, wacc, growth, volatility, and change) are indicators of the latent variable η_{ij} (firm performance) for firm i in group j; = (strategic risk, operational risk, and financial risk) are causes of ; = (npm, roic, rota, ocost, mcost, fcost, drto, erto, rrto, atrto, srto, ocfrto, optc, ivnto, recto, fxato, and toato) are congeneric measures of .

Testing for Validity of the MIMIC Model

In contrast to normal linear regression, the structural equation model can never be accepted, it can only fail to be rejected. Thus, it is necessary to determine goodness-of-fit between the hypothesised model and the sample data before performing an analysis of estimates. According to Hair (1998), at least four fit indexes are needed to construct the validity of a measurement model. Therefore, this paper chose Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI) and Root Mean Square Error of Approximation (RMSEA) as primary fit statistics and used them to validate the MIMIC model.

TABLE 1
Model fit assessment and test statistics

Test statistics	Original mimic model	Modified mimic model	Acceptable criteria
Goodness-of-Fit Index (GFI)	0.6158	0.9270	> 0.90 Good Fit
Comparative Fit Index (CFI)	0.4790	0.9410	> 0.90 Good Fit
Normed Fit Index (NFI)	0.4745	0.9359	> 0.90 Good Fit
Root Mean Square Error of Approximation (RMSEA)	0.1262	0.0578	< 0.05 Close < 0.08 Good < 0.10 Reasonable

It can be noted that all four indexes for the original MIMIC model are out of the recommended range of acceptability, which means the current MIMIC model cannot be used to estimate the sample data accurately. It is rare that a model fits well at first, while model modification is sometimes required to obtain a better-fitting model. As space is limited, the details of modification procedure will not be described here. In reviewing the fit indexes in Table 1, it can be concluded that the MIMIC model is relatively well fitting after modification. The model can finally be deemed as valid for representing good fit to the sample data.

TABLE 2
Maximum likelihood estimates for key risk indicators

		Group 1: Firms with credible ERM			Group 2: Firms without credible ERM		
		S.M.C.	S.R.W.	P	S.M.C.	S.R.W.	P
NPM	<---strategic risk	0.730	-0.854	***	0.791	-0.889	***
ROIC	<---strategic risk	0.271	-0.521	***	0.388	-0.623	***
ROTA	<---strategic risk	0.953	-0.976	***	0.926	-0.962	***
OCOST	<---strategic risk	0.001	-0.024	0.063	0.000	-0.011	0.567
MCOST	<---strategic risk	0.009	0.096	***	0.013	0.116	***
FCOST	<---strategic risk	0.030	0.173	***	0.023	0.150	***
OPTC	<---operational risk	0.682	0.826	***	0.583	0.763	***
IVNTO	<---operational risk	0.692	-0.832	***	0.674	-0.821	***
RECTO	<---operational risk	0.165	-0.406	***	0.153	-0.391	***
FXATO	<---operational risk	0.057	-0.239	***	0.090	-0.300	***
TOATO	<---operational risk	0.308	-0.555	***	0.411	-0.641	***
DRTO	<---financial risk	1.000	1.000	***	0.966	0.983	***
ERTO	<---financial risk	0.716	0.846	***	0.757	0.870	***
RRTO	<---financial risk	0.338	-0.581	***	0.441	-0.664	***
ATRTO	<---financial risk	0.221	-0.470	***	0.295	-0.543	***
SRTO	<---financial risk	0.370	-0.608	***	0.403	-0.635	***
OCFRTO	<---financial risk	0.144	-0.379	***	0.158	-0.397	***

RESULTS AND DISCUSSION

Compared with firms without credible ERM, the correlation between KRIs and financial risk for firms with credible ERM is significantly decreased in Table 2. In addition to drto, the absolute value of standard regression weight (S.R.W) for all other financial risks of group 1 is lower than that of group 2. This indicates that one unit change in the standard deviation of financial risk will be accompanied by less variance of standard deviation for the relevant risk indicators. As shown in Table 2, in contrast to financial risk, optc, ivnto, and recto of group 1 increased the impacts on operational risk slightly, while fxato and toato decreased their effects. Compared to financial risk and operational risk, the effect of credible ERM on risk portfolio is more ambiguous in strategic risk. Among the six risk indicators, the correlation between strategic risk and rota, ocost, and fcost is enhanced, while for the others like npm, roic, and mcost, their correlation with strategic risk diminishes.

TABLE 3
Maximum likelihood estimates for risk portfolio

		Group 1: Firms with credible ERM			Group 2: Firms without credible ERM		
		Correlation	Covariance	P	Correlation	Covariance	P
Strategic risk Operational risk	<-->	-0.028	-0.946	0.034	-0.037	-1.095	0.069
Operational risk Financial risk	<-->	-0.025	-33.820	0.207	-0.102	-146.244	***
Financial risk Strategic risk	<-->	0.317	1.673	***	0.308	1.195	***

The correlation among the three categorical risks can also be regarded as evidence of the impacts of credible ERM on a firm's risk portfolio. It is shown in Table 3 that there is a strong correlation between strategic risk and financial risk for all the firms. However, the most significant variation is the downtrend in the interrelated nature of operational risk in both strategic and financial risks. Indeed, the relevance of operational risk to financial risk turned out to be insignificant. As interactions between categorical risks are potential risks for a firm, the weakening of relevance among risks in the portfolio can therefore be treated as the good performance of credible ERM in risk management.

TABLE 4

Maximum likelihood estimates for risk structure

	Group 1: Firms with credible ERM			Group 2: Firms without credible ERM		
	S.M.C.	S.R.W.	P	S.M.C.	S.R.W.	P
Firm performance <--- Strategic risk	0.946	-0.940	***	0.928	-0.936	0.185
Firm performance <--- Operational risk	0.946	0.020	0.009	0.928	0.005	0.690
Firm performance <--- Financial risk	0.946	-0.089	***	0.928	-0.078	0.187

Table 4 shows the estimates of categorical risks to firm performance so as to provide a brief understanding of risk structure existing in manufacturing firms. Based on a comparison within each group, it was found that strategic risk had the biggest impact on firm's performance, the contribution of which was as high as 93%. Besides, the correlation between financial risk and firm performance is higher relative to operational risk. However, the relevance of categorical risks to firm performance is nonsignificant in group 2. Even if the risk structure is confirmed to be a little

bit weak for firms without credible ERM, nevertheless, all the evidence argues that risk managers should give priority to strategic risk because it plays the most important role compared with the others.

In order to provide a more intuitive distribution of categorical risks in structure, this paper uses a simple formula to quantify the constitution of the three categories of firm performance. As the squared multiple correlations (S.M.C.) of firm performance for the two groups are 0.946 and 0.928, this means predictors such as strategic risk, operational risk and financial risk explain 94.6% and 92.8% variance of firm performance in these two groups. Hence the formula should be:

$$Distribution_{rj} = [Categorical\ Risk_{rj} \div \sum (S.R.W._{rj})] \times S.M.C._{rj}$$

Where distribution of categorical risk *r* in group *j* to the whole risk structure should be equal to standard regression weight of the categorical risk divided by summation of standard regression weights of all categorical risks and then multiplied by squared multiple correlation. Finically, the risk structure of group 1 constituted approximately 84.79% strategic risk, 1.76% operational risk and 8.03% financial risk, while the constitution of group 2 is roughly defined as 85.23% strategic risk, 0.41% operational risk, and 7.14% financial risk.

Compared with group 2, both operational risk and financial risk in group 1 increased their distributions to risk structure, and this could be interpreted by the upward trend of S.R.W of these categorical risks for firms with credible ERM relative to those firms without.

Table 5 reports the estimates for all the performance indicators in the MIMIC model. The S.R.W. of roa for both groups is greater than 0.9, therefore, it can be regarded relatively as the strongest indicator of firm performance. Besides, growth is also an important indicator for group 1, which describes 1 standard deviation change in the risk portfolio leading to 0.321 standard deviation changes in sales growth. However, the function of other indicators in group 1 is weak in relation to risk portfolio because their factor loadings are lower than 0.3. According to Hair's (1998) argument, one measurement variable where the factor loading is lower than 0.3 is not a significant indicator because it cannot even explain 9% variance of objective variable. Thus, the impacts of risk portfolio on firm size, Tobin's q, market position, cost of capital, stock price volatility, and change of market value are limited. In the same situation, all performance indicators, except for roa, are under 0.3 factor loading level in group 2. Consequently, all categories of risk faced by a firm will influence its performance in terms of profitability.

TABLE 5
Maximum likelihood estimates for firm's performance

		Group 1: Firms with credible ERM			Group 2: Firms without credible ERM		
		S.M.C.	S.R.W	P	S.M.C.	S.R.W	P
SIZE	<--- Firm performance	0.024	0.156	***	0.001	0.028	***
ROA	<--- Firm performance	0.919	0.959	***	0.964	0.982	0.173
TOBINQ	<--- Firm performance	0.005	0.070	***	0.008	0.090	0.204
POSITION	<--- Firm performance	0.012	0.108	***	0.000	-0.012	0.638
WACC	<--- Firm performance	0.000	0.009	0.584	0.001	-0.033	0.321
GROWTH	<--- Firm performance	0.103	0.321	***	0.078	0.280	0.181
VOLATILITY	<--- Firm performance	0.000	-0.004	0.755	0.006	-0.074	0.211
CHANGE	<--- Firm performance	0.013	0.116	***	0.011	0.104	0.178

In order to compare the two groups, the correlation between firm performance and roa, tobinq, wacc, and volatility in group 1 is mitigated in relation to group 2. This means that after improving credible ERM, a firm's profitability, market value, capital cost, and stock price are less exposed to variance in its risk portfolio. In contrast, size, position, growth, and change in group 1 are bigger than those in group 2. Nevertheless, one cannot say that credible ERM causes firms to lose advantage in terms of firm size, market share, sales growth and market value. It is appropriate to treat this as a limitation of the function of ICS in risk management. As the ERM framework has a relatively wide range of implications compared with the internal control framework, thus, maturity ERM programmes should add more potential value to a firm.

CONCLUSION AND RECOMMENDATIONS

This paper provides initial evidence of the potential effects of ERM on Chinese firms in the manufacturing sector. As the maturity stage of ERM programme is quite rare in China, therefore it treats integrated ICS as a sign of credible ERM. In order to examine the practicality and potential value of ERM, this paper examined it in three aspects: the impact of credible ERM on the relationship between different kinds of risk and a firm's risk portfolio; the influence of credible ERM on components of a firm's risk structure; and the function of credible ERM in correlation with risk portfolio and firm performance. Consequently, this paper found that credible ERM could help to mitigate the impact of risks on the risk portfolio by reducing the correlation between them. Since ERM is an extension of ICS, each individual risk might therefore contribute

fewer hazards to a firm as a whole after it has adopted maturity ERM programmes. It can be noted that Chinese firms, with or without credible ERM, are exposed to most of the risks from a strategic point of view. As ERM is a management activity related or linked to its strategic objective, a firm's risk ought to be well-controlled and well-managed with an effective maturity ERM framework. This paper also found that the strong negative relationship between risk portfolio and firm's profitability is reduced by credible ERM. Therefore, firms that could implement maturity ERM efficiently would be able to improve their profit potential.

The results of this paper have authentically shown the practicality and potential value of ERM in China based on the empirical evidence in the manufacturing sector. The analysis has provided a starting point for future research on ERM in China. However, there are several limitations that need to be addressed in this regard. One is the measurements at the effects of ERM, which are indirectly defined by the effects of integrated ICS. Even if ICS is argued to be the foundation of ERM, it can only be proven in some sectional functions in ERM programmes, and that makes quantification difficult and inaccurate. Another limitation is the determination of both risk and performance indicators. The non-availability of relevant data in China adds to the constraints on the selection of effective indicators. Thus, this paper has only demonstrated the relevance of the risk portfolio to a firm's profitability, which

is just one predictor of firm performance. Though profitability is a significant factor in firm performance, it is not necessarily the only one. In addition, the MIMIC model cannot represent firms without credible ERM as perfectly as firms with credible ERM (disclosed as nonsignificant estimates for some parameters); thus, this limitation affects the results as well. Accordingly, further research using more effective indicators will make important contributions to the body of ERM literature in Asia.

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Overcoming the Uncanny Valley Theory in Digital Characters Based on Human Attitudes

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ABSTRACT

The uncanny valley theory is an idea pioneered by Masahiro Mori in 1970 in relation to the psychological effects of lifelike robotics (Mori, 1970). The uncanny valley is a phenomenon that occurs in animation and robotic, wherein things that look extremely similar to the human face, but with slight differences from the natural appearance or the natural movements and expressions of humans, that are found to be disturbing, uncanny, and revolting (Mewes & Heloir, 2009). This study aimed to accomplish three goals: 1) analysing the participants' attitudes towards digital characters based on a series of validated semantic differential questionnaires; 2) developing a conceptual model focusing on overcoming the uncanny valley theory in computer generated digital characters based on empirical findings; and 3) validating the theoretical model by providing specific guidelines for overcoming the uncanny valley theory by avoiding negative human attitude responses. Based on results from 229 participants, this study examined the key factors of digital characters from games and movies which caused uncanny responses from the participants based on their attitudes. The structural model indicates that digital characters' facial expressions have the strongest influence on the participants' perceived humanness, followed by the stimulus's physical movements. Meanwhile, the digital characters' animated hair has the next strongest influence on the participants' familiarity, followed by its facial expression.

Keywords: 3D Animation Perceived Humaness, Psychology, Stylized Animation, Uncanny Valley Indices

INTRODUCTION

The uncanny valley theory is an idea pioneered by Masahiro Mori in 1970 in relation to the psychological effects of lifelike robotics (Mori, 1970). The name

the uncanny valley refers to the graph comparing human likeness and familiarity; familiarity increases as human likeness increases to a certain point, at which it takes a swift dive to the negative levels of familiarity when the likeness is extremely similar and yet not similar enough; familiarity then rises again as the likeness increases again, approaching the appearance of a natural human face (Mori, 1970). The key issues that need to be addressed in this study are the lack of studies in relation to moving and talking realistic digital characters based on participants attitudes' that have caused studios, designers and animators to opt for stylised digital characters so as to avoid negative emotional responses from viewers. The uncanny valley effect has also caused negative responses from audiences towards realistic but emotionless and lifeless digital characters such as Final Fantasy, Beaowulf and Polar Express, which have been an issue for production companies for the past few decades (Segaya & Nakashima, 2007). This study focused on developing a conceptual model focusing on overcoming the uncanny valley effect in computer generated digital characters based on empirical findings and validating the theoretical model by providing specific guidelines on overcoming the uncanny valley theory by avoiding negative human attitude responses.

RELEVANT RESEARCH

In attempting to prove or disprove the uncanny valley theory, many researchers have developed specific criticisms of the original uncanny valley, as expounded by Mori. In a study by Tinwell *et al*. (2011), for example, participants were shown videos of multiple characters and asked to rate them in terms of human-likeness and familiarity. The researchers in that study accepted Masahiro Mori's terminology (as it is commonly translated into English) of "familiarity" as a factor that is contrary to a sense of eeriness or discomfort with characters in the uncanny valley (Mori, 1970) despite the criticism of some that "familiar" and "eerie" are not self-evident antonyms or ambivalence about what exactly the chart of "familiarity" is meant to describe (Ho *et al*., 2008). Results of the study by Tinwell, Grimshaw, and Williams did not reveal an uncanny valley at all; in fact, the characters by and large increase their familiarity scores as they increase their human verisimilitude; the only dramatic exception was the character Mario from Mario Bros., who is emphatically non-human but received a very high score on "familiarity" possibly because he is a famous character in video games (Tinwell *et al*., 2011). However, the researchers themselves interpreted a valley as existing between the characters of Mario and Lara Croft, rather than seeing these two famous characters as unexpected spikes in the "familiarity" index compared to a larger number of non-famous characters. Tinwell, Grimshaw, and Williams' study would have been stronger, as they acknowledged, if they had included solely non-famous characters or had gathered data about

whether their respondents were already familiar with the characters in order to control for this particular variable.

Another criticism of the uncanny valley theory that animators have expressed is the theoretical closeness between uncanny realism and pleasing realism. This criticism is based on the fact that many animators choose to make their animated characters deliberately stylised in order to convey to the audience that they are not attempting to create a character that looks lifelike, and thus, paradoxically, to create a character that the audience can relate to (Geller, 2008). In this criticism, the problem is not that the uncanny valley is not supposed to exist, but that it is not placed accurately with regards to actual human responses, at least not based upon the professional experience of certain animators such as Kenn McDonald, who worked on both *The Polar Express* and *Beowulf* for Sony Pictures (Geller, 2008). Of course, this criticism is in essence similar to Mori's own recommendation that human-like items be prevented from being *too* close to human appearance in order to avoid falling into the uncanny valley (Mori, 1970): stylising the animations so that the audience is not distracted or turned off by wondering whether the characters on screen are in fact live action or not, or finding the characters to be eerie.

METHODS

In order to understand the effects of the uncanny valley on the participants' attitude towards digital animated characters, this study investigated the participants' attitudes towards digital stimuli. This study employed the quantitative approach based on semantic differential questionnaires. For the purpose of this research, the Perceived Humanness and Familiarity indices were developed by Ho and Macdorman (2011), while the other indices were modified and based on Ho and Macdorman's Uncanny indices. This study was conducted in Yahos Training Centre's conference hall. This venue was selected because it was the most convenient and cost effective for the organiser. The sampling method used for this study was the systematic sampling method, as we preferred participants with moderate knowledge of digital characters, either in games or movies. The participants consisted of gamers, university students, moviegoers and creative professionals, who aged between 18 and 35 years at the time of this study. The participants were invited through email, Facebook and telephone calls. The participants were requested to rate all the stimuli based on the questionnaires. Responses were saved in an Excel file, which was attached to the e-mail. The total number of participants was initially proposed at 300, but only 229 responded to the invitation to participate in the survey.

The five stimuli selected for this study consisted of female digital characters such as Ellie from "The Last of Us", Madison Paige from "Heavy Rain", Elastigirl from "The Incredibles", Digital Ellie by Image Metrics and finally the control stimulus, which was represented by a real person. In

order to avoid response bias, only female digital characters were chosen in this study. These characters are generally the heroines in the movies or games so as to enable the researchers to study the participants' attitudes towards the digital characters.

STRUCTURAL EQUATION MODELLING (RESULTS OF MEASUREMENT VALIDITY)

Principal component analysis was used because it helps to reduce the dimension of the data set by reducing the data into basic components. The Kaiser-Meyer-Olkin measure of sampling adequacy is .934, which is above the recommended value of .6, while the Bartlett's test of sphericity is significant $p < .05$). The communalities for all the indices are above 0.3, which concluded that all the items shared some common variance with other items. Based on the Pattern matrix table, all subscales are each loaded into its own factor, as follows: Facial, Rig, Hair, Eyes, Ligthing, Lip Sync. All the subscales loaded in the range of 0.65 to 0.97. The construct reliability and validity of the measurement model of this study were also calculated using SPSS software to check for its internal consistency. Construct validity test, which is essential to the perceived overall validity of the measurements, was divided into two subtypes: convergent validity and discriminant validity. Convergent validity tests determine whether the factors that are expected to be related are actually related, while discriminant validity test determines whether the factors which are supposed to be unrelated are actually unrelated. To test the factors convergent validity, we refer to the Pattern Matrix extracted from the SPSS output. Each of the eight factors achieved an average load of above 0.7, which indicated that the factors are related. For the discriminant validity tests, the Pattern Matrix indicated that there are no cross loadings among the factors. The component correlation matrix revealed that none of the factors had a correlation of greater than 0.7, indicating that there are no correlations between the factors. These discriminant validity tests concluded that each factor is unrelated which each other. Cronbach Alpha test is crucial to determine the validity of the study's psychometric test. The reliability analysis in the table below reveals that all the factors achieved an average Cronbach Alpha above 0.7, which is considered good in terms of internal consistency; therefore, we decided to maintain all the subscale indices for all the factors.

TABLE 1
Reliability Analysis

Cronbach's Alpha	N of Items	Factor
.887	3	Lip Sync
.881	3	Texture
.876	3	Hair
.846	3	Humanness
.799	3	Eyes
.856	3	Familiarity
.849	3	Movement
.758	3	Facial
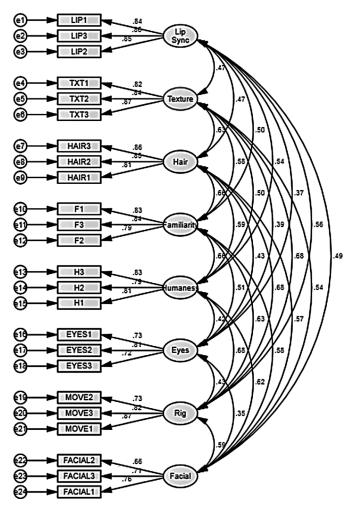
Fig.1: Final Measurement Model

CONFIRMATORY FACTOR ANALYSIS

The first step in a Confirmatory Factor Analysis (CFA) is to develop a decent measurement model based on the pattern matrix obtained from SPSS. By using the Pattern Matrix plugins for AMOS, a decent measurement model (see Fig.1) was obtained.

The next step of the confirmatory factor analysis is the analysis of measurement invarainc of latent constructs. Van De Schoot et al. (2012) stated that analysis of measurement invariance is important in order to determine where the latent variables are valid across groups. In this study, the groups were divided into 3 based on the stimuli, which are, realistic, stylized and all groups. The figure below shows that at least one of the loadings is non-significant.

The final measurement model of exogenous and endogenous was tested by assessing the fit indices. The CMIN/df for this model was 1.36, indicating a model fit. The comparative fit index (CFI) was 0.991 and the goodness of fit index (GFI) was 0.965. The adjusted goodness of fit index (AGFI) was 0.953. The mean square error of approximation (RMSEA) was 0.013. Meanwhile, all CFI, GFI, AGFI and RMSEA for this measurement model met the criteria for a model fit (Hu & Bentler, 1999). Then, the average variance of extracted (AVE) values were analysed for all the items. The AVE for all the items ranged from 0.51 to 0.72, which is above the cut-off value of 0.5. The CFA analysis confirmed that the data fit the hyphothesised measurement model.

RESULTS AND FINDINGS

Our descriptive analysis revealed that in terms of facial expression, the control stimulus achieved the highest ratings with an average rating of 4.0. This was followed by stimuli 4 (Digital Emily), with the mean rating of 3.93. Stimuli 2 (Madison Paige) achieved the lowest mean rating of 2.79. In terms of physical movements and rigging, the control stimulus once again achieved the highest mean rating of 4.14, followed by Digital Emily with 4.05 and stimulus 3 with 3.76. Stimulus 2 was rated the lowest with a mean rating of 2.6. Then, the participants rated the digital eyes with the control stimulus achieving the most desirable effect from the participants, with a mean rating of 4.03 followed in a distance

by stimulus 4 with a mean rating of 3.62. Madison Paige achieved the lowest mean rating of 2.86. For hair animations, Digital Emily surprisingly achieved better mean ratings than the control stimulus, with 4.6 and 4.46 mean ratings for the control stimulus. This was followed closely by stimulus 3 with a mean rating of 4.0. For lighting methods, stimulus 1, 3 and 4 were not significantly different from each other with the mean ratings of 4.5, 4.27 and 4.58, respectively. Stimulus 2 achieved the lowest with a mean rating of 2.92. Finally for the lip syncing factor, stimulus 1 achieved the highest rating with 4.7, followed by stimulus 4 with 4.02. Stimulus 3 and 5 were not significantly different from each other with the mean ratings of 3.97 and 3.77, respectively. Once again, Stimulus 2 achieved the lowest rating of 2.86.

This structural model shows how these factors affect the participants' attitudes towards digital characters. Our structural model achieved a good fit with CMIN/df of 1.365, RMSEA of 0.013, CFI of 0.991, GFI of 0.965 and AGFI of 0.953, which are based on Hu and Bentler (1999), who recommended that RMSEA should be <0.6 and CFI >0.9, while Baumgartner and Hombur (1996) recommended that GFI and AGFI should be >0.9. These show that our structural model has achieved a good fit.

In order to explore the relationship between the six factors and the participants' perceived humanness and familiarity, a structural equation model (SEM) was calculated. Based on the regression weight on the structural model based on all the

stimuli, lip syncing techniques had a non-significant effect on participants' familiarity towards the stimuli with ($r^2 = 0.089$, $p<0.05$). Meanwhile, other factors such as lighting and physical movements also had non-significant effect on participants' familiarity with ($r^2 = 0.118$, $p<0.05$) and ($r^2 = 0.184$, $p<0.05$). The next factor, which is hair animation, had a moderate significant effect on familiarity ($r^2 = 0.275$, $p>0.05$), while other factors such as digital eyes and facial animations had moderate significant effects on familiarity as well, with ($r^2 = 0.244$, $p>0.05$) and ($r^2 = 0.252$, $p>0.05$), respectively.

As for the participants' perceived humanness towards all the stimuli, factors such as physical movement and facial expression had high and significant effects on the participants' perceived humanness with ($r^2 = 0.487$, $p>0.05$) and ($r^2 = 0.366$, $p>0.05$), respectively. Hair animation also had a low significant effect on the participants' perceived humanness ($r^2 = 0.137$, $p>0.05$). Surprisingly, eyes and lighting had no significant effect on the participants' perceived humanness.

Based on the scatterplot data from SPSS, the participants' familiarity and perceived humanness had a positive and non-linear correlation. Evans (1996) suggested that $r = 0.8-1$ is a very strong value, while 0.6-7.9 is strong. Meanwhile, the R values which are below 0.4 are considered weak. For familiarity and perceived humanness, an r-value of 0.737 was achieved, which is considered as strong. This correlation indicates that the more realistic the digital characters are, the more familiar they are perceived by audience.
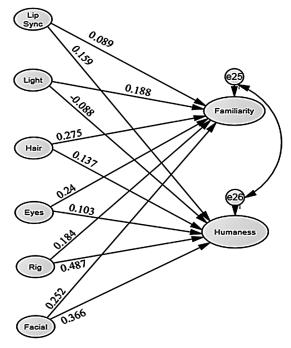
Fig.2: Structural Equation Model

DISCUSSION

This research focused on analysing participants' attitudes towards realistic and stylised digital characters in general and also developing a d test the structural model, including six animation factors and participants' attitudes towards the stimuli and the effects on their perceived humanness and familiarity. Our research began by developing an initial measurement model to measure human attitudes' towards different types of digital characters developed by well-established animation studios. After validating the measurement model, we proceeded with our data collecting process, which comprised 229 participants from various backgrounds and ages. The mean analysis indicated that Digital Emily achieved the highest mean ratings among the digital stimuli in terms of facial expression, physical movements, hair animation, digital eyes, lighting and lip sync. The second phase of the study adopted the SEM method to test the hypothesised relationships between all the factors. The structural model revealed empirical evidence that the three factors had significant effects on participants' familiarity, which included digital hair, eyes and facial expressions. The factors with significant effects on participants' perceived humanness were lip sync, digital hair, physical movements and facial expression. Digital characters that included detailed digital hair, digital eyes and facial expressions were found to have been perceived to be less eerie and uncanny by the audiences, thus overcoming the uncanny valley theory on those characters. Increasing realism in digital characters would require animators to add more details in lip sync movements, physical movements, digital hair and facial expressions of the digital characters.

IMPLICATIONS

The previous research by Macdorman, Green Ho and Kock (2008) indicated that realistic digital characters were not necessary eerie, which is against Mori's (1970) theory of the uncanny valley. Similarly, Seyama and Nagayama (2007) also stated that audience will not be repulsed by artificiality as it approaches lifelikeness, as long as the level of artificiality is uniform and there are no jarring elements. Their conclusion is supported by our findings which indicated that highly realistic digital character such as Digital Emily is able to achieve high ratings in terms of familiarity and realism. Tinwell, Grimshaw and Williams (2011) posited that the existence of an uncanny wall, rather than an uncanny valley, suggests that it is simply impossible for artificial methods to successfully approach human likeness to the point that people cannot tell the difference between the artificial and the real. Our findings have proven otherwise with the ratings of Digital Emily and the control stimulus as not significantly different from each other in terms of perceived humanness. Other theoretical implications of our findings also indicated that all the other factors, besides digital eyes such as facial expression, hair animation, physical animation and

lip syncing, are significant in causing the uncanny valley effects among human audience. In terms of methodological implications, our study has developed a validated measurement model which is based on six key factors in animations measured by the participants' attitudes in a semantic differential scale, which is a modified version of Ho and Macdorman's (2011) uncanny indices measurement model. This measurement model can be used by students or animators to measure the effectiveness of their digital characters based on the participants' attitudes and familiarity.

CONCLUSION

Based on the structural equation model (Fig.2), it can be concluded that students or animators should put more emphasis on the digital characters' facial expressions and physical movements so as to achieve desirable realism as both factors (facial expressions and physical movements) have high significant effects, with ($r^2 =$ 0.487; $p>0.05$) and ($r^2 =$ 0.366; $p>0.05$) respectively, on the participants' perceived humanness. If animators do not require a lot of realism (e.g., by using stylised animation), they should focus on the characters' hair animation and facial expressions, which were found to have significant effects on the participants' familiarity. Meanwhile, other factors such as digital eyes, modelling/animation and lighting manipulation should not be neglected. Thus, we proposed that animators and researchers who intend

to produce highly realistic animations emphasise on their characters' facial expression and physical movements, in addition to desirable hair animation and lip syncing to avoid the uncanny valley.

SIGNIFICANCE OF THE RESEARCH

This research has extended our knowledge in the creative industry, especially in animation, by providing empirical evidence on how various types of digital characters affect viewers' attitudes towards them. This research has also confirmed that the Digital Emily Project developed by Image Metrics is currently the most realistic digital character perceived by human audience and familiarity. This model can also be referred to by novice animators as a guideline for their animation production process in order to avoid any uncanny effect from audience. This model can be referred to by animators, while modelling realistic digital characters instead of avoiding it altogether and opting for stylised animation as sales demand for realistic digital characters are increasing especially in digital games.

FUTURE RESEARCH

Future research should focus more on types of digital characters as the stimuli to study participants' attitudes based on these digital characters. This will allow participants to compare more stimuli and allow them to make better judgement in terms of ratings. The current structural model is based on 5 stimuli, with one of the stimuli as the control stimulus. Besides that, future researchers should conduct

a survey on a dedicated website to allow more participants around the world to take part in the survey. Finally, interactive digital characters should be included as the stimuli for future research in order to study the interactions between digital characters and participants' emotions and attitudes.

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SOCIAL SCIENCES & HUMANITIES

Analysis of Decision Making on Selection of the Social Networking Sites by College Students

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ABSTRACT

The high internet usage from college students has drawn the attention of different marketers. However, research pertaining to statistics of social media usage among youngsters, especially college students in Malaysia and their choice in social networking sites (SNSs), are still very few. The objective of this paper is to study the choices and the prioritised criteria in choosing SNSs among college students by using Analytical Hierarchy Process (AHP). Findings revealed that privacy attention and awareness are rapidly increasing among college students since privacy threats could hardly be ignored.

Keywords: Social networking sites, students' preference, Analytical Hierarchy Process (AHP)

INTRODUCTION

Billion of people are using social networking sites (SNSs) such as Facebook, Twitter, Google+, and Instagram to connect with friends and family, share photos and videos, or exchange ideas every day. According to the statistics by Statista (2014a), 1.82 billion of global social

networking users were reported in 2014, which is an increase from 1.61 billion users in 2013. Facebook was reported to be the main dominant social network and market leader throughout the years and has successfully surpassed one billion registered accounts. The president of the Malaysian Digital Association (MDA) reported and presented the current social media usage in Malaysia (Wong, 2014). Out of the total population of 29.9 million Malaysians, 61.7% or 17.7 million of Malaysians were Internet users, while 41% or 15.2 million of them were users of most popular SNSs. Also, young adults in the age

category of 15-24 years formed the highest percentage of online users compared to the other categories.

Generation Y, who are mostly students, have grown up with SNSs. Undeniably, the high usage from users of this age group has drawn the attention from different marketers (Berthon *et al.*, 2012). Various international corporations are also keen to make effective marketing strategies in SNSs to target youngsters (Li *et al.*, 2007). In fact, more and more marketers are using social media as an important and indispensable tool for marketing and for building up good interaction platform with their potential customers. Marketing and advertising in SNSs are apparently the most important future business trends. Nonetheless, research done on priorities, preferences, concerns and users' behaviours of social networking usage among Malaysian youngsters, especially college students in Malaysia, remains scarce. As a result, marketers have difficulties to applying effective marketing strategies without understanding their users' behaviour in the SNSs. Multiple researchers have identified the importance of studying the SNSs users' behaviour in applying effective marketing strategies in SNSs (Lorenzo-Romero *et al.*, 2011; Chu & Kim, 2011; Vinerean *et al.*, 2013). A study of SNSs users' behaviour can be done by analysing their selection criteria and the priority choice on SNSs. The objective of this paper is to analyse the choices and the priorities of criteria among Malaysia college students in choosing SNSs. As a practical implication, the findings can definitely shed

some light to keen marketers to expand their businesses and apply effective marketing in Malaysia through SNSs.

LITERATURE REVIEW

The study of the selection criteria and choices in SNS is significantly important and essential as it discloses their priorities, preferences and concerns in relation to their SNSs users' behaviour and consumers' behaviour. Nevertheless, research pertaining to selection criteria for SNSs are limited. Hence, inferring and identifying any possible criteria in choosing SNSs among college students are important and these can be done by referring to past studies done on website evaluation and selection criteria, which are the most popular activities in social media networks and their significant concern over SNSs.

Pempek *et al.* (2009) investigated the typical activities of college students on Facebook and the results indicated that although college students spent quite a lot of time posting latest personal news updates, they preferred viewing or reading the content/information posted by their friends without communicating in any way. They used SNSs to read the latest news updates on what have been done by friends and see at the pictures posted by others. Kayahara *et al.* (2007) highlighted that the gratification of looking at contents on the Internet was from acquiring information from others. Meanwhile, Lampe *et al.* (2006) investigated the primary use of the SNSs by conducting a survey among 2000 students and concluded that they mainly used the functions of

"social searching" and "social browsing". Students frequently used the social networks, especially Facebook, to organise offline meetings and different kinds of events in their college. The studies by Lenhart and Madden (2007) and Wiley and Sisson (2006) also revealed that college students primarily use Facebook to connect friends, with those whom they meet frequently, rarely seen or to make new friends.

Flavián *et al*. (2006) commented that the greater the usability of the website, the higher the chance of remaining loyal by the Internet users. The well design and usability of the website will certainly generate users' experience with a great sense of satisfaction. Great usability of the websites will offer more sense of security and confidence to the website. Therefore, winning the loyalty from the customers has become the main objective to bring the greater success to the business. Abdul Hamid (2008) and Casaló *et al*. (2008) carried out similar research and agreed that there is a positive relationship between perceived usability by customers and their loyalty to the internet banking website. In particular, the degree of trust, satisfaction and loyalty will greatly be increased and enhanced when they use easy-to-use e-commerce websites. The research further implied that user-friendly website will continuously bring the highest business value to the companies.

Ishak *et al*. (2012) and Gross and Acquisti (2005) reported increased high privacy concern and high security awareness among the undergraduate students in Malaysia and Canada on SNSs.

Ishak *et al*. (2012) concluded that college students generally had high awareness on privacy settings when they used SNSs. Young and Quan-Hasse (2009) also revealed the significant privacy concern in Facebook from the respondents. They were afraid that any unknown parties with potentially harmful purposes might abuse their personal information. Katona *et al*. (2011) modeled the diffusion of the social networks and asserted that the adoption decision to particular social networks of individuals was affected by the level of connection in the group of adopted users (clustering effect). The two studies indicated that the popularity might be the possible criterion used in choosing the particular social networking site.

Neilsen (2012) tabulated the data of Top 5 U.S SNSs via mobile web, social networking apps and PC and found that Facebook and Twitter were ranked in the first and the second places. In the survey results from the Pew Research Centre, Duggan (2013), the senior researcher compared users' statistics for SNSs and reported that Facebook was still dominant in 2012 and 2013. College students were accounted for the high percentages of the total Facebook and Twitter users. Facebook was still the main dominant and market leader throughout the years and has successfully surpassed one billion registered accounts to date.

METHODOLOGY

Research Design

Fig.1 shows the research design consisting of a detailed description of this study.
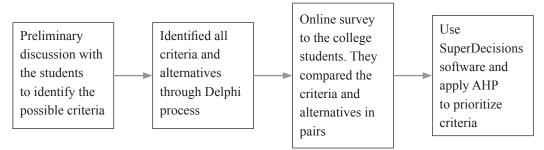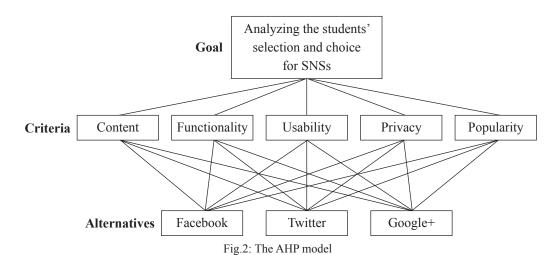
Fig.1: Research design

After the preliminary discussion, five criteria (content, functionality, usability, privacy and popularity) and three alternatives (Facebook, Twitter and Google+) were identified. Then, the online survey was distributed to college students from different public and private universities in Malaysia. A total of 60 college students consisting 27 males and 33 females participated in this study. Through the online survey, they compared the relative importance and preference with respect to the criteria and alternatives using the scale ranging from 1 to 9 on both ends. Finally, all the data from the online survey were computed into SuperDecisions software and analysed using the Analytical Hierarchy Process (AHP) to obtain the priorities of the criteria and alternatives from the 60 college students.

Conceptual Framework of the AHP Model

The analytic hierarchy process (AHP) is a useful decision making tool originated from Thomas Saaty. It can be applied to a problem that involves a number of selection criteria and multiple-choice alternatives. In particular, AHP can arrange all the criteria and alternatives in a hierarchical form, compare two criteria or alternatives in a pair, and calculate the priorities of individual criteria and alternatives (Saaty, 1990, 2006). The AHP model for this study could be constructed as shown in Fig.2 below.

Fig.2: The AHP model

The main research objectives of this study are to figure out the priorities of the criteria in choosing the SNSs and the priorities of their choices between Facebook, Twitter and Google+. In order to achieve these, college students answered the pairwise comparison questions pertaning to the criteria and the alternatives through the online survey. To apply the AHP method according to Saaty (1990), the w_i, the weight of the criterion (i) and w_j, the weight of the criterion (j) would be computed to get the score of a_{ij}, and the relative importance of the criterion on row (i) over the criterion on column (j). This process will eventually generate the pairwise comparison matrix as shown in Equation (1) below.

$$A = \begin{pmatrix} w_1/w_1 & w_1/w_2 & \cdots & w_1/w_n \\ w_2/w_1 & w_2/w_2 & \cdots & w_2/w_n \\ w_n/w_1 & w_n/w_2 & \cdots & w_n/w_n \end{pmatrix} = \begin{bmatrix} 1 & a_{12} & \cdots \\ a_{21} & 1 & \cdots \\ \cdots & \cdots & \cdots \\ a_{n1} & a_{n2} & \cdots \end{bmatrix}$$

(1)

Next, the matrix operation of $Aw = \lambda_{max} \cdot w$ (2) was computed for the pairwise comparison of the criteria and the alternatives, where λ_{max} is the eigenvalue of A and w is the eigenvector of A. W is the main goal as it shows that value of the priorities for the criteria and alternatives.

$$Aw = \lambda_{max} \cdot w = \begin{pmatrix} w_1/w_1 & w_1/w_2 & \cdots & w_1/w_n \\ w_2/w_1 & w_2/w_2 & \cdots & w_2/w_n \\ \cdot & \cdot & & \cdot \\ \cdot & \cdot & & \cdot \\ w_n/w_1 & w_n/w_2 & \cdots & w_n/w_n \end{pmatrix} \begin{pmatrix} w_1 \\ w_2 \\ \cdot \\ \cdot \\ w_n \end{pmatrix} = \lambda_{max} \begin{pmatrix} w_1 \\ w_2 \\ \cdot \\ \cdot \\ w_n \end{pmatrix}$$

(2)

Lastly, the value inconsistency level that indicating the consistency and reliability of the set of pairwise comparison by the college students were carried out. According to Saaty (1990), inconsistency ratio of about 10% or less is allowed to accept the estimate of w.

RESULTS AND DISCUSSION

In this chapter, the basic background of the surveyed college students is firstly reported. Then, the outcome of the priorities of the criteria and alternatives in choosing the SNSs for college students are presented in tables. Finally, the observations and implications of the AHP results are further discussed in details. In term of gender, the total number of female respondents (55%) was slightly higher than the male respondents (45%). In particular, 55% of the respondents spent around 3 to 5 hours a day for social networking sites. Only 3.33% of them used the sites less than one hour per day. The statistic indicates that most of the college students are heavy users doing different activities in social networking sites.

TABLE 1
Overall synthetised priorities

No.	Criteria	Priorities
1	Privacy	0.40804
2	Functionality	0.17915
3	Usability	0.16749
4	Content	0.13062
5	Popularity	0.11471

TABLE 2
Priorities of alternatives of criteria

Alternatives	Priorities
Facebook	0.49593
Twitter	0.26624
Google+	0.23783

As for the AHP results, all the pairwise comparison matrices showed a highly acceptable inconsistency ratio of 0.00192 compared to a benchmark of 0.1. This finding illustrates that the college students' set of judgments were highly consistent and reliable. Table 1 and Table 2 illustrate the overall synthetised priorities of the criteria and alternatives in choosing the SNSs by the college students in the AHP model. The criterion of privacy (0.40804) was found to be the top priority when the college students chose SNSs, followed by functionality (0.17915), usability (0.16749), content (0.13062), and popularity (0.11471). As for the priorities of alternatives by considering the criteria, the college students were more likely to choose Facebook as their first choice (0.49593), followed by Twitter (0.26624) and Google+ (0.23783).

An unanticipated finding of this study revealed the privacy was the top priority of concern over the criteria of content and functionality, which are usually the most important concern in using or buying goods and services. This research outcome is congruent with the findings from Ishak *et al*. (2012) and Gross and

Acquisti (2005) that reported the high privacy concern and security awareness on SNSs among undergraduate students in Malaysia and Canada. However, only little exsisting literature was found pertaining to the result of this concern. Noteworthy contradictions exist between the finding of this study and results described by Pempek *et al*. (2009) and Kayahara and Wellman (2007) for the concern of content and Lampe *et al*. (2006) and Wiley and Sisson (2006) for the interest of functionality. This rather contradictory result may be explained by the rising cybercrimes for the past few years. According to the statistics on reported incidents based on general incident classification statistics 2012 and 2013 from Malaysia Computer Emergency Response Team (MyCERT, 2012 & 2013), the number of different cybercrime incidents had a significant increase from 9,986 cases in 2012 to 10,636 cases in 2013. The cybercrime indeed triggered the awareness of the college students in relation to the importance of privacy in using the Internet. They are afraid of the personal information or activities shared in the social media being misused or abused by any unknown third parties. Therefore, college students eventually had the highest concern in the criteria of privacy when they choose the SNSs.

In order to protect the privacy information not being misused or abused by the parties, the Government of Malaysia started implementing Personal

Data Protection Act 2010 (PDPA 2010) in 2014. According to the act, marketers have to get the consent from consumers before collecting, storing and processing their personal and private data or information for commercial purposes. In a nutshell, this research finding revealed that privacy attention and awareness are rapidly increasing among college students since the privacy threats should not be ignored. Marketers have to take students' psychological feelings and concern account in planning the effective marketing strategies. This compelling finding also signifies the importance of website security when marketers are selling the goods and services to consumers. Marketers are advised to adopt the trusted and safe money transaction system to enhance its overall protection of the communication content, payment details and customers' personal and private information. VeriSign, GeoTrust, EnTrust and TrusE are appropriate options for marketers to enhance the security of money transaction. As a result, college students who have high privacy concern will have more confidence in the goods and services provided by the marketers.

The second priority in choosing SNSs is the criterion of functionality (0.17915), followed by usability (0.16749). These two criteria are significantly less important than privacy (0.40804). The lower priority of functionality may be due to the similar functions provided by most popular SNSs. This explanation is also

supported by Richter and Koch (2008). Consequently, college students might not find any crucial difference for different SNSs and therefore assigned the lowest priority for the criterion of functionality in choosing the sites. A noteworthy outcome is the minor difference of the priorities between functionality and usability discloses the users' expectation in depth. They may expect the great functionality of the site should be accompanied with the great usability as well to optimise comprehensive users' experience.

A good content can keep users engaging with the website continuously, but Internet users may usually get similar posts and news in most popular SNSs. This reason, therefore, explains the low priority of the criterion of content. The lowest priority of popularity can be attributed to the reason that most college students are the users of most of popular SNSs. Hence, the choice of the sites may not be affected by their popularity. Finally, the results indicating Facebook as the dominant among college students corroborates with the findings of Duggan (2013) and Statista (2014b). Thus, marketers should spend more efforts and focus on marketing on Facebook.

CONCLUSION

This paper has further investigated the research issue of SNSs users' behaviour by Lorenzo-Romero *et al.* (2011), Chu and Kim (2011) and Vinerean *et al.* (2013)

from the perspective of the choices and the prioritised criteria in choosing SNSs among college students in Malaysia. As a conclusion, college students in Malaysia have high privacy concern in choosing SNSs compared to other related criteria and their prefer Facebook over the other social sites. Student market as the highly lucrative market is definitely the most important target for most marketers. Therefore, marketers should wisely make use of SNSs to expand their businesses and build up customer relationship and brand reputation in this competitive emerging student market. However, marketers should take into account the privacy concern of the students in marketing. Unwelcome calls and disturbances from marketers will certainly cause them to lose their business opportunities in the student market. Finally, this paper has brought extraordinary business commercial value to marketers. By setting up the right marketing priorities (Facebook), meeting and identifying the customers' needs (privacy concerns), marketers will have more business opportunities and unlimited potential through SNSs.

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SOCIAL SCIENCES & HUMANITIES

Intrinsic Motivation as a Mediator on Accounting Information System Adoption

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ABSTRACT

This paper investigated intrinsic motivation as a mediating factor of the relationship between CEO characteristics and accounting information system adoption in the SMEs of Libya. The adoption model with mediation was tested with a sample of 348 top level managers and owners of SMEs. Understanding the main determinants of accounting information system adoption for SMEs is very crucial, whereas characteristics of CEO play a significant role in identifying users' behavioural intention for technology adoption. For this purpose, structural equation modelling approach was applied using quantitative research design. Findings supported intrinsic motivation as partially mediating between CEO's characteristics and users' behavioural intention. Therefore, motivating users intrinsically by providing knowledge, innovativeness and trust will have an effect on Accounting information system (AIS) implementation in the organisational context.

Keywords: Intrinsic motivation, AIS adoption, behavioral intention, Libya

INTRODUCTION

Adoption of technology, especially in SMEs, is considered as an important issue as most of them are unable to adopt the technology due to financial

and organisational obstacles. Accounting information system is a tool that incorporates the field of information system and it is designed to help and control the management on economic and financial aspects. The adoption of ICT at all levels is an essential factor in advancement plan of Libya (Rhema & Miliszewska, 2010). In fact, it is very crucial for the SMEs of Libya to deal with uncertainty and competitiveness by improving their system and having the necessary processing

capacity to increase the quality of information required (Hunaiti *et al.*, 2009, p. 37).

The Libyan private individual sector and SMEs in particular lack business know-how and face problems of economies of scale, as well as poor managerial, financial and marketing capabilities. The adoption of technology in the developing country like Libya has been heavily investigated in terms of attitude and behaviours in the past decades. Thus, it is expected that the adoption of new technology by companies in Libya will be improved if the technology is perceived to be compatible and easy to adopt. In other words, CEOs possessing sound IT knowledge are able to assess awareness through knowledge that will increase their confidence facilitating in adopting new technology. On the contrary, lack of IT knowledge will lead to uncertainty, which in turn will limit the adoption of technology. CEO IT knowledge plays a crucial role in the identification of benefits of innovation adoption.

As a result, increasing AIS investment in SMEs has been seen as advantageous for achieving a stronger, more flexible corporate culture to face the persistent environmental changes facing these firms (Grande, Estébanez, & Colomina, 2011). Thus, this study investigated the impacts of CEO's characteristics (CEO IT knowledge, CEO IT innovativeness and CEO Trust in IT) on their behavioural intention to adopt AIS in Libyan SMEs with the mediating effects of instrinsic motivation.

LITERATURE REVIEW

In the past decades, studies on adoption of technology in developing countries like Libya have heavily focused on attitude and behaviors Thus, it is expected that the adoption of new technology by companies in Libya will be rapid if the technology is perceived to be compatible and easy to adopt.

Twati and Gammack (2006) examined the role of the accounting system through social and cultural factors and confirmed the importance of awareness of cultural context in the role of accounting information system in Libyan companies. Furthermore, Hosen, Hui, Suliman, and Rahman (2011) mentioned that demographic characteristics and societal culture of management team in privatised small and medium firms have significant effects on the use of management control system. Despite the importance of the accounting information for competitive advantage in a dynamic environment of SMEs, SMEs have not strategically used accounting information to their advantage.

Moftah, Hawedi, Abdullah, and Ahamefula (2012) examined the challenges of security, protection and trust on online purchasing in Libya and reported that the nature of online transaction in Libya was constrained due to instability resulting from insecurity, trust and unprotected transactions. In other words, the lack of trust among online consumers to purchase via online has discouraged them to do so. On the contrary, Orens and Reheul (2013) found that CEOs' positive attitude towards change and innovation and factors like experience, CEOs' tenure and education

did not have any association with the level of holding cash. Meanwhile, Said and Noor (2013) mentioned that lack of trust in online services and lack of infrastructure, feeling insecurity about their personal information and poor knowledge are great challenges for e-commerce adoption in the hotel industry of Libya. Abukhzam and Lee (2010) factors affecting bank staff's attitude towards adopting e-banking technology in Libya and concluded that they would be happy to adopt e-banking technology if the technology was easy to use and could assist them to accomplish their tasks effectively. Abdelali (2013) investigated the role of management in the adoption of cost accounting system and found factors like lack of experienced personnel for the identification of cost centres, outdated method for calculating cost, and ignorance of cost accounting by the management as they do not know the functions as some reasons for not using the system. They further concluded that the management must be consistent in using the accounting system.

Meanwhile, Esa *et al*. (2009), Venkatesh (2000), and Wixom and Todd (2005) found that "successful IT investment leads to increase productivity, while failed systems lead to undesirable effects such as financial losses and dissatisfaction among employees". Hence, information system (IS) and information technology (IT) are considered as a competitive advantage which are crucial for businesses (Rouibah, Hamdy, & Al-Enezi, 2009). Similarly, Ramayah *et al*. (2002) argued that systems

which are not utilised would result in expected efficiency and effectiveness gains. Information technology is used as a way to achieve quality advancement and as a cost effective strategy. AIS is also helpful for the internal and external users by providing valuable information of accounting data (Sharkasi & Wynn, 2011). After the establishment of a new government that emphasises on economic growth and focusing their importance on SMEs, it has been viable for the SMEs to be innovative in both technological and financial aspects. Thus, the main objective of this paper is to identify the mediating effects of intrinsic motivation on users' or decision makers' intention to adopt AIS in SMEs.

CEOs' Knowledge of IT

Knowledge refers to an individual's extent of theoretical knowledge that can be used to improve his ability and skills to best perform his tasks. Ghobakhloo *et al*. (2012) suggested that CEOs' knowledge and experience of IT affect the adoption of IT in SMEs. Similarly, Chuang, Nakatani, and Zhou (2009), Drew (2003), Ghobakhloo, Benitez-Amado, & Arias-Aranda (2011), and Thong (1999) suggested that CEOs' knowledge and experience of CEO affect IT adoption in SMEs. It was also suggested that in order to reduce any uncertainty related to acceptance towards IT, adoption must certainly be increased. Studies carried out by Chan and Ngai (2007), Jeon, Han, and Lee (2006), Thong and Yap (1995) revealed that CEOs' knowledge of IT is crucial for IT adoption.

CEOs' IT Innovativeness

Diffusion of innovation (DOI) theory highlights the innovation or technological factors affecting adoption. As indicated earlier on, CEO or owners of SMEs play an important role for IT adoption. According to Thong and Yap (1995), the willingness of adopting innovative system is crucial in order to ensure its acceptance. In other words, CEOs' perception and attitude towards innovation and new technology acceptance is crucial for IT (Damanpour, 1991). Furthermore, Venkatesh *et al*. (2003) mentioned that IT use behaviour was well disclosed by the UTAUT and suggested that future experts should continue validating their model. Similarly, Hameed and Counsell (2012) also mentioned that in small businesses, the CEO is usually the owner and the sole decision maker; therefore, CEO's innovativeness and involvement contributes to the success of any IT adoption process (Poon & Swatman, 1999). Innovative CEO's are more willing to take risks and prefer solutions that have not been tested previously (Thong, 1999). A review of the past literature indicated that CEOs' innovativeness significantly and positively influenced the adoption of IT (Mirchandani & Motwani, 2001).

CEOs' Trust in IT

Trust is defined as an intellectual state that individuals have to accept susceptibility based on their feelings that due to their competence, benevolence, integrity and predictability, their product will be accepted by the customers (Al-Somali,

Gholami, & Clegg, 2009; Corritore, Kracher, & Wiedenbeck, 2003; Sukkar & Hasan, 2005). In order to predict the intention of users, trust is the primary factor and prior importance for outsourcing relationship between the management and customers. Furthermore, Kim, So, and Lee (2007) suggested trust plays an important role in maintaining business relationship and increasing open communication with greater satisfaction. Zhu *et al*. (2009) mentioned that trust leads to increase in intention, whereby reduction in perceived risk will reduce perceived risk and increase the intention to adopt the system. Pavlou (2003) stated that due to high level of uncertainty, the involvement of trust is crucial for e-commerce adoption.

Intrinsic Motivation

Ryan and Deci (2000) define intrinsic motivation as doing something that is interesting and enjoying. Acording to Willis (2008), as technology becomes more intrinsic to the functioning of an organisation as a whole, the ability of employees to integrate the new technology into their workflow becomes an ever-larger determinant of its success. A critical review of TAM by Davis (1989) revealed that there is a need to include other components to provide a bigger vision and a better explanation of IT adoption. Venkatesh *et al*. (2003) also redefined TAM within a motivational framework; both extrinsic and intrinsic motivations as predictors of behavioural intention to use was included as the motivational framework. Motivation

is the internal process that increases behaviour providing energy and direction to individuals (Riva, 2001). Meanwhile, other researchers such as Teo, Lim, and Lai (1999), Venkatesh (1999), and Webster (1989) found the worth of both the role of enjoyment (a form of intrinsic motivation) in workplace computing. Davis *et al*. (1992) suggested that people spend effort with both extrinsic and intrinsic motivation.

RESEARCH METHODOLOGY

Thıs study is a descriptive research to investigate the mediating effects of intrinsic motivation between CEO IT characteristics and users' behavioural intention on AIS adoption. After extracting the missing data and performing data screening, the sample consisted of 348 top management officers having the power of decision making on technology adoption in their organisation. The survey participants were targeted with stratified purposive sampling technique addressed by Krejcie and Morgan (1970). With the focus on positivist paradigm and quantitative research design, scientific prediction is generated with valued objectivity, the study is supported by a significant number of works including those by Moskovsky *et al*. (2009), Osofsky, Bandura, and Zimbardo (2005), and Vollum, Longmire, and Buffington-Vollum (2004). In specific, measurement items for intrinsic motivation were adopted from Moskovsky *et al*. (2009), CEO characteristics constructs were extracted from Thong, Yap, and Raman (1996) and behavioural intention items were obtained from Fagan, Neill, and Wooldridge (2008) and Saadé and Bahli (2005) that are based on a ten point likert scale, where 1 = strongly disagree and 10 = strongly agree.   Five items for intrinsic motivation as mediating variable towards behavioural intention, five items for behavioural intention, five items for CEOs' IT knowledge, nine items for CEOs' IT innovativeness and six items for CEOs' trust in IT were included in this investigation on AIS adoption (see Appendix). Furthermore, all the measurement items were modified in the context of AIS adoption in Libyan SMEs.
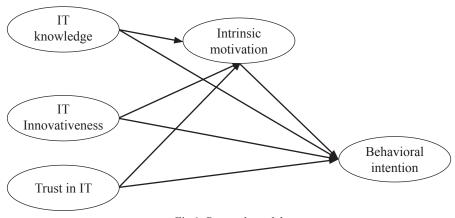
Fig.1: Research model

DATA ANALYSIS

Firstly, respondents' data were analysed by performing mean, standard deviation, composite reliability and validity analysis using average variance extracted (AVE) for the variables. Meanwhile, common method variance (CMV) analysis was performed to detect response bias and multicollinearity issues of the variables. The hypotheses were tested with confirmatory factor analysis (CFA) using structural equation modelling (SEM).

Common Method Variance Analysis

The model was tested using common method variance analysis to detect response bias for the measurement items. A technical review of the model for controlling method variance was developed using analysis of moment structure (AMOS) version 21.

Common method variance refers to the variance that is attributable to the measurement method rather than to the constructs the measures are supposed to represent. Method biases are one of the main sources of measurement error, and most researchers agree that a common method variance is a potential problem in behavioural research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). From the common method covariance analysis, it was found that the model did not fit and was worse (Blasius & Thiessen, 2012; Campbell & Fiske, 1959). This indicates that there is no multicollinearity or response bias issue. Thus, the research was proceeded with further analysis.

Mean, Standard Deviation, Reliability and Validity Assessment

After the analysis of uni-dimensionality of the constructs with total measured items is achieved each of the constructs is assessed for their reliability and validity (Hair, Ringle, & Sarstedt, 2013). Reliability is assessed using composite reliability (CR) and average variance extracted (AVE) for validity using construct.

TABLE 1
Assessment of the measurement model

Variable instruments			Mean	SD	Estimate	C.R.	AVE
IM1	←-	IMM	8.540	1.177	0.849	0.879	0.597
IM2	←-	IMM	8.610	1.294	0.872		
IM3	←-	IMM	8.570	1.351	0.847		
IM4	←-	IMM	8.000	1.524	0.680		
IM5	←-	IMM	7.630	1.613	0.571		
CII1	←-	CII	7.930	1.420	0.845	0.948	0.612
CII2	←-	CII	7.540	1.492	0.817		
CII3	←-	CII	7.580	1.668	0.824		
CII4	←-	CII	7.480	1.494	0.817		
CII5	←-	CII	7.490	1.323	0.712		
CII6	←-	CII	7.230	1.534	0.731		
CII7	←-	CII	7.540	1.423	0.717		

TABLE 1 (continue)

						CR	AVE
CII8	←-	CII	7.680	1.389	0.805		
CII9	←-	CII	7.650	1.468	0.751		
CIK1	←-	CIK	7.400	1.265	0.690	0.820	0.533
CIK2	←-	CIK	7.600	1.235	0.727		
CIK3	←-	CIK	6.400	1.790	0.683		
CIK5	←-	CIK	6.340	1.507	0.814		
CTI1	←-	CTI	7.310	1.646	0.636	0.875	0.540
CTI2	←-	CTI	7.940	1.444	0.714		
CTI3	←-	CTI	7.730	1.460	0.702		
CTI4	←-	CTI	7.750	1.525	0.819		
CTI5	←-	CTI	7.640	1.429	0.786		
CTI6	←-	CTI	7.660	1.468	0.739		
BI1	←-	BII	8.530	1.147	0.865	0.911	0.672
BI2	←-	BII	8.690	1.122	0.803		
BI3	←-	BII	8.630	1.118	0.841		
BI4	←-	BII	8.450	1.330	0.813		
BI5	←-	BII	8.740	1.197	0.773		

Note: CR – Composite Reliability, SD- Standard deviation, AVE – Average variance extracted, IM – Intrinsic motivation, CIK – CEO IT knowledge, CII- CEO IT innovativeness, CTI-CEO trust in IT, BI-Behavioural intention

Composite reliability was used as an indicator to determine the reliability of the measurement scale of CEOs' IT Innovativeness, CEOs' IT knowledge, CEOs' Trust in IT, perceived usefulness, perceived ease of use, intrinsic motivation, extrinsic motivation and behavioural intention. The value of composite reliability was above (0.70) and AVE was above 0.50, as recommended by Bagozzi and Yi (1988), suggesting further support of the reliability of the constructs. In similar fashion, all the items showed high beta coefficients of above 0.60 and were therefore confirmed to be having high factor loading. Furthermore, the correlations between the variables are not higher than 0.85; this means there are no multicollinearity issues between them.

Thus, the overall the measurement model between exogenous constructs (CEO IT knowledge, CEO IT innovativeness and CEO trust in IT) and endogenous construct is confirmed and fit.

Structural Model

In the context of AIS adoption and behavioural intention of users, the research model shown in Figure 1 was analysed using AMOS structural equation modeling software tool. The direct effect of CEOs' characteristics on behavioral intention is indicated by the beta value. The results illustrated in Fig.2 confirmed that behavioural intention is predicted by three factors of CEOs' characteristics.
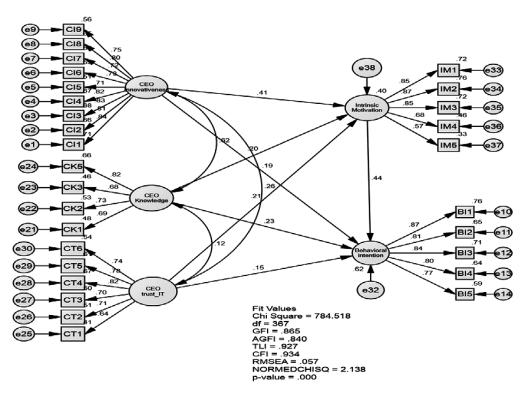
Fig.2: Structural model for the variables

Meanwhile, the structural model between CEOs' characteristics constructs and behavioural intention through intrinsic motivation as mediator is depicted in Figure 2. After modifying some items that made correlations between them, the model was made fit. The goodness of fit indices for the 29 items of CEOs' IT knowledge, CEO's IT innovativeness, CEOs' Trust in IT, intrinsic motivation and behavioural intention, the structural model confirmed the acceptance level (significance < 0.5) as the result of the standardised regression weight.

CFA results of intrinsic motivation as mediator with exogenous constructs CEO characteristics showed that the chi-square was significant ($x^2 = 801.267$, $x^2 / df = 2.177$). The GFI was .862, AGFI = 0.837, TLI = .925, CFI = .932, RSMEA = .058. Based on the results of the Structural Model given in Table 2, it can be seen that the AGFI (0.8) (Acceptable fit criteria) and RMSEA are less than (0.08) (Hooper, Coughlan, & Mullen, 2008). This finding shows that the measurement model has a good fit with the data (Anderson & Fornell, 1994).

TABLE 2
Standardised regression weights of intrinsic motivation as mediator

Variables			Estimate	Beta	S.E.	C.R.	P
Intrinsic motivation	<---	CEO Innovativeness	0.394	0.451	0.061	6.456	***
Intrinsic motivation	<---	CEO Knowledge	0.176	0.149	0.080	2.189	0.029
Intrinsic motivation	<---	CEO trust IT	0.238	0.239	0.053	4.494	***
Behavioral intention	<---	CEO Innovativeness	0.153	0.177	0.048	3.171	0.002
Behavioral intention	<---	CEO Knowledge	0.177	0.151	0.061	2.880	0.004
Behavioral intention	<---	CEO trust IT	0.107	0.108	0.040	2.654	0.008
Behavioral intention	<---	Intrinsic motivation	0.604	0.611	0.054	11.087	***

Results of the direct and indirect effect exhibit strong positive effects on behavioural intention. In more specific, CEOs' innovativeness attained a strong direct effect on intrinsic motivation and behavioral intention (beta = 0.394, p <0.001). In addition, CEOs' IT knowledge showed a strong direct effect on behavioural intention (beta = 0.177, p <0.05. There was also a strong direct influence of intrinsic motivation on behavioural intention (beta = 0.604, p <0.001). Based on the squared multiple correlation in Figure 2, it can be concluded that CEOs' characteristics on intrinsic motivation by 40%, whereas the overall square multiple correlation of CEOs' characteristics and intrinsic motivation on behavioural intention by 62%, with p <0.001.

CONCLUSIONS

The study found that the impact of CEOs' IT knowledge was overshadowed by organisational and innovation factors that dictate the adoption processes in organisations. The most significant variable that determines the extent of IT adoption is IT knowledge. Small businesses with high IT knowledge are most likely to use IT more extensively. When the small businesses accumulate more IT knowledge through learning by using it, this will lower its IT knowledge barriers and increase confidence in adopting IT. More importantly, all the hypotheses explaining direct and indirect relationships between the constructs were found to be supported. Thus, it is hoped that this will further add confidence to the research design and future studies can extend these findings for discussions and comparison.

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APPENDIX A. QUESTIONNAIRE

Intrinsic motivation	1) Getting good result from AIS usage is more important for me than getting such result from other system tools.
	2) I am learning AIS in order to be able to be fiction in the usage of AIS
	3) Usage of AIS is a challenge that I enjoy
	4) I would learn to use AIS even if it is not important for my organisation
	5) I want to know about AIS as it is important to show my ability to others
CEOs' IT knowledge	1) I have information system experience
	2) I am capable of using computer software
	3) I am able to sit long hours using information system
	4) I have good knowledge of information system
	5) I have good understanding of the potential of information system
CEOs' IT innovativeness	1) I have original ideas
	2) I will create something new rather than something existing
	3) I would risk doing things differently
	4) AIS will allow us to better communicate with our business partners
	5) AIS will allow to cut cost in our operations
	6) AIS adoption will increase profitability
	7) AIS adoption will provide accurate information for decision making
	8) The cost of adoption is far greater than benefits
	9) Adoption of AIS is compatible with firm's value and beliefs
CEOs' Trust in IT	1) I think AIS is trustworthy
	2) I think AIS keeps promises and commitments
	3) I think AIS has enough safeguards to make me feel comfortable to use it
	4) I feel assured that legal structures adequately protects me from problems associated with using AIS
	5) I feel confident that technological advances on the information system make it safe for me to use AIS
	6) In general the AIS is a safe environment in which to transact accounting activities
Behavioral Intention	1) Assuming I had access to AIS, I intend to use it
	2) Given that I has access to AIS, I predict I would use it
	3) I plan to use the AIS in the near future
	4) I intend to show others this AIS
	5) I intend to take more understanding and knowledge using AIS in the future

The Importance of the U.S. Shocks and Monetary Transmission Mechanism Channels in the United Arab Emirates

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ABSTRACT

This paper examines the importance of the U.S. external shocks and monetary transmission mechanism channels in the United Arab Emirates (UAE). The focal points are to analyse whether or not the U.S. external shocks are relevant to influence the UAE economy and to identify the significance of the two channels of monetary transmission mechanisms (the interest rate and the exchange rate channels) in the UAE during the global financial crisis of 2007/2008. Using a non-recursive SVAR identification scheme, the results of impulse response function suggest that the U.S. external shocks affect the UAE output and inflation rate quickly and strongly. However, the interest rate and the exchange rate channels of monetary transmission mechanisms are not very effective in the UAE. This is consistent with the hypothesis of the study in which the interest rate and the exchange rate channels may not be effective due to the fixed exchange rate regime and the interest rate pegging in that country. Another key finding is that the world oil price has a dominant role in explaining major macroeconomic fluctuations in the UAE economy, which suggests that the UAE economy is vulnerable to the world's oil price shocks. This finding suggests that the UAE policy makers need to consider diversifying their export sectors in mitigating the economic fluctuations.

Keywords: Monetary Transmission Mechanism, SVAR, the U.S. External Shocks, United Arab Emirates

INTRODUCTION

The United Arab Emirates (UAE) has experienced tremendous transformation after oil was discovered 30 years ago. The UAE is the fiftieth largest economy in the world and the second largest in Gulf Cooperation Council (GCC). It is

integrated to the advanced economies of the world. According to the Index of Economic Freedom, the UAE has been a regional leader in economic freedom since 1996. Its openness and liberal economic policies such as 100% foreign ownership and zero taxes have helped UAE attract large foreign investments.

Some previous studies suggested monetary transmission channels have different effects on the UAE's economy. Using a panel VAR, Espinoza and Prasad (2012) found that the monetary policy of the U.S. has statistically significant impacts on broad money, non-oil activity and inflation rates in the GCC countries. Although Cevik and Teksoz (2012) found no support for exchange rate channel, interest rates have significant influences on real non-hydrocarbon output and consumer price index of the said countries.

The 2007-2008 financial crises hit the UAE hard. The UAE government used expansionary fiscal and monetary policies to boost liquidity and stimulate its economic growth. Beginning in 2008, the UAE central bank lowered its REPO rate (the official policy rate) close to zero following the Federal Funds Rate in the U.S. There is no sufficient and empirical support to prove whether or not the transmission mechanisms were effective in the UAE in pegging its interest rate and using a fixed exchange rate system, especially in the aftermath of the recent financial crisis. Meanwhile, the U.S. is one of the main trading partners of the UAE.

Therefore, the main objectives of this paper are to re-examine the transmission mechanisms of the interest and exchange rate channels and identify any changes in the effectiveness of the two channels. In particular, this is an important task because it considers the period (2008-2014) during which the UAE economy was hit by the global financial crisis. The second objective of the study is to evaluate the extent to which the U.S. shocks affect the UAE domestic output and inflation rate.

The results from the error variance decompositions and the impulse response functions indicate a common conclusion that the world oil price and the U.S. shocks affect the UAE economy. Domestic output responds positively both to positive shocks in the oil price and the U.S. output. As expected, however, it responds negatively to the U.S. policy rate. In addition, the findings suggest that neither the interest rate nor the exchange rate is significantly effective in the UAE.

Hereafter, some relevant reviews of the recent literature are provided in the first section. An explanation for the SVAR model, along with its identification and specification is given in the second part. Meanwhile, the estimated empirical results are presented in the third section, followed by conclusions of the paper in the last section.

LITERATURE REVIEW

Mishkin (1996) illustrates the main transmission channels of monetary policy. The traditional interest rate channel is a

mechanism through which the real interest rate affects the spending and investment decisions. With the global economic integration, majority of the countries have shifted to using a flexible exchange rate regime. Therefore, the effect of the exchange rate on exports is an important aspect of monetary transmission. A fall in the domestic real interest rate makes domestic deposits less attractive, while it increases the demand for foreign deposits. In other words, domestic currency depreciates. The depreciation in the domestic currency lowers the price for domestic goods. With an increase in the demand for domestic goods, there will be an increase in the domestic output.

Previous studies found support for interest rate and bank lending channels in the GCC countries. Cevik and Teksoz (2012) used a four-variable SVAR model and a standard identification scheme and found plausible impulse response functions to structural shocks. Their empirical results suggested no support for the effectiveness of the exchange rate channel in majority of the GCC countries, while the interest rate channel has a significant influence on real non-hydrocarbon output and consumer price index. Cevik and Teksoz (2012) also found a dominant role performed by the bank lending channel in transmitting monetary shocks in the GCC countries.

Meanwhile, Espinoza and Prasad (2012) studied the impacts of monetary policy shocks on macroeconomic variables in the GCC countries. The results of their study indicated shallowness of money markets and how the central banks operate in those countries. Furthermore, they also found strong support for the significance of the U.S. monetary policy on broad money, non-oil activity and inflation rates.

Monetary transmission mechanism and external shocks have also been extensively studied for other economies. Among other, Kim (1999) used SVAR model with two blocks of variables for the G-7 countries. He found that the effects of monetary policy shocks on exchange rates and other macroeconomic variables as consistent with the economic theory. In order to address the anomalies of liquidity, price and exchange rate puzzles, he used a foreign block consisting of three variables (namely, the world oil price, the U.S. federal funds rate and the exchange rate). He found monetary policy as not a major contributor to the output fluctuations in the G-7 countries, where fluctuations are significantly impacted by the foreign shocks.

There is a widespread consensus that developing markets are more prone and subject to external shocks than large and developed economies. Mackowiak (2007) estimated an SVAR model for eight (8) emerging markets (Chile and Mexico in Latin America; Korea, Malaysia, the Philippines, Hong Kong and Singapore in East Asia). His findings point out that external shocks are not only an important source of macroeconomic fluctuations in emerging markets, but the U.S. monetary policy shocks affect the interest rate and the exchange rate in an emerging market quickly and strongly.

Zaidi and Karim (2013) examined the relative importance of foreign and domestic shocks on three ASEAN countries (Malaysia, Indonesia and Thailand). Their results from individual SVAR models for each of the countries suggested that the foreign shocks have important role in influencing the macroeconomic activities of the three countries and that those shocks are more influential in the medium- and long term. In addition, they considered the GDP of the U.S. and Japan as the source of foreign shock and found that the role of the Japanese economic shock as more prominent than the U.S shocks for the three ASEAN countries. Meanwhile, Karim and Karim (2014) examined the implementation of monetary policy during interest rates targeting in Malaysia; they found that monetary policy had a significant role in affecting macroeconomics variables. Moreover, foreign shocks (world oil price) and U.S. transmission (U.S. income and the U.S. monetary policy) were also found to play prominent roles in influencing domestic monetary policy and macroeconomic fluctuations.

However, it is important to understand how external shocks affect domestic economies such as that of the UAE and how the channels of monetary transmission are effective at times of financial crisis. In general, the results of this paper reaffirm the findings of the previous studies that the U.S. external shocks are significant for the UAE economy and that the monetary transmission channels are not so effective in the country.

METHODOLOGY

SVAR models are useful tools for analysing the dynamics of a model by subjecting it to an unexpected shock (Gottschalk, 2001). It was first pioneered by Sims (1972, 1980). Studies by Sims (1986), Blanchard and Quah (1989), Gali (1992), Gordon and Leeper (1994), Christiano *et al.* (1996), Bernanke and Blinder (1992), Bernanke and Mihov (1998) and Sims and Zha (2006) are some examples of the works that investigated monetary policy and macroeconomic fluctuations using the SVAR models.

In this study, a seven-variable SVAR model was used to estimate six-year monthly macroeconomic variables. In the past studies, monetary VARs were estimated on annual data for the GCC countries. In order to conduct similar studies, it is more reasonable to use quarterly or monthly data. In addition, it is more plausible to assume contemporaneous effects when using high frequency data sets, particularly for financial variables (Walsh, 2003).

The data set consisted of four UAE domestic (industrial production index (LAIP), inflation (INF), 1-month interbank rate (IBOR) and real effective exchange rate (LREER) and three external variables (crude oil Brent price, the U.S. total industrial production index (LUSIP), and the U.S. federal funds rate (USR). As the UAE is a net exporter of oil, it is believed that the oil price plays an important role in its economy. During 2008-2014, the U.S central bank targeted at the federal funds rate to stimulate the U.S. economy. This

variable was used by Mackowiak (2007) and others to study the significance of the U.S. monetary policy on small open economies.

With the exception for the real exchange rate that was extracted from the Bruegel database, the other variables were obtained from International Financial Statistics (IFS) and the monthly financial bulletins published by the central bank of the UAE and by the UAE National Bureau of Statistics. The data set covered the period from February 2008 to May 2014. With the exception for the interest rate and inflation, all the other variables were logged. Figure 1 shows that almost all the variables used in the SVAR model are not stationary in level.
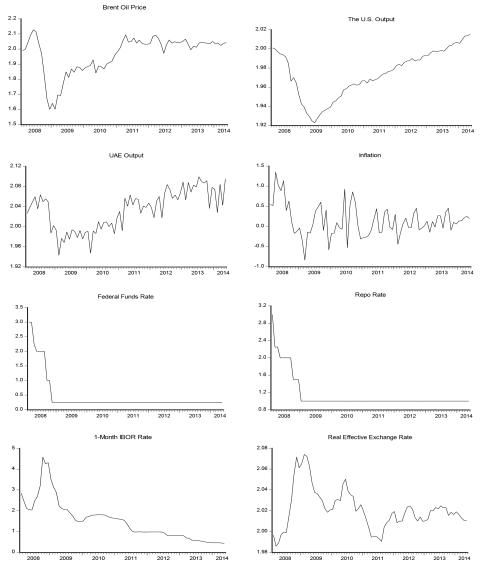
Fig.1: Domestic and External Macroeconomic Variables

The SVAR Model

$$BY_t = C + (\gamma_1 L + \gamma_2 L^2 + \cdots + \gamma_k L^k)Y_t + \varepsilon_t$$

$$(1)$$

In this SVAR model, B stands for a square matrix and it captures the structural contemporaneous relationships among the macroeconomic variables. Y_t is a (n × 1) vector of the macroeconomics variables, C is a vector of deterministic variables, $\gamma(L)$ is a kth order matrix polynomial in lag operator, L and ε_t is vectors of structural innovations that satisfy the conditions, $E(\varepsilon_t) = 0$, $E(\varepsilon_t \varepsilon_s') = \sum_\varepsilon$ for all t = s and $E(\varepsilon_t \varepsilon_s') = 0$ otherwise.

When equation [1] is multiplied by B^{-1} a reduced form of the above SVAR model is obtained:

$$Y_t = B^{-1}C + B^{-1} (\gamma_1 L + \gamma_2 L^2 + \cdots + \gamma_k L^k) Y_t + B^{-1}\varepsilon_t$$

$$(2)$$

where $e_t = B^{-1}\varepsilon_t$ is a reduced form of the VAR residual that satisfies the conditions that $E(e_t) = 0$; $E(e_t e_s') = \sum_e$. $\sum_e$ is a (n × m) symmetric, positive definite matrix which can be estimated from the data. The relationships between variance-covariance matrix of the estimated residuals, $\sum_e$ and the variance-covariance matrix of the structural innovations, $\sum_\varepsilon$ are such that:

$$\sum_\varepsilon = E(\varepsilon_t \varepsilon_s')$$
$$= E(Be_t e_s' B') = BE(Be_t e_s') B'$$
$$= B\sum_\varepsilon B'$$

The Structural Model, Specification and Identification

Should the SVAR model be specified at levels or first difference? It seems the choice is between selecting or accepting a loss of efficiency (when a VAR model is estimated in levels) and a loss of information (when a VAR model is estimated at first difference). Ramaswamy and Sloek (1998) provided a detailed discussion on this topic. Following their recommendations, Zaidi (2011) specified the SVAR model in levels to re-examine monetary transmission mechanisms in Malaysia. When there is no prior economic theory, it is preferred to specify SVAR in levels. Thus, this paper specifies the SVAR model for the UAE in levels.

Favero (2001) provided a detailed discussion of the different approaches to identification problems. Taking the economic theory and the structure of the UAE economy into consideration, the SVAR model is specified as follows:

$$[BY_t] \equiv \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ \beta_{21} & 1 & 0 & 0 & 0 & 0 & 0 \\ \beta_{31} & \beta_{32} & 1 & 0 & 0 & 0 & 0 \\ \beta_{41} & \beta_{42} & \beta_{43} & 1 & 0 & 0 & 0 \\ \beta_{51} & 0 & \beta_{53} & 0 & 1 & 0 & 0 \\ \beta_{61} & 0 & \beta_{63} & 0 & \beta_{65} & 1 & \beta_{67} \\ \beta_{71} & \beta_{72} & \beta_{73} & \beta_{74} & \beta_{75} & \beta_{76} & 1 \end{bmatrix} \begin{bmatrix} LOP_t \\ LUSIP_t \\ USR_t \\ LAIP_t \\ INF_t \\ IBOR_t \\ LREER_t \end{bmatrix}$$

$$(3)$$

The external variables are ordered first in the model, while the UAE domestic variables are ordered last. This standard ordering follows a block exogeneity assumption, whereby it is assumed that as

a small open economy, the UAE cannot influence the foreign macroeconomic variables. Cevik and Teksoz (2012) also considered a block of exogenous variables (the world commodity price, the U.S. output and interest rate) to study external shocks in GCC countries. For the identification of U.S. monetary policy shocks, the work of Leeper *et al*. (1996) is followed. Therefore, it is assumed that the U.S. policy rate can respond contemporaneously to changes in the oil price. Mackowiak (2007), who used monthly data sets for eight emerging economies, assumed the same role for commodity world price in his SVAR model. The oil price can be regarded as an expected inflation (Cushman & Zha, 1997). The oil price is included in the SVAR model in order to solve prize puzzle that occurs when monetary tightening leads to an increase rather than a decrease in the price level. Oil price is assumed to affect all variables; hence, the oil price instantaneously influences inflation in the UAE since it is a net exporter of crude oil.

Consistent with the previous studies and with the economic theory, it is assumed that the U.S. real economic activity cannot influence the UAE inflation rate and IBOR rate contemporaneously. Instead, the assumption is that it has a lagged impact on those variables. Due to the assumption of price rigidity, the UAE inflation does not instantaneously respond to a shock in the U.S. output. The second assumption is that the UAE policy makers do not look at the contemporaneous values of the U.S output to twist the UAE domestic interest rate; this same identification was also used by Zaidi (2011).

In this identification, the assumption is made that the U.S federal funds rate does have a contemporaneous effect on the UAE real output, inflation rate and the two financial variables (namely the IBOR rate and the real effective exchange rate, LREER). The reason is that during the period of this study, the UAE was closely following the trends in the federal funds rate and it was pegging its policy rate (the repo rate) to the federal funds rate of the U.S.

Furthermore, it is assumed that the UAE domestic output does not contemporaneously impact the inflation rate and IBOR rate in the UAE. Unlike Zaidi (2011) and Sims (1980), who specified domestic interest rate to have a contemporaneous effect on the domestic output, this paper assumes that the IBOR rate does not instantaneously affect the domestic output.

Consistent with the previous studies, the exchange rate in this study is ordered last. This is due to the fact that the exchange rate is a fast moving financial variable that can respond contemporaneously to all the external and the UAE domestic variables. Other variables respond to shocks in the exchange rate with lags. Furthermore, the real effective exchange rate is assumed to contemporaneously affect the IBOR rate. An alternative SVAR model was also tested where the IBOR rate was ordered last. This was done to check the robustness of the main model.

EMPIRICAL RESULTS

Here, Akaike and Schwarz's criteria for the choice of lag length and the results for error variance decompositions and the impulse response functions of the SVAR model are reported.

The results for the impulse response functions and variance decompositions from the alternative model indicate that the main SVAR model is robust in both stability and consistency of the results. But, the results for the contemporaneous coefficients of the model and the findings from alternative SVAR model are not reported here.

Choice of Lag Length

The Akaike's (1973) Information Criterion (AIC) and Schwarz's (1978) Bayesian Criterion (SBC) are used to identify the appropriate choice of lag length. AIC suggests a choice of four lags as appropriate for the model; SBC, however, proposes two lags. As the data set contained 72 observations, two lags[1] were chosen. The eigenvalues of the matrix of the SVAR model indicate that they are all inside the unit circle, an indication of stability when the model is used with two lags.

TABLE 1
AIC and SBC Tests for the Choice of Lag Length and the Stability Test

System Diagnostics		
K	AIC	SBC
4	-3224.49641	-2990.86955
3	-3170.96249	-2988.94135
2	-3179.37875	-3049.59941
1	-3039.59419	-2962.67999

Stability Tests: Eigenvalues of the companion matrix in absolute value, $|\lambda| =$

0.94	0.86	0.81	0.81	0.85	0.59	0.59
0.57	-0.53	-0.44	0.15	0.00	0.00	0.00

Error Variance Decomposition of:

The UAE output: The results show that LAIP (The UAE output) is mostly explained by its own shock (60% over 4 months), the oil price (34% over 24 months), the U.S. output (26% over 24 months), and to some extent by the U.S. policy rate (11% over 24 months). In the meantime, neither IBOR rate nor the exchange rate is significant in explaining variance decomposition in the domestic output in the short term.

The UAE inflation: Over the 24-month horizon, all the three external variables explain some sizeable variations in the forecast errors of the variance decomposition of the UAE inflation rate (by 17%, 48%, and 18%, respectively). Over four month's horizon, 65% of the error for inflation rate is explained by its own shocks. Nonetheless,

[1]An alternative model was tested with four lags, where the confidence intervals of impulse response functions explode and the results are not stable.

none of the UAE domestic variables is significant in explaining the variance decomposition of the UAE's inflation rate.

The IBOR rate: The U.S output (LUSIP 40% over 4 months) and the U.S. monetary rate (USR 34% over 24 months) are effective in explaining the variation in the errors of the forecast of variances of the IBOR rate. In addition, the real effective exchange rate explains about 9% of the errors for IBOR rate over the 4-month horizon. While the IBOR rate own shocks explain about 30% of its variations in the short term, none of the other two domestic variables is significant. Over a longer period of 24 months, over 70% of the errors for the IBOR rate are explained by the three external variables.

The UAE real effective exchange rate: In contrast, over 20% of the forecast errors of the variance decomposition of the real effective exchange rate are explained by the IBOR rate in the short-term horizon. It is also significant over long-term horizons. However, the UAE domestic output and inflation rate are not significant either in the short- or long-term horizon. However, more than 60% of the forecast errors of the exchange rate are explained by the oil price both in the short- and long-term horizons. This finding is indicative of the fact that the UAE is a net exporter of oil and the revenues from the export of oil are a very important fact about the UAE economy.

TABLE 2
Variance Decompositions of the UAE Domestic Variables

Table 2a of the LAIP

Horizon (Months)	LOP	LUSIP	USR	LAIP	INF	IBOR	LREER
4	26.73	6.99	4.18	60.28	0.92	0.08	0.81
8	32.60	19.31	6.86	39.47	1.05	0.09	0.63
16	33.88	24.48	10.00	30.11	0.97	0.08	0.49
24	34.11	25.60	10.81	28.03	0.91	0.07	0.46

Table 2b of the INF

Horizon (Months)	LOP	LUSIP	USR	LAIP	INF	IBOR	LREER
4	1.55	24.06	3.42	2.74	65.28	2.30	0.65
8	1.99	48.56	13.62	2.17	29.79	3.10	0.77
16	13.11	48.58	18.53	1.31	15.96	1.77	0.74
24	16.55	48.30	18.40	1.15	13.48	1.49	0.63

Table 2c of the IBOR

Horizon (Months)	LOP	LUSIP	USR	LAIP	INF	IBOR	LREER
4	3.60	40.20	12.35	1.39	4.01	29.80	8.65
8	2.92	32.41	34.02	2.66	5.28	18.47	4.25
16	14.84	25.54	33.78	2.41	4.59	15.39	3.44
24	15.07	25.58	33.65	2.40	4.56	15.29	3.45

Table 2d of the LREER

Horizon (Months)	LOP	LUSIP	USR	LAIP	INF	IBOR	LREER
4	61.73	10.38	1.68	0.32	0.22	20.35	5.32
8	64.75	9.52	2.88	0.28	0.32	16.31	5.94
16	59.69	11.56	5.94	0.69	1.18	15.53	5.41
24	59.98	11.39	6.12	0.69	1.19	15.32	5.31

Impulse Response Functions

Fig.2 presents the responses of the UAE output and inflation rate to a positive standard deviation shock to the three external and U.S. variables. LAIP immediately and positively responds to a shock in the oil price and to the U.S. economic activity shock. In line with the economic theory, a contractionary monetary policy slows down the UAE economic growth. This reflects a fact that the UAE has been closely following the U.S. policy rate. The results indicate that an increase in the federal funds rate affects the UAE output in the opposite direction.
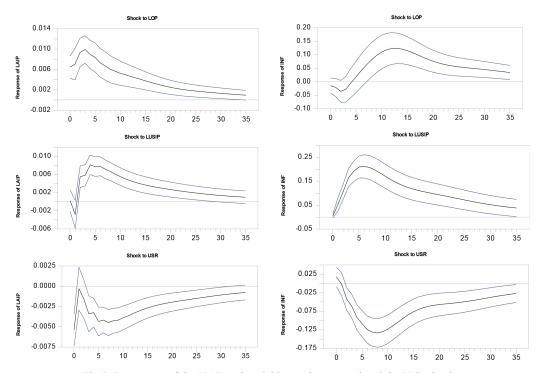
Fig.2: Responses of the UAE real variables to the external and the U.S. shocks

The response of inflation to a positive shock in the oil price is counterintuitive. Initially, a shock in the oil price lowers the inflation in the UAE but it leads to a positive response by inflation over a 3 month's time. This second response of inflation is

consistent with the theory and structure of the UAE economy. The response of inflation to the U.S. output is positive, instant and strong. It is according to the real economic conditions. The response of inflation to the US policy rate is also consistent with the theory. An increase in the U.S. policy rate leads to an increase in the UAE policy rate (because it is pegged against the U.S. interest rate), so the UAE inflation rate will decline.

Fig.3 shows the impulse responses of the domestic real variables to a one standard deviation of the IBOR rate shock. The UAE output falls after a positive shock in the IBOR rate. Though this is consistent with the economic theory, the response is very weak. It is believed that an increase

in the short term interest rate will lead to a fall in the inflation rate. Fig.3 points out that a one standard deviation shock to the IBOR rate leads to a fall in the inflation rate. The IBOR rate causes the inflation rate to fall over a five-month period before it begins to stabilise. In addition, the real effective exchange rate appreciates with a shock in the IBOR rate. Thus the modal does not suffer from the exchange rate puzzle and this suggests that the exchange rate responds positively and immediately to a shock to the IBOR rate. Similar to the results for the forecast errors in the variance decompositions, the IBOR rate shock does not significantly affect the output. Therefore, it seems that the interest rate channel is not strong in the UAE economy.
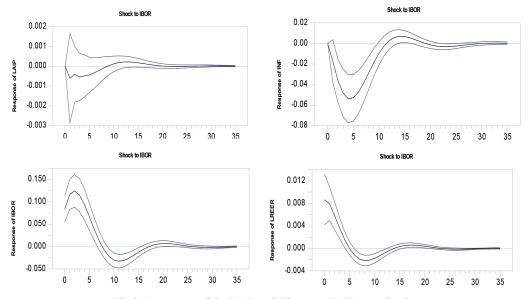
Fig.3: Responses of the UAE variables to an IBOR rate shock

The response of the UAE domestic output to a shock in the exchange rate is counterintuitive because a positive shock to the exchange rate brings about an increase

in its output in the short term. Based on the theory, an appreciation of the currency should have lowered the domestic output. Zaidi (2011) found similar results, where

an appreciation in the Malaysian ringgit in the first place leads to a lower output in the immediate output. The response of inflation to the exchange rate is negative and

it is consistent with the economic theory. An appreciation in the domestic currency will reduce demands for domestic goods and lead to a decrease in inflation.
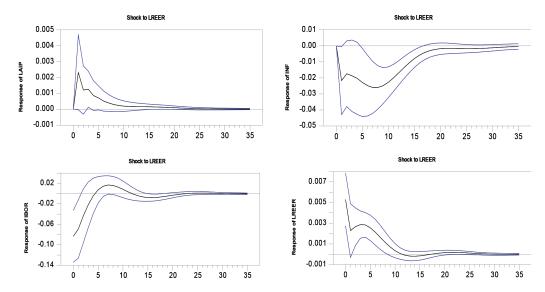
Fig.4: Responses of the UAE variables to a real effective exchange rate shock

In summary, the results from the SVAR model suggest that the three external variables are significant in influencing the extent and the direction of responses in the UAE domestic variables. These findings are consistent with the economic structure of the UAE. As a small open economy, it is strongly affected by the external shocks of the U.S. and the oil price. It can be concluded that the U.S. external shocks are significant. On the other hand, though exchange rate can affect the UAE inflation rate in an insignificant way, the results suggest that the IBOR rate does not influence the domestic variables. These further suggest that the interest rate and the exchange rate channels of monetary transmission mechanism are not so effective in the UAE economy.

CONCLUSION

The economy of the United Arab Emirates (UAE) was hit hard by the financial crisis of 2007-2008. Following the federal funds rate, the central bank of the UAE lowered its REPO rate close to zero. The effectiveness of its monetary policy changes overtime. Though the UAE pegged its interest rate and pursued a fixed exchange rate regime, there is no sufficient and empirical evidence to support whether the monetary policy channels operated after and during the financial crisis. Meanwhile, the U.S. is one of the main trading partners of the UAE. Additionally, knowing the nature and the direction of the U.S. shocks should therefore be of great interest to policy makers in the UAE, especially during economic crisis.

There are three main conclusions from the paper. First, the results indicate that both inflation rate and domestic output in the UAE are affected by the world oil price, the U.S. macroeconomic and the U.S. monetary shocks. In other words, the U.S. federal funds rate affects the UAE economy significantly. Furthermore, inflation responds positively to the U.S. output. This is consistent with the standard economic theory. Positive shocks to aggregate demand in the U.S. lead to a higher price level in the UAE. In addition, inflation rate in the UAE also responds negatively to the U.S. federal funds rate, the finding which is consistent with theoretical background.

Second, the response of inflation to real effective exchange rate is negative and it is consistent with the economic theory. An appreciation in the domestic currency will reduce demands for domestic goods, leading to a decrease in inflation. However, the real effective exchange rate is not significant in explaining the UAE's domestic output. In addition, the IBOR rate is also not important in explaining the variations in the domestic output and inflation.

Third, the world oil price has a dominant role in explaining major macroeconomic fluctuations in the UAE economy, which suggests that the UAE economy is vulnerable to the world oil price shocks. This finding suggests that the UAE policy makers need to consider diversifying the country's export sectors in mitigating the economic fluctuations.

The results from the forecast errors variance decompositions and impulse response functions of the SVAR model suggest that interest rate and exchange rate channels are not effective in influencing the domestic macroeconomic variables in the UAE. Nonetheless, there is a need for further research to examine the roles of other channels of monetary transmission such as credit and asset price channels, while policy makers should find ways to improve mechanisms of monetary transmission in the UAE economy so that the effectiveness of monetary policy could be strengthened.

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System Dynamic Model for Public Private Partnership of Higher Educational Institution Project in Malaysia

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ABSTRACT

Malaysian Higher Educational Institution (HEI) needs to allocate adequate building spaces and facilities to support the increasing number of tertiary student population, particularly and consequently realising the objective to make Malaysia the Asian Education Hub by 2020. However, a huge sum of capital is required to develop the projects, and relying upon the government funding alone is almost impossible. Therefore, both public and private sectors need to cooperate to accumulate all the necessary resources including capitals. For this reason, Public Private Partnership (PPP) was launched to attain financial resources purposely for higher educational projects. Nevertheless, the concession price is the main capital problem in PPP HEI projects and finding the concession price itself is a tedious task. Thus, the research aims to establish a system dynamic model based on concession price model (financial model) for Higher Educational Institution. The developed price model for PPP HEI projects is created using data from observation and case study. The prototype of concession price model (system dynamic model) consists of a set of cause-effect diagrams. It is verified by Net Present Value (NPV) graft that exceeds zero and keeps on increasing with time. The developed system dynamic model provides better pricing of PPP projects that are going to be a useful tool for all stakeholders.

INTRODUCTION

Public-private partnership (PPP) is a contractual agreement between government and private sectors (Thomas Ng *et al.*, 2007). This agreement is awarded to the

private sector (concessionaire) to finance, design, build, develop, manage and operate the government projects (Zhang, 2009). PPP has been known in both developed and developing countries. PPP is obtained to help the funding of HEI projects in Malaysia. However, the major funding issue of PPP Higher Educational Institution project is concession price. To support this statement, Clerck, Demeulemeester, and Herroelen (2012) claimed that, in real situation of PPP projects, there are a lot of complications in determining concession price and no consensus has been established. The determination of the concession price is very important to the success of a PPP project. Concession price is a commercial profitability of project and a very important parameter at an early stage (Shen *et al.*, 2007). It is very imperative to decision makers to determine or forecast the exact pricing on project and win the bid for the private sector. Meanwhile, for the public sector, it is very important to figure out which one will be cost effective and value for money

(Xu *et al.*, 2012). Thus, this research aims at establishing Prototype System Dynamic Model for PPP Higher Educational Institution projects – based on concession price. This research provides a realistic study based on an actual project in Malaysia.

PROBLEM STATEMENT

Decision on determining concession price is a very important step. Private or public sector tends to use discounted cash flow, which applies Net Present Value (NPV) and Internal Rate of Return (IRR) decision making criteria (Sontamino & Drebenstedt, 2013). However, it is quite complicated and prone to errors when using a calculator or Microsoft Excel software to solve for NPV and IRR in complex situations. Therefore, the developed Prototype System Dynamic Model is one of the best tools to solve these issues. Major concession price issues summarised from previous research studies are shown in Table 1.

TABLE 1
A summary of major concession price issues from the previous research studies

Issues - PPP concession pricing	The determination of concession price is complex & Uncertainty	Complicated to make decision making	Renegotiation	Previous model is unsystematic	Difficult to quantify non-monetary terms	Lacks theoretical foundation & scientific pricing rule	Lacks consideration on views from stakeholders	Political legal system stipulations of policy and economy	Unrealistic assumptions	Longer concession period is more difficult
Xu *et al.* (2012)	√	√		√	√	√	√			
Bovis (2010)					√					
Demirag & Kandaroo (2011)	√									
Cruz & Marques (2013)	√		√							

TABLE 1 (continue)

Chiang & Chen (2009)		√							
Tang & Shen (2013)			√						
Waldman (2007)							√		
Wibowo *et al*., (2005)	√								
Jeerangsuwan *et al*. (2012)	√	√		√					
Ashuri *et al*. (2012)	√		√		√			√	
Gross *et al*. (2009)	√								
Hu & Zhu (2012)	√								
Islam & Mohamed (2009)	√								
Lv *et al*., (2013)	√								
Mccowan & Mohamed (2007)	√								
Vassallo *et al*. (2012)							√		
Xiong & Zhang (2014)	√		√						
Xu & Moon (2014)									
Yu *et al*. (2014)									√
Liou & Huang (2008)				√					

Determination of concession price is complex and uncertain

Determining PPP concession price is extremely difficult to do (Xu *et al*., 2012; Gross *et al*., 2009). Some components can be quantified and cannot be quantified especially in non-monetary terms such as risk, efficiency, time, effort, etc. (Xu *et al*., 2012). In the perspective of the public sector, value for money (VFM) is an important criterion for the success of government's project. It can be changed if there are differences in the culture, processes and mechanisms in accountability (Demirag & Khadaroo, 2009). Thus, the concession price is also affected and considered. There are many arguments in relation to the relationship between accountability and performance of VFM. The measurement of VFM is difficult in terms of estimation future cash flows, discount rates and risk mitigation (Demirag & Khadaroo, 2009).

In the PPP project, there are major uncertainty components such as construction cost, construction schedule, concession period, future revenue, initial and future rate and macroeconomic condition (Wibowo *et al*., 2005; Hu & Zhu, 2012; Lv *et al*., 2013; Mccowan & Mohamed, 2007; Xiong & Zhang, 2014). These components will cause decision or proposal to become uncertain (Wibowo *et al*., 2005; Islam & Mohamed, 2009). Cruz and Marques (2013) mentioned that uncertainty comes from two aspects of external conditions and the system. External conditions can be derived from economic environment, the cost of capital and the evolution on demand. For the system, external conditions are derived from production cost, reliability, effectiveness, risk and efficiency, among others. All these uncertainties will not help

to value correctly. Hence, selection of key components at an early stage of a project is important and contributes to the financial viability evaluation (Jeerangsuwan *et al*., 2012). The private sector can request funding from the government to share the financial risk if the project is overestimated (Ashuri *et al*., 2012). Certainly, this happens when the revenues are lower than the expected.

Complicated to make decision

Concession price is a semi-structured decision making and part of the components in predicting the success of the projects. It has had difficulties in setting changeable decision. Some variables can be quantified and cannot be quantified; thus, it is hard to make a decision (Xu *et al*., 2012). Several financial institutions faced critical decisions in offering loans to the private sector (Chiang & Cheng 2009). The concessionaire (private sector) has to estimate the project possibility with restricted information and make decision critically on choosing concession components (Anon., 2012). In other words, the concessionaire has to be careful in estimating the project.

Renegotiation

Renegotiation always happens in PPP contract. If the demand is greater than the limit, it will cause surplus and the concessionaire has to compensate (Cruz & Marques, 2013). The government generally accepts certain serious risks of concession renegotiation. However, international

PPP practices show that renegotiation has conflicted results (Xiong & Zhang, 2014). The Prototype System Dynamic Model can be used to solve this issue.

Previous model is unsystematic

Systematic price adjustment and parameters for PPP concession price still do not exist (Xu *et al*., 2012). There is no systematic consideration in the NPV analysis, and there is no method to adjust the discount rate which is reflected to the risk reflecting the risk (Ashuri *et al*., 2012).

Difficult to quantify non-monetary terms

Non-monetary terms such as risk cannot be quantified (Xu *et al*., 2012). Thus, there is a limitation in the ability to quantify (Anon., 2012). Research conducted by Liou and Huang (2008) disregarded the impacts of non-financial risk factors on NPV in automated contractual-negotiation model. From Bovis (2010), pricing in contractual agreement will be affected if risk allocation is included. Thus, it is difficult to determine the characteristic of an acceptable transfer of risk in a contract between the public and private sectors.

Lacks of consideration in the theory fundamental and scientific pricing rule

The concession price can be high and low because there are no rules and laws (Xu *et al*., 2012). A review of the previous literature showed that many researchers used quantitative approach such as Net Present Value (NPV), Monte Carlo simulation, non-linear regression, Cost

Benefit Analysis (CBA) and Capital Asset Pricing Model (CAPM) to determine concession price (Xu *et al*., 2012). Thus, there is no specific standard (Ashuri *et al*., 2012).

Lacks of consideration on view from stakeholders

There are different perspectives among stakeholders and the application model generally lacks their perspective. From the perspective of the private sector, it is important to win the bid and gain the maximum profit. Meanwhile, from the perspective of the public sector, it is important to share the knowledge, experience, expertise and funding the project effectively (Xu *et al*., 2012). Thus, it is revealed that different perspectives give different concession price.

Political, legal system, stipulations of policy and economy

The political, legal system, the stipulation of policy and economy can incur financial risks. These problems will affect fund delivery (Waldman, 2007). Thus, these will be affecting the business performance of the concessionaire (private sector) (Vassallo, Ortega, & Baeza, 2012).

Unrealistic assumptions

There are a lot of unrealistic assumptions when estimating and analysing financial projects such as demand, time, interest rate, etc. (Ashuri *et al*., 2012).

Longer concession period is more difficult

The longer the concession period, the more maintenance and operation costs will be needed. These will impose financial risks and the project will be transferred back to the government. In practice, the determination of concession period is usually determined by the concessionaire (Yu, Lam, & Yung, 2014).

Nonetheless, a dynamic system for the concession price for PPP Higher Educational Institution projects is still not available. Thus, this research aimed to establish prototype system dynamic model to solve all the said flaws.

LITERATURE REVIEW

The following literature review is divided into three main parts: pricing/parameters methodology, concession price variables (infrastructure projects) and System Dynamic Model.

Pricing Methodologies / Parameters

Many PPP practitioners and research studies improvised concession price model (Thomas Ng *et al*., 2007; Xu *et al*., 2012). Among other, Xu *et al*. (2012) designed a concession pricing model (System Dynamic Model) via cost-benefit analysis based on an NPV calculation (Discounted Cash Flow technique), which was verified by a typical case. Meanwhile, Shen *et al*. (2007) and Lv *et al*. (2013) designed concession period model by using the Nash Negotiaton theory. Shen and Wu (2005) proposed a BOT CCM model by taking into consideration risk impact of

formulating a concession period by using Monte Carlo Simulation. Ng *et al*. (2007) proposed a Fuzzy simulation model for optimising the concession period of public-private partnership schemes. Zhang and Asce (2009) proposed a win-win concession period by combining Critical Path Method and Monte Carlo Simulation technique. Ke, Liu, and Wang (2008) developed an equitable financial evaluation method through Discounted Cash Flow method and Monte Carlo Simulation. Lee *et al*. (2012) used Critical Path Method and Stochastic system to forecast a project cash flow. Islam and Mohamed (2009) used a fuzzy simulation to develop financial performance measure. Sun and Zhang (2015) proposed a model that could determine minimum revenue guarantee (MRG) level in a project by revising NPV and Monte Carlo simulation Technique. Last but not least, Xu *et al*. (2014) developed construction cost model to determine a concession period by using stochastic process. A summary of these methods is shown in Table 2.

TABLE 2
A summary of research studies related to concession period and pricing

Method Used	Critical Path Method	Nash Negotiation theory	Monte Carlo Simulation	Fuzzy Simulation	Discounted Cash Flow	System Dynamic Model	Regression Analysis	Stochastic System
Zhang (2009)	√		√					
Ng *et al*. (2007)				√				
Shen *et al*. (2007)		√						
Shen & Wu (2005)			√					
Xu *et al*. (2012)					√	√		
Ke *et al*. (2008)			√		√			
Lee *et al*. (2012)	√							√
Islam & Mohamed (2009)				√				
Lv *et al*. (2013)		√						
Sun & Zhang (2014)			√		√			
Xu & Moon (2014)								√

Concession Price Variables – Infrastructure projects

In order to support variables affecting the concession period and price in the literature, many research studies have been referred to. A summary of research studies is shown in Table 3.

De Albornoz and Soliño (2014) outlined six valueable key variables in the transport infrastructure; there are a return

of PPP projects, discount rate on the sale of PPP projects, length of the construction period, length of the PPP contract, transaction exit costs and growth factor for selling prices and costs. Besides, Anon (2012) made a comprehensive framework to set up key concession variables for PPP toll road projects, as follows: toll rates, an equity level, concession length and rate of return. Anon (2014) focused on availability payment which is the revenue to the private sector that comes from the government to assess potential PPP projects. Gross *et al*. (2009) stated that cost and time are crucial variables. They also listed primary variables such as toll rates, concession length and availability of payment. Other variables like the size of the investment, inflation rate and construction period might give a big impact on the viability of the project (Hu & Zhu, 2012). Islam and Mohamed (2009) found that there are three critical variables affecting the award of concession contract; base price, concession length and equity level. Lv *et al*. (2013) claimed that concession length is one of the greatest critical variables to the success of a project. Meanwhile, Mccowan and Mohamed (2007) listed financial variables such as interest rate, cost, revenue, Net Present Value (NPV), equity level, debt service coverage ratio and tax rate as important variables.

TABLE 3
A summary of the research studies related to the variables of concession period and pricing

Variable used	Albornoz & Solino (2014)	Jeerangsuwan *et al.* (2012)	Mladenovic & Queiroz (2014)	Gross *et al.* (2009)	Hu & Zhu (2012)	Islam & Mohamed (2009)	Lv *et al.* (2013)	Mccowan & Mohamed (2007)	Shen *et al.* (2002)	Yu *et. al.* (2014)	Xu *et. al.* (2012)
Return of PPP Projects / rate of return	√	√								√	√
Total Income / Revenue			√					√			√
Discount Rate / interest rate	√							√		√	√
Length of the construction period	√				√						
Length of the PPP Contract / concession	√	√		√		√	√			√	√
Costs	√		√	√				√		√	√
Toll Rates		√	√	√						√	
Equity Level		√				√		√			
Loan Principal											√
Capital Fund											√
Availability Payment			√	√							
Inflation rate					√					√	

TABLE 3 (continue)

Investor's capital investment					√					√	√
Construction Investment											√
Base price						√					√
NPV								√	√	√	√
Debt service coverage ratio								√			
Tax rate								√			√
Traffic Volume			√							√	√

System Dynamic Model

This system was developed by Forrester in the late 1950s (Alasad, Motawa, & Ogunlana 2012; Xu *et al*., 2012). He created a set of techniques to simulate the complex, multi-loop feedback, non-linear system. He divided his model into four (4) aspects, as follows:

- "Stock" gathers all inflows and serves as a source from where outflows come
- "Flow" is a vehicle that delivers data information to and from the stock (the value can be positive or negative)
- "Converter" reacts as a utilitarian role to select proper values/ reacts as parameters
- Connector

This system is used to solve the complex system (Alasad *et al*., 2012) and generate the cause–effect relationships through stocks, flows and feedback loops. Meanwhile, Hashimoto (2009) developed a dynamic model for space projects. Furthermore, Golnam, Ackere, and Wegmann (2010) have integrated dynamics system and enterprise modelling to address dynamic and structural complexities of choice situations in the enterprise.
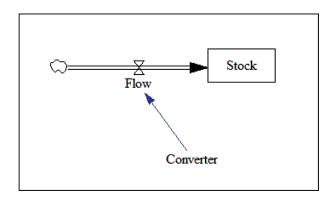
Fig.1: An example of System Dynamic Model developed using the Vensim Software

RESEARCH METHODOLOGY

The methodology is based on quantitative and qualitative approaches such as comprehensive literature review, observation and case study to validate the proposed Prototype System Dynamic Model. The research activities are based on the following objectives:

- To investigate the problems in determining concession price for PPP Higher Educational Institution Projects
- To analyse the critical components of systematic pricing for PPP Higher Educational Institution Projects
- To integrate the price within the system dynamic model of PPP Higher educational Institution projects.

Case Study

In order to clarify the accuracy of the proposed Prototype System Dynamic Model – based on the financial model concession price model, a Public Private Partnership (PPP) Higher Educational Institution Project in Malaysia was implemented as a case study. Data documentations such as feasibility report, financial model (concession price model) and progress report were collected for this purpose. This was followed by developing the prototype SD Model with all the variables as in the financial model. The model was processed by using task sequence (see Fig.2).

Model Processing Diagram
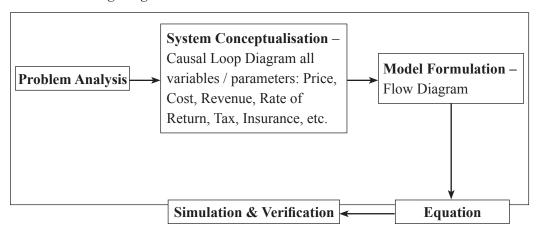
Fig.2: Model Processing Diagram

Details of the processing of System Dynamic Model are as follows:

• *Problem Analysis*
Problems are identified (as described in statement of the problem). These

identifications helped to recognise the gap of the research study.

• *System Conceptualisation*
System conceptualisations made by previous research studies were compared.

Then, the gap was detected in terms of different project, variables/parameters, pricing system and problem statement. This System Dynamic model used the vensim software. This system consists causal loop with variables/ parameters that are actually picked from financial model such as costs, revenues, rate of return, tax, insurance, etc.

• *Model Formulation*

The model was formulated by including all the selected variables. The tools used in this software are Flow, stock, converter and connector.

• *Equation*

Each of the variables / parameters was equated and formulated. All the parameters were linked to each other to find the Net Present Value (NPV).

• *Simulation and Verification*

The Model has resulted in the Net Present Value (NPV) that exceeded zero.

RESULTS AND FINDINGS

The concession period is 23 years and the Concession Price is RM33,527,326.63. These data were taken from the financial model and feasibility report.

The Established Prototype System Dynamic Model

The established Prototype SD model for Higher Education Institution project is shown in Fig.3 below.
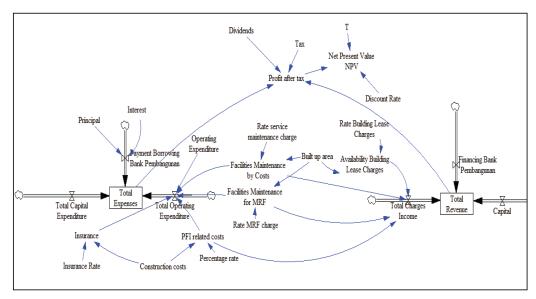
Fig.3: The proposed Prototype SD Model for Higher Educational Institution project

Equation, Simulation and Verification

TABLE 4
Equations SD Model in PPP Higher Educational Institution project

No.	Description	Equations
1)	Total Charges Income	= Availability Building Lease Charges + Facilities Maintenance Charges by Costs + Facilities Maintenance Charges for MRF + PFI Related Costs
2)	Total Expenses	= Borrowing Loan + Total Capital Expenditure + Total Operating Expenditure
3)	Total Revenue	= Capital + Total Charges Income + Financing Loan
4)	Profit after Tax	= (total Revenue – Total Expenses) – (Tax + Dividends)
5)	Net Present Value (NPV)	= Profit after Tax * $(1/(1 + \text{Discount Rate})^{\text{Time}}$
6)	Concession Period	23
7)	Discount Rate	0.0631
8)	Insurance	= Construction Costs * Insurance Rate
9)	Availability Building Lease Charges	= Built up area * Rate Building Lease Charge
10)	Facilities Maintenance Charges by Costs	= Built up area * Rate Service Maintenance Charge
11)	Facilities Maintenance Charges for MRF	= Built up area * Rate MRF Charge
12)	PFI Related Costs	= Construction Costs * Percentage Rate
13)	Total Operating Expenditure	= Facilities Maintenance Charges by Costs + Facilities Maintenance Charges for MRF + Insurance + Operating Expenditure + PFI Related Costs.
14)	Borrowing Loan	= Loan Principal + Loan Interest
15)	Loan Principal payment formula	= $P/((1 – (1/(1 + i)^n))/i)$
16)	Concession price	=RM33,527,326. 63
17)	Present Value	=Profit after tax*$(1/(1+\text{Discount Rate})^T)$

The price parameter equations for the Prototype SD model are summarised in Table 4. The verification of the Prototype SD model can be proven through simulation of the final Net Present Value (NPV) of RM39,000,000.00 at the concession price of RM33,527,326, as shown in Fig.4. It is verified that whenever NPV exceeds zero, the model is accurately viable. Furthermore, the calculated amount of each price variable/parameter in Prototype SD Model showed a close agreement to the calculated price parameters in the financial model (concession price model).
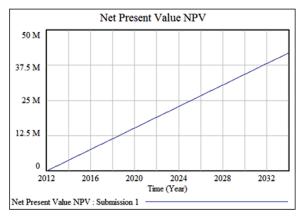
Fig.4: The Simulation of NPV in Graft

CONCLUSION AND DISCUSSION

There are many advantages shown for the developed Prototype System Dynamic Model. Firstly, the model can process dynamic and complex nature of real systems which cannot be done by a typical model. Secondly, the model helps to generate price elasticity in respect to various potential responses due to government's policies for infrastructure project developments. A cause-effect diagram, which is built from the concept of system dynamic, is integrated to develop the conceptual concession price model. Thirdly, the developed model helps to reveal and define the waves of different factors on price volumes through the generated causal structure of concession price system.

Therefore, one can rely on this model to speed up the process of determining concession price. In future verification of collaborated projects of Higher Educational Institution Project, the developed model can be utilised and exploited by taking into account some parameters like stakeholder ratios and used IRR. Last but not least, the public and private sectors may benefit from the Prototype SD Model through decisions made on the pricing of PPP projects.

ACKNOWLEDGEMENTS

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IFRS Convergence and Earnings Management

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ABSTRACT

In this work, the extent of earnings management before and after IFRS convergence was examined. Board's characteristics (independent of board members, board size, ethnicity, and political influence) and company's characteristics (audit quality, foreign stock market listing, company size, leverage, profitability and growth) before and after IFRS convergence were also investigated. Meanwhile, the Kothari's discretionary accrual model was used to measure the extent of earnings management. Using a sample of 231 publicly listed Malaysian companies over the 2005–06 period, it was found that IFRS convergence reduced the extent of earnings management. However, board's characteristics variables did not show any significant difference before and after the IFRS convergence. As for company's characteristics, only company growth was found to have a statistically significant difference before and after the IFRS convergence.

Keywords: Political connections, IFRS, Malaysia, Earnings management

INTRODUCTION

Effective January 1, 2006, IFRS-based accounting standards that are known as Financial Reporting Standards[1] (FRS) have been employed by publicly

[1] FRS and IFRS are used interchangeably throughout the paper.

traded companies in Malaysia. The new accounting standards that converge with IFRS are seen as a major milestone in the Malaysian accounting history after the country experienced several domestic financial scandals such as the one involving the Transmile Group Berhad.[2] These scandals have severely dented investors' confidence toward the domestic financial markets and exposed the weaknesses of the

[2] In a special audit, the Transmile Group Berhad was found to have overstated its revenues by more than RM500 million in FY 2005 and 2006 (The Edge Malaysia, 2009).

current accounting regime in Malaysia. As a result, many investors seek opportunities in well-regulated foreign financial markets.

Ball, Robin, and Wu (2003) argued that even though Malaysian accounting standards have originated from common law sources (i.e., United Kingdom and International Accounting Standards), financial reporting quality in Malaysia is not better than that of code law countries because the preparers' incentives are low. Their assertion is supported by Leuz, Nanda, and Wysocki (2003), who also found that Malaysia has the least-stringent earnings management as compared with other common law countries.

Even though Malaysia is classified as a common law country, it has some similarities with the code law ones as it has a highly concentrated ownership structure (e.g., family control) and relies on insider financing such as through banks (Ball *et al*., 2003; Abdul Rahman & Mohamed Ali, 2006). Claessens, Djankov, and Lang (2000) reported that in 1996, 67.2% and 13.4% of the Malaysian publicly listed companies were under family control and state control, respectively. Moreover, the management's and owner's roles are not seggregated in family-controlled companies. Large shareholders enjoy significant decision-making power because of their management role, and in most of the cases, minority shareholders' interests are neglected. This information asymmetry problem can be solved between management and large shareholders (usually within family members) through informal channels; nevertheless, it still exists between management and minority shareholders (Siregar & Utama, 2008). The inadequacy of legal protection in Malaysia is potentially causing minority shareholders to be expropriated by management and large shareholders (Mohd Saleh, Mohd Iskandar, & Rahmat, 2007). Meanwhile, Claessens *et al*. (2000) suggested that the concentration of wealth among few families is not a good sign for equity markets, especially in the evolution of corporate governance. This could be one of the plausible reasons why Malaysia has been perceived as the country with the least-stringent earnings management among other common law countries (Leuz *et al*., 2003).

International Accounting Standard (IAS) was employed as early as 1979 and almost all of the standards were incorporated in the Malaysian financial reporting standards, known as the MASB Standards. Malaysian accounting development is closely connected with IASB as it is a major force in shaping its framework (Ball *et al*., 2003). The rationale behind the introduction of an IFRS-compliant accounting framework by MASB, which is used by more than 100 countries, is to facilitate comparability across countries and increase the transparency of financial markets. The convergence to IFRS-compliant accounting framework is also intended to counter growing competition in the global financial markets, as well as to strengthen capital and financial markets in Malaysia.

IASB is an independent accounting standards setter with the objective to develop and promote a single set of high-quality globally accepted international financial reporting standards. The ultimate objectives of the accounting body are to enhance the transparency and comparability of financial statements across the world. IASB has engaged in awareness campaigns with the help of like-minded lobbies in various countries to ensure these objectives are met. Furthermore, several major changes, such as the Comparability and Improvement Project of 1989, have been made by the IASB on IFRS to eliminate accounting choices and facilitate comparisons across countries (Leuz *et al*., 2003; Christensen, Lee, & Walker, 2008).

One of the major successes of the IASB in promoting international accounting standards is the implementation of IFRS in European countries, which started in 2005 (Barth, Landsman, & Lang, 2008; Zéghal, Chtourou, & Sellami, 2011). The wide adoption of IFRS in Europe has spurred other countries to follow; in addition to the European Union, more than 100 countries such as Argentina, Australia, and Brazil have started to recognise and use IFRS after sustained efforts made by the IASB. Many countries, including major economies such as the United States, have drawn out a roadmap to comply with IFRS and are scheduled to adopt or converge with it in the near future. Furthermore, adoption of IFRS is recommended by the International Organization of Securities Commissions (IOSCO) to its members as the cross-listing

financial reporting standard (Ball, 2006). As such, securities market surveillance could become more effective and well-regulated under a single set of uniform accounting standards (El-Gazzar, Finn, & Jacob, 1999). This suggests that there are an increasing number of countries that would use IFRS as their financial reporting standard in the coming years.

Our study examined whether IFRS convergence in Malaysia, a common law country, would reduce the extent of earnings management. Using a sample of 231 Malaysian publicly listed companies over the 2005–06 period, it was found that IFRS convergence reduced the extent of earnings management.

The remainder of the paper is organised as follows. Section 2 reviews the relevant existing literature, while Section 3 discusses the research methods. Section 4 reports on the results and findings of the study. Finally, Section 5 summarises and concludes the paper.

PRIOR STUDIES ON IFRS AND EARNINGS MANAGEMENT

Most of the current debate focuses on the impacts of mandatory adoption of IFRS on earnings management. However, only a few studies have been done to examine the impacts of voluntary adoption of IFRS on earnings management (Van Tendeloo & Vanstraelen, 2005; Barth *et al*., 2008; Christensen *et al*., 2008). A remarkable study has been done by Van Tendeloo and Vanstraelen (2005) that examined the impact of voluntary adoption of IFRS.

Interestingly, they found no difference in the extent of earnings management between voluntary IFRS adopters and non-IFRS adopters in Germany's publicly traded companies. On the contrary, Christensen *et al*. (2008) found that voluntary IFRS adopters in Germany's publicly listed companies are associated with lower earnings management. In contrast to Van Tendeloo and Vanstraelen (2005), Zéghal *et al*. (2011) found that mandatory adoption of IFRS in a code law country (namely, France) led to a reduction in the extent of earnings management.

In a similar vein, Wan Ismail *et al*. (2013) used Malaysian listed companies as the subjects of the study to examine the interaction between mandatory adoption of international accounting standards and earnings management. They discovered that lower earnings management and higher value relevant were reported under the new accounting standards. The present study is different compared to the study conducted by Wan Ismail *et al*. (2013) in terms of the methods used to measure earnings management. They used modified Jones' model to measure the extent of earnings management with the time frame of three years before and after IFRS convergence.

Most of the studies with respect to earnings management are country-specific and focus on either code law or common law countries, except for Barth *et al*. (2008), whose study concentrates on the effects of voluntary IFRS adoption towards accounting quality through cross-country analysis that involves 327 companies in both code law and common law countries. Barth *et al*. (2008) revealed that companies that voluntary adopted IAS from 21 countries displayed lower earnings management, higher value relevance, and more timely loss recognition as compared with a collective sample of companies that used domestic accounting standards.

The interaction between IFRS adoption and earnings management has been tested extensively in prior studies (e.g., Van Tendeloo & Vanstraelen, 2005; Barth *et al*., 2008; Christensen *et al*., 2008; Iatridis, 2010). Most of the prior research reached a consensus that adoption of IFRS would lead to a reduction in the extent of earnings management since it requires higher disclosure and contains fewer accounting choices (Barth *et al*., 2008; Christensen *et al*., 2008; Zéghal *et al*., 2011). Hence, the following hypothesis was proposed in this study:

H_1: *The extent of earnings management declines after IFRS convergence.*

RESEARCH METHODS

Research design

This study focused on Malaysian companies listed on Bursa Malaysia with a December 31 financial year-end. Nonetheless, banks and financial institutions were excluded as their financial reporting rules are in accordance with the Malaysian Banking Act of 1973 issued by the Central Bank of Malaysia. In addition, pension funds and brokerage companies were also excluded since their accounting measures are incomparable

with those of industrial companies. The timeframe of our study was the year 2005 (i.e., before IFRS convergence) and 2006 (i.e., after IFRS convergence). As the convergence with FRS is effective from January 1, 2006, the first annual reports prepared under IFRS would be the listed companies with a December 31 financial year-end. Hence, data for 2005 and 2006 were collected to compare the extent of earnings management under two sets of accounting standards.

Sample

The sources of data were primarily from Datastream and company annual reports obtained through the Bursa Malaysia website. A cross check was performed on the 2005 and 2006 annual reports for each sample company to ensure that they switched from the MASB standards to FRS on January 1, 2006. All the sample companies had a mandatory requirement to comply with FRS and no early adopters were found.

Our initial sample size was 847 Malaysian publicly listed companies in 2006, which was further reduced to 231 because certain companies did not fulfil the selection criteria. The study excluded 303 companies with the financial year-end other than December 31, whereas 74 IPO companies and 17 companies involved in change of financial year-end in the years 2004, 2005, and 2006, respectively, in order to enhance the comparability and consistency of the data. Furthermore, 25 banks and financial institutions were also excluded (Van Tendeloo & Vanstraelen, 2005; Iatridis, 2010; Zéghal *et al*., 2011) since they are subject to different financial reporting rules in accordance with the Malaysian Banking Act of 1973. In addition, 173 companies in the industry groups containing less than 10 companies were also excluded since the cross-sectional regression for each industry is required to es*timate discretionary accrual (Chen et al*., 2005; Zéghal *et al*., 2011). Another 24 companies with insufficient data were also excluded from this study. The final sample consisted of 231 companies from diverse sectors, as described in Table 1 below.

TABLE 1
Industrial Sector of Sample Companies

Industry	Number of Companies	Percentage (%)
Building materials and fixtures	32	13.85
Computer services	12	5.19
Container and packages	17	7.36
Electrical equipment	11	4.76
Farming and fishing	23	9.96
Food products	16	6.93

TABLE 1 (continue)

Furnishings	10	4.33
Heavy construction	22	9.52
Industrial machinery	22	9.52
Iron and steel	10	4.33
Real estate holdings development	32	13.85
Software	14	6.06
Transport services	10	4.33
Total	231	100.00

Source: Sample Source

Operational Definitions and Measurement of the Variables

Earnings management was used as the metric to proxy the quality of the information contained in the financial statements. Similar to Zéghal *et al.* (2011), Kothari *et al.*'s (2005) discretionary accruals model, as specified in Equation 1, was used to estimate the discretionary accruals for each company in the industry group with at least 10 companies. We are interested in the discretionary accruals, (i.e., residuals value, υ_{it}), which are obtained through Equation 2.

$$TACC_{it} = \alpha_0 + \beta_1(1/TA_{it-1}) + \beta_2(\Delta REV_{it} - \Delta REC_{it}) + \beta_3 GPPE_{it} + \beta_4 ROA_{it} + \upsilon_{it}$$

(1)

$$DACC_{it} = TACC_{it} - [\alpha_0 + \beta_1(1/TA_{it-1}) + \beta_2(\Delta REV_{it} - \Delta REC_{it}) + \beta_3 GPPE_{it} + \beta_4 ROA_{it}]$$

(2)

Where $TACC_{it}$ represents the total accruals for the company i in year t; $DACC_{it}$, discretionary accruals for the company i in year t; TA_{it-1}, lagged total assets for the company i in year t-1; ΔREV_{it}, annual change in the revenues for the company i between year t and year t-1; ΔREC_{it}, annual change in receivables for the company i between year t and year t-1; $GPPE_{it}$, net property, plant, and equipment for the company i in year t; and ROA_{it}, return on assets for the company i in year t. Consistent with some prior studies (e.g., Abdul Rahman, & Mohamed Ali, 2006; Ahmad-Zaluki, Campbell, & Goodacre, 2011; Zéghal *et al*., 2011), all the variables were deflated by lagged total assets to reduce the heteroskedasticity of the data.

The current study was concerned with the absolute value of discretionary accruals (i.e., $|DACC_{it}|$) as it disregarded whether the earnings were managed up or down (Abdul Rahman, & Mohamed Ali, 2006; Zéghal *et al*., 2011). Once the

absolute discretionary accrual values were calculated for the companies, paired-samples t-test was used to compare the extent of earnings management before and after the IFRS convergence.

RESULTS

A univariate analysis was performed to test the hypothesis (H_1), which examines whether the extent of earnings management reduces after the IFRS convergence. The results obtained after comparing the before and after IFRS convergence data are reported in Table 2. Panels A, B and C report the results of earnings management variables, board characteristrics and company characteristics, respectively. Based on the results of the absolute discretionary accruals (|DACC|), it was found that the companies reporting under the MASB Standards (before IFRS convergence) showed on average 5.98% earnings management, while the figure for those reporting under IFRS (after IFRS convergence) was 4.17% on average. This finding implies that there is a significant decline in earnings management after the IFRS convergence. Therefore, it can be concluded that with a paired sample t-test of -3.991, one can successfully reject the null hypothesis and reveal a statistical difference between absolute discretionary accruals before and after the IFRS convergence.

Since the earnings management variable does not satisfy the normality assumption, a non-parametric test (i.e., Wilcoxon's signed rank test) is performed to check the robustness of the results that are reported under the paired samples t-test. Consistent with the paired sample t-test results, the results of the non-parametric test (z=-3.417) reveal that there is a statistically significant difference in absolute discretionary accruals before and after the IFRS convergence.[3] Consequently, it can be concluded that Hypothesis H_1 is verified, i.e. the IFRS convergence reduces the extent of earnings management. However, the other two earnings management variables (DACC and DACC>0) did not show any significant difference before and after IFRS convergence, except for the variable DACC<0, which shows a significant difference between the two periods.

[3] Effect size analysis is performed to ensure that the decline in discretionary accruals is unlikely occur by chance. Eta squared = t2/ (t2+N-1) is used to measure the effect size statistic. According to Cohen (1988), the Eta Squared is considered to have moderate effect if the value falls within the range of 0.06 to 0.14. The Eta Squared value of our study is 0.0647. This indicates that there is a moderate effect, with a substantial difference in the absolute discretionary accruals before and after IFRS convergence. In other words, the change from the MASB Standards to IFRS has a moderate effect in explaining the decline in discretionary accruals.

TABLE 2
Results of Univariate Analysis

Variables (n=231)	Mean (Pre-IFRS)	Mean (Post-IFRS)	Correlation	Paired Samples t-test	Wilcoxon Signed Rank test	Chi-Square
Panel A: Earnings Management Variables				–	–	
|DACC|	0.059	0.042	0.283***	-3.991***	-3.417***	N/A
DACC	-0.009	0.000	0.000	1.321	1.502	N/A
DACC≥ 0	0.058	0.046	0.126	-1.518	-1.038	N/A
DACC<0	-0.062	-0.039	0.073	3.272***	2.740**	N/A
Panel B: Board's Characteristics						
INDBM	0.398	0.405	0.815***	1.628	1.404	N/A
BSIZE	7.312	7.294	0.891***	-0.306	-0.031	N/A
ETHNI	0.351	0.348	0.971***	0.680	0.853	N/A
NPCON	0.795	0.799	0.929***	0.918	0.887	N/A
Panel C: C0mpany's Characteristics						
AQUAL	0.524	0.528	N/A	N/A	N/A	215.252***
DFEXM	0.069	0.069	N/A	N/A	N/A	215.748***
CSIZE	422.711	436.568	0.979***	1.421	4.004***	N/A
LEVER	22.103	22.495	0.928***	0.862	1.008	N/A
PROFIT	20.778	55.827	0.112**	1.043	0.434	N/A
GROWT	0.899	1.069	0.787***	3.484***	5.527***	N/A

Note: Sample size (Pre-IFRS)/(Post-IFRS) for DACC≥ 0 (n=101)/(n=109) and DACC<0 (n=130)/(122)

|DACC|: Absolute discretionary accruals; DACC: Discretionary accruals; DACC≥ 0: Positive discretionary accruals; DACC<0: Negative discretionary accruals; INDBM: Proportion of independence of board members; BSIZE: Total number of directors; ETHNI: Proportion of Malay directors on the board; NPCON: Proportion of politically unconnected directors on the board; AQUAL: Big-4 auditors; DFEXM: Foreign stock market listing; CSIZE: Total assets (in million RM); LEVER: Total debt-to-total assets (in percentage); PROFIT: Cash flow from operations (in million RM); GROWT: Price-to-book value ratio; N/A: Not applicable; ***, **, and * indicate significance level at 1%, 5%, and 10%, respectively.

As reported in Panel B, the average percentage of the independent external directors on board in the sample companies before and after IFRS convergence is 39.84% and 40.49%, respectively. Board size for the sample companies is about 7 members for both before and after the IFRS convergence.

On average, there are 35.10% and 34.81% Malay directors on board before and after the IFRS convergence. The percentage of directors who do not have the political influence before and after IFRS convergence is 79.49% and 79.93%, respectively.

The results of company's characteristics reported in Panel C show that about 52.38% and 52.81% of sample companies are audited by Big-4 auditors before and after the IFRS convergence, respectively. However, only 6.93% of the sample companies are listed on the foreign stock markets before and after the IFRS convergence. The average value of the total assets before and after the IFRS convergence is RM422,711,480 and RM436,568,152, respectively. There is an average 22.10% and 22.50% of leverage before and after the IFRS convergence, respectively. As for cash inflow from operating activities, the average is RM20,777,628 and RM55,821,727 before and after IFRS convergence, respectively. The average market value is lower than the book value in the sample companies and it is underestimated; it increased to 1.069 after the IFRS convergence. This implies that the average market value is almost equal to the book value in the sample companies, suggesting that the true value of a company is fairly reflected in the market price. Other than |DACC| and DACC<0, GROWT was also found to have a statistically significant difference (i.e., both parametric and non-parametric techniques) between before and after the IFRS convergence. However, CSIZE was found to have a statistically significant difference only in the non-parametric analysis. Other variables such as LEVER and PROFIT did not have any significant difference before and after the IFRS convergence.

CONCLUSION AND SUMMARY

As reported by Ball *et al.* (2003) and Leuz *et al.* (2003), earnings management is prevalent in Malaysia. As evident in some prior studies (e.g., Barth *et al.*, 2008; Christensen *et al.*, 2008; Zéghal *et al.*, 2011), IFRS could reduce the extent of earnings management since the Standards contain lesser accounting choices and require higher disclosure requirements. Therefore, we have investigated whether the convergence toward IFRS can reduce the extent of earnings management among selected Malaysian publicly listed companies. The evidence shows that the IFRS convergence reduces earnings management practices among the Malaysian publicly traded companies.

The current study contributes to the body of knowledge in relation to the impacts of IFRS convergence on earnings management in an Asian country. The findings have implications for regulatory bodies, which seek to look into the effects of IFRS convergence on potential earnings management reported under IFRS. In addition, this research is also important for investors and financial analysts as it provides empirical evidence that shows the reliability of financial information reported under IFRS in Malaysia. The conclusions provide additional evidence for regulatory bodies in other Asian or developing countries with a similar context to Malaysia so as to make a decision regarding conversion to IFRS.

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Financial Inclusion in Indonesia and Its Challenges

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ABSTRACT

The purpose of this paper is to observe the implementation of financial inclusion in Indonesia. Using Micro Enterprises (MEs) in traditional markets around Jakarta – Indonesia as the object of the research, approximately 20% MEs were found to have no banking facilities. Furthermore, instead of using credit facility, around 78% MEs still utilise their own capital to facilitate their businesses. The paper also examines the personal characteristics that can explain financial inclusion. Results revealed that only gender and education could explain financial inclusion. Morever, the findings also revealed that MEs generally demand for banking facility. Nevertheless, there are several barriers that hamper them from financially included. In particular, Self Exclusion and Marketing Exclusion are the most barriers that MEs face in accessing financial services.

Keywords: Financial Inclusion, Financial Exclusion, Micro Enterprises

INTRODUCTION

In today's advanced economy, the bank takes a central role in the community life and is the engine of economic development. As the intermediary institution, banking has an important role to bridge between demand and supply of the funds to improve the welfare of the community life. However, in most developing countries, access to banking and other formal financial services is limited to the lower classes.

It is estimated that around 2.5 billion people have no access to formal financial services. Financial exclusion tends to be higher in developing countries as compared to advanced economies. For example, in the United States and Germany only 9% and 4% of the population respectively have no access to financial services (Peachy &

Roe, 2006). In developing countries such as Indonesia, about half of its population are without access to any formal financial services. Other countries which have the worst condition are China, Pakistan, the Philippines and Bangladesh (World Bank Report, 2010).

Limited access to formal financial services occurs at the lower class of society. This is commonly referred to as financial exclusion which is a classic problem, where financial services to lower-class are still limited and very expensive. In Mexico, for instance, financial transactions such as short-term credit application cost five times more higher to unbanked society (Solo, 2008). Another example, for transactions using cheques, the unbanked society has to visit the issuer, which means they have to spend more time and money, while the banked society only need to make a deposit (Amaeshi, 2006; Mitton, 2008).

Financial inclusion is that formal financial services can reach low-income (low-income groups) and cover an extensive range of financial services such as savings, insurance, payment services and credit facilities. In other words, financial inclusion is the opposite of financial exclusion, a financial condition that only benefits a few parties.

Financial inclusion has become an important topic that is discussed in many developing countries, and it is even a focus point for all participants in the G-20 forum. Therefore, financial inclusion is vital to be realized given that country's economy relies on the financial sector.

The financial inclusion can be viewed as a means to achieve economic growth and a reduction of inequality and poverty. Ease of access to financial institutions will allow the lower classes to take part in economic activities and experience financial growth (NABARD, 2009).

Hanig and Jensen (2010) also argued that the current economic condition shows that financial innovation can bring crisis and destructive systemic impacts. The better existence of financial inclusion may enhance financial stability. They also stated that financial inclusion carries risks at the institutional level, but has no systemic impacts. It is proven that low-income borrowers and savers tend to have a solid financial behaviour towards financial crises, maintaining deposit in a safe place and satisfying their loan obligations.

Given the fact that financial exclusion exists in the lower classes of society in developing countries, including Indonesia, the groups have limited access to banking facilities. To diminish the financial exclusion, therefore, a financial inclusion programme is required. In order to implement the targeted and intensive financial inclusion, government, regulators, along with the banks, are expected to work together to consistently and continuously socialise and educate people who have limited access to financial institutions. In this case, the government, regulators and banking industry claim that they have already reinforced numerous financial inclusion programmes, including

enhancing financial literacy and providing suitable financial products and services to the lower class of society.

Based on the explanation given above, this research focuses on the implementation of financial inclusion in Indonesia and its barrier. It will only focus on demander side (Micro-Finance Enterprises), about their needs and barriers to access formal financial services. This paper is organised as follows: section two covers several state of art that have been reviewed. The next section discusses research design and methodology, followed by analysis and results in section four and conclusion in section five.

LITERATURE REVIEW

Financial inclusion is the situation when majority of the population have broad access to a wide range of financial facilities such as deposit, loans, pension and payment services, as well as insurance, financial literacy and consumer protection mechanism (Shafi & Medabesh, 2012). Furthermore, financial inclusion occurred when access to financial and banking services available transparently and fairly at affordable prices (Sarma, 2008; Solo, 2008). It is also mentioned by Fuller and Mellor (2008) that financial inclusion is the necessity to extend the concept of financial institution that focuses on the welfare (not merely for profit), reliable and affordable to all levels of society. The purpose of financial inclusion is to carry unbanked society into the formal financial services so that they have the access to financial services which include savings, insurance, payment services and credit facility (Hannig & Jansen, 2010).

The strategy to implement financial inclusion has also been applied in various countries using various means and strategies. In El Salvador, the focus of their attention is on how private banks can embrace unbanked society. The Jordanian government uses macroeconomic approach and bond sales promotion (interbank bond markets) with the objective to increase the accessibility of credit facility to the middle and low class society. On the other hand, the governments of Brazil and Egypt strengthen the banking network to create new banking products for unbanked society. Indonesia and Peru are pursuing the same approach to improve their people's ability to use existing banking products (The World Bank, 2007).

Meanwhile, Pakistan gives full authority to the small branches of banks in the region to take decisions in an effort to accelerate financial inclusion. In Kenya, the mobile is one means of expanding the banking network and providing easier access to the community broadly (Shafi & Medabesh, 2012).

Financial exclusion problem has been occurring in many developing countries including Indonesia. According to the World Bank (2010), less than 50% of the population in Indonesia have bank savings, only 17% borrow from the banks and more than one-third borrow from informal sectors. Therefore, it can be said that around 40% of Indonesians are financially

excluded from credit. Reasons for savers being unbanked include: (1) lack of money to obtain saving, (2) do not have any job, (3) do not understand bank, (4) do not see the advantages of having bank account. Interestingly, the finding shows that the interest rate is not a concern for them. In addition, the reasons for why people do not borrow include: (1) lack of documentation, (2) inadequate collateral, (3) inadequate income, and (4) in excess of debt.

Cnaan, Moodithaya, and Handy (2012) said that once financial institution is not well regulated, they will then prefer to have rich clients who can bear the high cost and at the same time, minimise the number of employees and branches to increase their profitability. These will definitely lead to financial exclusion.

Other researchers such as Khaki and Sangmi (2012) argued that the biggest constraints to eliminate the existence of financial exclusion are both from demand and supply. The problem from demand is caused by illiteracy, reluctance and skepticism about the formal financial sector. Then, constraints from supply increase due to the perception of non-bankable, complicated procedure and unsuitable products to all segments of the society.

Similarly, Shankar (2013) also argued that demand and supply might prevent the improvement of financial inclusion; for demand, it is due to financial literacy and capability. With the lack of financial knowledge, people tend to have minimum contact with financial services. In the same way, with poor financial capability, people could not afford any financial services. As for supply, the problems are due to unsuitable financial products, physical barriers, and complicated documentation.

Meanwhile, Leyshon *et al.* (2006, p. 161, as cited in Cnaan *et al.*, 2012), financial exclusion contains several barriers that may hinder the improvement of financial inclusion. The barriers consist of: (1) physical barriers; lack of physical financial institutions such as ATM machines, branch; (2) Access Exclusion occurred due to limited access for financial services like complicated requirement for opening a bank account; (3) Condition Exclusion where the product is unsuitable for low-income society; (4) Price Exclusion where people cannot afford financial services such as high administration cost for saving account; (5) Marketing Exclusion where marketing scope is created only for targeted customers; and (6) Self Exclusion when people voluntarily exclude themselves due to previous rejections or fear of being declined.

RESEARCH METHODOLOGY

Research Question

The explanation above describes the importance of implementing financial inclusion in developing countries, specifically in Indonesia since access to financial services is still difficult for low-income society. Hence, it is crucial to assess the implementation of financial inclusion in Indonesia, but only for the demand. Research has been conducted on the following questions:

1. How many Micro-Enterprises (MEs) in the studied market are financially included and what financial services they do they used?
2. What are the personal characteristics that distinguish the level of opportunity in gaining access to financial services?
3. What are the actual necessity of MEs on financial product and services?
4. What are the barriers for implementing extensive financial inclusion?

Data and Methodology

In this research, financial services refer to the financial services from the banks. The study was conducted among 270 respondents of ME's in and around nine municipalities of Jakarta including, Bogor, Depok, Tangerang and Bekasi. Three traditional markets were taken in each municipality as the objects of study, as outlined in Appendix 1. Then, 10 respondents were taken from each market, with a total of 270 respondents for all the markets around Jakarta.

As the objects of this study, MEs have to fulfil the following criteria:

1. MEs run their businesses in the traditional markets around Jakarta.
2. MEs have run their businesses for approximately one year.
3. MEs are still classified as Micro Enterprises based on the criteria

of Micro, Small and Medium Enterprises according to Law No. 20 of 2008 on UMKM Indonesia.

This study is a quantitative research using primary data attained from questionnaires. The questionnaires consists of close-ended questions with several possible answers for each question. The respondents were required to choose only one answer for each of the question.

The questionnaire was divided into four parts according to the four research questions. The first part is related to the number of MEs that has been included in financial access. Micro enterprises can be counted as included in the financial system if they already have a saving account. The second part is about personal characteristics that can distinguish the chance to gain the access to financial services. The subsequent part asks about the needs of MEs on financial services. The final part is about the barriers that MEs faced in the financial system.

Apart from the questionnaire, statistical tools were also utilised to analyse the data. To test the validity and reliability of the questionnaires, SPSS (Statistical Package for Social Science) version 20 was used. Also, binary logistic regression was used to explain question number 2.

RESULT AND ANALYSIS

In order to answer the first research question, a demographic analysis was conducted. There were 270 questionnaires distributed to 270 respondents, and all

the questionnaires were returned. The respondents consisted of 66% males and 34% females who were generally around 25-45 years old (63%) at the time of this study. Around 92% of the respondents are married, and about 50% of them have run their businesses for more than 10 years.

Furthermore, the average of their revenue turnover is below 25 million. As for the respondents' educational background, they have either high school or lower level of education. In term of their residential status, around 47% are still renting.

TABLE 1
Distribution and percentage of respondents based on facilities owned

	Facilities	Total	Percentage
Bank Facilities	No Facility	55	20.37%
	Saving	171	63.33%
	Credit	9	3.33%
	Health/Life Insurance	7	2.59%
	Credit Card	1	0.37%
	More than one facility	27	10.00%
Source of Capital other than bank	No Answer	2	0.74%
	Cooperative	24	8.89%
	Fiduciary	0	0.00%
	Own Capital	211	78.15%
	Personal	33	12.22%

Results presented in Table 1 show that there are about 20% of the respondents who have no financial facilities at all. The most facilities owned by MEs are saving accounts (about 63% of the respondents), while unfortunately only about 3% have obtained a credit facility from the bank. Furthermore, in terms of source of capital, about 78% of the respondents still generally use their own capital. This indicates MEs are still not familiar with the credit facility from the bank.

Question number two covers personal characteristics that can distinguish the level of opportunity in gaining access to financial services. The analysis was carried out using binary logistic regression.

TABLE 2
Personal charateristics related to financial inclusion

Variable	Category	Sig. (p-value)	Exp(B)	Sig. Result
Gender	Female (ref: Male)	.002	3.766	S
Age	(ref: < 25)			
	25-45	.868	1.153	NS
	46-65	.983	.981	NS
	> 65	1.000	156335080.920	NS
Marital Status	Married (ref: Not Married	.983	1.017	NS
Length of Business	(Ref : < 1 year)			
	1-5 years	.292	3.349	NS
	6-10 years	.148	5.462	NS
	>10 years	.422	2.493	NS
Revenue	(Ref: < 25 mil)			
	25-50 mil	.165	1.762	NS
	50-100 mil	.186	2.919	NS
	>100 mil	.999	895887656.765	NS
Education	(Ref: Primary to Junior high			
	High Schol or higher education	.002	3.043	S
Status of Residence	(Ref: House-rent)			
	Apartment-rent	.999	.000	NS
	Stay with family	.101	3.841	NS
	Owner	.855	1.069	NS
R Square (Cox & Snell)	0.168			
R Square (Nagelkerke)	0.264			

From Table 2, it appears that gender can explain financial inclusion. Interestingly, during this time, the female is considered as a gender group that has difficulty gainning access to financial institutions. However, this study proves that females can significantly explain financial inclusion since p-value <0.05 and they have 3.7 times greater chance to gain financial access than the males.

Similarly, the level of education can explain financial inclusion as well. Those with high school qualification or higher level of education have 3.04 times greater chances than those having lower levels of education (primary and junior

school) in gaining access to the financial system. This might be related to the fact that better education would improve their financial literacy. On the contrary, the other variables such as age, marital status, length of business, revenue and status of residence could not explain financial inclusion.

The third research question is about the need of MEs for financial facilities. In order to get clearer picture of their financial access needs, the respondents were given seven statements, as follows:

1. You need saving account to save and manage your business.

2. You need a loan facility from banks as additional capital for your business.
3. You need a close distance to banks or ATM machine to aid your business continuity.
4. You want to have deposits, insurance.
5. You need banking services to support your business.
6. You need a loan facility to expand your business.
7. Banks have an important role in helping your business and financial condition.

TABLE 3
Results of the needs analysis

	Questions						
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
Disagree	19%	36%	31%	16%	28%	36%	39%
Agree	81%	64%	69%	84%	71%	64%	60%

Those questions have passed validity and reliability test. The analysis was conducted on the needs of MEs for financial facilities. The results presented in Table 3 revealed that 81% of the respondents wished to have savings and 64% of the respondents wished to obtain credit facilities from the banks. In addition, about 69% of the respondents wanted the bank or ATM location placed close to their business. Furthermore, majority of the respondents (84%) would like to have other banking facilities such as deposits, insurance and so on. On the the other hand, only about 28% of MEs did not require banking services, 36% did not require

credit facilities and 39% thought that the banks did not have an important role in helping their businesses and finances. In general, about 70% of MEs argued that they needed banking services and products.

In the fourth research question, a descriptive analysis was conducted on the barriers that have the tendency to affect the occurrence of financial exclusion. Barriers are categorsed based on the research of Leyshon et al. (2006: 161), which was cited in the study of Cnaan (2012: 185). These barriers consisted of Physical, Access, Condition, Price, Marketing and Self Exclusion. In order to analyse each barrier, the respondents were given three questions

representing each exclusion covered with possible answers: (1) Strongly Disagree, (2) Disagree, (3) Agree, and (4) Strongly Agree. The list of questions is as follows:

1. Physical Exclusion

Q1: Around your business environment, you have difficulty in finding a bank branch.

Q2: Around your business environment, you have to go far to be able to find an ATM machine.

Q3: Around your business environment, you have never seen a bank employee who promotes products / services.

2. Access Exclusion

Q1: Banks have complex requirements when you want to open a savings account.

Q2: Banks have complex requirements when you want to apply for the credit facility.

Q3: Banks have complex requirements when you want to make a deposit or insurance.

3. Condition Exclusion

Q1: Banks do not have services and financial products that can support your business.

Q2: Banking products and services such as credit, savings, and insurance provide no benefits to you.

Q3: Bank loan does not match your needs.

4. Price Exclusion

Q1: Banking administrative fee for savings account is too high, making it difficult for your business.

Q2: The interest on the bank loan is too high for you, making it difficult for your business.

Q3: Interbank funds transfer fee is too high for you, making it difficult for your business.

5. Marketing Exclusion

Q1: You do not understand well various banking products and services.

Q2: Financial products and facility information such as savings, credit, etc. have not been disseminated clearly in various media.

Q3: Bank services are not appropriate for all levels of society, including the needs of MEs.

6. Self Exclusion

Q1: During this time, you still have concerns about the money you deposit in the bank because you do not trust the bank.

Q2: During this time, you still have concerns that your loan application will not be approved by the bank.

Q3: During this time, you still have concerns that the bank will not be willing to serve your needs as MEs.

Validity and reliability testing was carried out before the descriptive analysis was conducted. The results showed that all the questions are valid and reliable. Based on the results of the descriptive analysis, all

the questions for Physical Exclusion show results tht are below average. This finding indicates that MEs found no problems in finding bank branches, as well as ATM and bank employees. As for Access Exclusion, the highest average is the second question which indicates that respondents felt that the banks have complex requirements when they wanted to apply for credit facilities. However, they did not find difficulty opening any savings account. Furthermore, Condition Exclusion shows that the highest average is in the first question that indicates that most MEs felt that the bank has no programme and financial products that are able to support their business activities. For Price Exclusion, the highest average is for question two which reveals that the respondents felt that the interest on the loan facility is still high. Nonetheless, all the questions for Marketing Exclusion showed results that are above average. This result indicates that MEs do not understand various banking products and services well. In addition, they also found that information about financial products and facilities has not been clearly disseminated in various media. Moreover, they argued that the services provided by the bank are not suitable for their needs. Lastly, for Self Exclusion, Questions 2 and 3 have results that are above average. This finding shows that the respondents are still worried that the bank will reject their credit applications or their other financial needs.

CONCLUSION

This study aimed to examine and analyse the implementation of financial inclusion in Indonesia. The results revealed that about 20% of the respondents still do not have banking facilities. The most banking facilities used by MEs are savings. In terms of capital, approximately 78% of the traders are still using their own capital to run their businesses. This finding supports the research of World Bank in 2010, whereby 40% of the Indonesian population were excluded from credit facilitues.

For the second question, Bi-variate was conducted to analyse the personal characteristics that might explain financial inclusion. A previous research conducted by Cnaan *et al*. (2012) found that caste, religion, education and command of resources as the variables that explained financial inclusion. This paper used certain variables such as gender, age, marital status, length of business, turnover, level of education, and status of residence. It was found that only gender and level of education could explain financial inclusion. This finding suggests that female has more opportunities to gain access to banking products. In other words, women are assumed to be more reliable by the banks in giving financial access. In addition, MEs with higher educational level have greater opportunity than those with lower educational levels. This is probably because they have more knowledge about and understanding of banking product and services.

The third research question explored the needs of MEs on financial facilities to support their business activities. The question only focused on traditional banking products such as saving, loan, deposit and insurance. It is interesting to note that about 70% of MEs stated that they needed banking services and products in managing their businesses. About 84% of MEs needed savings, 64% wished to have credit facilities and 84% wanted to have other banking facilities such as deposit and insurance. Thus, it can be said that MEs basically needed banking product and services. Bank is expected as an institution that can help them (MEs) to solve their money management problems in saving, borrowing and lending money at reasonable rates. However, they usually do not enough knowledge about banking or capital and resources to offer as collateral.

The final question assesses six barriers that possibly hamper the implementation of financial inclusion. Those six barriers are using typology of financial inclusion by Leyshon *et al*. (2006). Each barrier is represented by three questions. It was found that physical exclusion (in this case, branches, ATM and employees) is not a serious problem for MEs since all the questions have results that below average. For other barriers such as Access exclusion, condition exclusion, price exclusion indicated only one question generated a result that is above the average. Therefore, those exclusions seem not to be serious problems for MEs either. On the other hand, the barriers that have the highest average are marketing exclusion and self exclusion. It can be assumed that those barriers are related to their knowledge in banking products and services, as well as their educational level. This result is in line with the results of question two which illustrates that majority of which without savings are less educated. Due to their low educational level, they do not have the confidence to access the financial services, so they exclude themselves. In relation to educational level as well, the MEs might not fully understand and were therefore not familiar with the marketing and sale of banking products so that they would think twice before doing any transactions with any banks. From this result, it can be suggested to bank and regulators in order to overcome the financial exclusion problems. In fact, MEs need bank products and services but their scope of knowledge and education have hampered them from getting the financial access. Therefore, it is recommended that banks create products that are suitable for them and also make the products familiar to or easily understood by them.

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Corporate Activity to Prevent Climate Change and Shareholder Structure: How Does CDP Connect Companies with Investors?

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ABSTRACT

Climate change is the most severe global problem. Every investor with a social and long-range view intends to improve climate performances by means of its investment. Companies should appeal to investors by disclosing their environmental activities. Among many disclosure systems, CDP (the former Carbon Disclosure Project) is the pioneer of the global one. This study shows the relation between corporate activity to prevent climate change and shareholder structure, by means of the response to CDP Japan 500. This investors' activity study indicates that disclosing the climate performance affects investor's activity to hold the stock of companies preventing climate change. It is critical that the company that is requested to provide information on climate change by CDP answers it and aims at high CDP score. In particular, this study shows the relation between investors and companies and promotes corporate activity to prevent climate change.

Keywords: Climate change, shareholder structure, CDP (The Carbon Disclosure Project)

INTRODUCTION

Recently, climate change has become the most severe global problem. It is recognised that every corporate activity to reduce GHG (Green House Gas) emission is effective to

control climate change. It means that this kind of social cost becomes company's cost. Every company does not expend to control climate change without any thought of its profit. Companies want to know whether or not their activities to prevent climate change are attractive to their multi-stakeholders, especially investors. On the other hand, every investor with a social and long-range view intends to improve climate performances by means of its investment. However, this relationship is not clear

yet. Thus, in order to change the climate problem for the better, it is necessary to show the relationship between corporate activities and investors' activities.

PREVIOUS RESEARCH AND CDP

After the Kyoto Protocol went into effect in 2005, a lot of research has been carried out to find the corporate factors that control global climate changing effects. For example, Amran *et al*. (2012) found that size, profitability, industry membership, government ownership and business network are positively and significantly related to climate change mitigation efforts in Malaysia. This research suggests a lot to green investors. However, it does not suggest a lot to companies, which do not recognise what they should act.

In relation to stock price, there is a lot of research conducted on firm value such as that by Al-Najjar and Anfimiadou, (2012). Most research on SRI (Socially Responsible Investment) also investigated GHG emission. However, every successful research is short to specify the corporate activities including what and how companies disclose their environmental activities.

From the point of corporate view, it is necessary to find the effect of its activity to prevent climate change. The main reason of the difficulty of finding is that the disclosure of corporate environmental activities is voluntary and that it is not easy to compare them.

Nowadays, there are a lot of unified disclosure programmes to report corporate environmental activities. Among them, CDP (the former The Carbon Disclosure Project) is the pioneer of the global disclosure programme to report companies' environmental impacts and strategies for investors. CDP, an international non-for-profit organisation working with investors, asks over 5,000 of the world's largest companies to report their activities to prevent climate change. It is distinguished that anyone can access the original responses to the CDP questionnaire.

Therefore, this study adopts CDP as the disclosed information of corporate activity to prevent climate change. CDP is recognised as one of the most useful programmes for investors. On the other hand, is it useful for every company to pay to have its activities disclosed? The objective of this study is to clear the guideline on what and how companies should disclose their environmental activities on CDP. In particular, it will indicate that CDP connects companies and investors and is useful for both companies and investors.

The CDP 2013 consists of three sections; climate change management, risks and opportunities and emissions. This study focuses specifically on climate change management, which is a fundamental activity.

TABLE 1
Country CDP Climate Change Reports 2013

Country reports in alphabet order		
Asia ex-Japan	DACH 350	Italy 100
Australia and New Zealand	France	Japan 500
Benelux 150	FTSE* 350	Korea 250
Brazil 100	Global 500	Nordic 260
Canada 200	Iberia 125	S&P 500
Central and Eastern Europe	India 200	South Africa 100
China	Ireland	Turkey 100

*: UK companies selected in Financial Times Stock Exchange

CDP disclosed several climate change reports in 2013 (see Table 1). To apply time-series analysis, this study investigated CDP Japan 500 which consisted of the largest number of companies.

CDP Japan 500 has asked 500 Japanese largest companies to report from February to September every year since 2006. The results are published in November. The companies' environmental activities are evaluated by two scores. The first one is the disclosure score. It shows the evaluation of integrity and quality of the answers. Another is the performance score. It shows the evaluation of the actual efforts of companies.

RESEARCH APPROACH

To investigate investors' activities, this study focused on holding stocks. The shareholder structure is examined because every company wants investors to hold its stock for a long time. The objective of the analyses is to find the relation between corporate activity to prevent climate change and shareholder structure by means of the response to CDP Japan 500.

This study investigated environmental management and environmental performance of companies relating climate change, however, it did not examine their reducing amount of emissions directly. Though the reducing amount is disclosed in CDP reports, the numerical value of the amount is not considered. This is because the efficiency of corporate activity to its environmental emission reduction depends on the stage of environmental management of each company (Tsuboi & Takahashi, 2012a, 2012b). The historical comparison of the amounts of emission reduction of a company is significant. However, the simple comparison of the amounts of emission reduction among the companies on the different stages of environmental management will hide the difference of their past efforts. Then, this study investigated only the reduction target and management system to execute the reduction. In specific, this study is divided into three parts.

First part: Shareholder Structure 2014 – CDP 2013

The first part shows how companies attract investors through their disclosure of activities to prevent climate change. The relation between shareholder structure in February 2014 and CDP Japan 500 in 2013 was analysed. The first part puts its focus on what information investors pay attention in CDP. The CDP information is divided into four steps as information criteria of investors. The four steps can be defined as Table 2.

TABLE 2
Definition of the four steps

Step	Step A CDP response	Step B CDP score	Step C Reduction target	Step D Standard of target
CDP information	CDP response	Disclosure score Performance score Comparison with non-answering company	Absolute target Intensity target	Original setting Kyoto Protocol Laws and regulations Industry goal Production base goal Domestic goal Overseas goal

Step A discusses about whether or not companies answer CDP. Step B discusses about disclosure score and performance score. In addition to these, through comparison between getting low score company and non-answering company, this study defines the standard score which companies should get at least. Step C discusses about absolute target and intensity target. Absolute target objects to reduce GHG that companies discharge in total. Intensity target objects to reduce GHG that companies discharge per activity such as per production volume. In Step D, standard of target is discussed.

Second part: Shareholder Structure 2014 – CDP 2012 & CDP 2013

The second part considers the effectiveness of the past disclosure. CDP Japan 500 in 2012 was added into the analysis. It discusses about CDP response, CDP answer newly and the change of scores. In this part, response score is taken into consideration, and the response score is defined in Table 3.

TABLE 3
Definition of response score

CDP2012 response	CDP2013 response	Response score
Answered	Answered	2
Not answered	Answered	1
Not answered	Not answered	0
Answered	Not answered	-1

Final part: CDP 2013 & CDP 2014 – Shareholder Structure 2013

The final part examines whether or not investors and shareholders improve corporate activities to prevent climate change. The relation between the change of CDP Japan 500 in 2014 from 2013 and shareholder structure in February 2014 was analysed. The change of scores in the CDP information is discussed in this part. CDP is organised working with investors to motivate companies to disclose their GHG emissions. The effects of investors and shareholders to corporate activity to prevent climate change are related to the original objective of CDP. Table 4 shows the object of each analysis and Table 5 shows variables in this study.

TABLE 4
Object of each analysis

Part	Analysis	Object	Number of companies
First part	Step A	Companies asked to report by CDP 2013	462
	Step B	Companies answering CDP 2013	216
	Step C	Companies setting reduction target	139
	Step D		
Second part	CDP response	Companies asked to report by CDP 2012 and CDP 2013	418
	CDP answer newly	Companies not answering CDP 2012	224
	Change of scores	Companies answering CDP 2012 and CDP 2013	183
Last part	Change of scores	Companies answering CDP 2013 and CDP 2014	187

TABLE 5
Variables

Index	Variables	Source
Investor activities	Institutional investor's shareholding ratio	Nikkei NEEDS database
	Foreign shareholding ratio	
	Stable holder's shareholding ratio	
CDP answer	Answer	
	Disclosure score	
	Performance score	
GHG reduce target	Absolute target	CDP Japan 500
	Intensity target	
	Original setting	
	Kyoto Protocol	
	Laws and regulations	
	Industry goal	
	Production base goal	
	Domestic goal	
	Overseas goal	

TABLE 5 (continue)

Control variables	Market capitalisation	Nikkei NEEDS database
	Overseas sales ratio	
	Financial leverage	
	Tobin's Q	
	Stock returns 3-year average	
	ROA 3-year average	
	Stock price fluctuations 3 years	
	Specific strain concentration	
	Small shareholders' shareholding ratio	
	Industry dummies †	

†: Industry dummies are defined as 10 industries that are classified taking into account the GHG emissions.

The multiple regression models are applied to each analysis. In the first and second parts, the objective variable is the shareholder structure, which is the shareholding ratio of institutional investor, foreign investor and stable holders[1]. The independent variables in the first part are CDP responses, disclosure scores, performance scores and targets reduction of GHG. The independent variables in the second part are changes of CDP response, disclosure score and performance score. In the last part, the variables are reversed in the second part. Table 6 shows the indices of each analysis.

TABLE 6
The indices of each analysis

Part	analysis	Objective variable	Independent variables	Control variables
First part	Step A	Ratio of shareholdings 2014/02	CDP answer 2013	2013/03
	Step B		CDP answer 2013	
	Step C		GHG reduce target 2013	
	Step D			
Second part	CDP response		CDP answer 2012-2013	
	CDP answer newly		CDP answer 2013	
	Change of scores		CDP answer 2012-2013	
Last part	Change of scores	CDP answer 2013-2014	Ratio of shareholdings 2014/02	2014/03

[1] In this study, stable holder's shareholdings are defined the shareholdings owened by cross-shareholdings; insurance companies, banks or credit unions excluding special accounts and trust accounts; open affiliate companies; officer and directors; an employee stock ownership plan; treasury stock; and the financial institutions' share owened by open corporations, and other large shareholdings by corporations.

To eliminate spurious correlation, this study makes the default model constructed from control variables, size, profitability, financial position, stock price and industry. When an analysis model is better than the default model, its statistical significance is investigated.

RESULTS AND DISCUSSIONS

First part: Shareholder Structure 2014 – CDP 2013

Step A: CDP Response

The results from Step A indicated that the company answering CDP has high institutional investor's shareholding ratio and high foreign shareholding ratio (Table 7). Therefore, the company which is requested to provide its information on climate change by CDP should answer CDP. Its response affects its shareholder structure. On the other hand, it is not seen as strong effect on stable holder's shareholding ratio.

TABLE 7
Results of the CDP response

	Institutional investor		Foreigner investor		Stable holder
Number of companies	462		462		462
Adjusted R^2	0.418		0.383		0.6654
Adjusted R^2 (default)	0.410		0.377		0.6648
CDP answer	3.09	***	2.30	**	-0.72

Significant levels are *:10%, **:5%, ***:1%

Step B: CDP score

Table 8 shows that the company getting high score on disclosure score has high institutional investor's shareholding ratio and high foreign shareholding ratio. Table 9 indicates that the company getting high score on performance score has a high foreign shareholding ratio. In specific, the company getting an "A" on its performance score is closely related to foreign shareholding ratio. In addition, on both scores, the company getting low score has a low evaluation of institutional investor and foreign investor. Stable holder has a reverse trend of institutional investor and foreigner investor.

TABLE 8
Results of the disclosure score

	Institutional investor		Foreigner investor		Stable holder	
	Adjusted R^2	Coefficient	Adjusted R^2	Coefficient	Adjusted R^2	Coefficient
Default	0.510		0.461		0.783	
100~96	0.508	0.57	0.468	4.46 *	0.782	-0.56
100~90	0.520	3.77 **	0.480	4.28 ***	0.787	-2.75 **
100~85	0.517	2.82 *	0.472	2.94 **	0.790	-3.00 ***
100~80	0.514	2.13	0.473	2.82 **	0.788	-2.62 **
100~75	0.511	1.61	0.467	2.26 *	0.786	-2.17 **
100~70	0.508	0.21	0.459	0.55	0.783	-1.32
100~65	0.514	2.39	0.468	2.62 *	0.787	-2.63 **
100~60	0.513	2.41	0.463	1.95	0.783	-1.40
100~55	0.514	2.91	0.464	2.37	0.783	-1.69
100~50	0.519	4.23 **	0.467	3.15 *	0.786	-2.95 *

TABLE 9
Result of the performance score

	Institutional investor			Foreign investor			Stable holder		
	Adjusted R^2	Coefficient		Adjusted R^2	Coefficient		Adjusted R^2	Coefficient	
Default	0.510			0.461			0.783		
A	0.513	3.87		0.483	7.32	***	0.782	0.76	
A~B	0.512	1.73		0.467	2.19	*	0.788	-2.53	**
A~C	0.514	2.28		0.471	2.81	**	0.788	-2.60	**
A~D	0.516	3.49	*	0.465	2.65		0.785	-2.61	*
A~E	0.519	4.23	**	0.467	3.15	*	0.786	-2.95	*

In comparison with the company getting low disclosure score, the difference is not seen in the company not answering CDP (see Table 10). Raising the score for the comparison, it has seen the difference between the answering companies with "60" ~ "69" on their disclosure score and the non-answering companies (Table 11). Therefore, if companies answer CDP, the companies need to get at least a "60" on disclosure score.

TABLE 10
Result of comparison's score under 50

	Institutional investor	Foreign investor	Stable holder
Number of companies	281	281	281
Adjusted R^2	0.383	0.380	0.6057
Adjusted R^2 (default)	0.385	0.382	0.6055
CDP answer	0.06	0.42	1.98

TABLE 11
Result of comparison's score 60~6

	Institutional investor	Foreign investor	Stable holder
Number of companies	276	276	276
Adjusted R^2	0.427	0.406	0.571
Adjusted R^2 (default)	0.419	0.405	0.572
CDP answer	6.44 *	3.84	-2.54

Step C: Reduction target

Table 13 shows that the company setting intensity target has low institutional investor's shareholding ratio. Based on the result from Step C, it is concluded that companies should set absolute target, not intensity target.

TABLE 12
Result of the absolute target

	Institutional investor	Foreign investor	Stable holder
Number of companies	139	139	139
Adjusted R^2	0.434	0.337	0.714
Adjusted R^2 (default)	0.438	0.34	0.715
Absolute target	0.82	1.41	-1.21

TABLE 13
Result of the intensity target

	Institutional investor		Foreign investor	Stable holder
Number of companies	139		139	139
Adjusted R^2	0.456		0.342	0.713
Adjusted R^2 (default)	0.438		0.34	0.715
Intensity target	-4.00	**	-2.03	0.37

Step D: Standard of target

The relevance does not appear in setting the original targets for climate change and the shareholder structure. However, there is relevance between setting targets based on the Kyoto Protocol or the industry goal and the shareholder structure (Table 14). Therefore, it can be presumed that companies should set the target investors understand easily.

TABLE 14
Result of the target's standard

	Institutional investor		Foreigner investor		Stable holder	
Number of companies	139		139		139	
Adjusted R2	0.466		0.366		0.725	
Adjusted R2 (default)	0.438		0.340		0.715	
Original setting						
Kyoto Protocol	7.41					
Laws and regulations	4.52				-3.55	
Industry goal	16.10	*	16.35	*	-11.10	*
Production base goal			3.70		2.56	*
Domestic goal			-6.18	*		
Overseas goal	2.21		3.50	**		

Second Part: Shareholder Structure 2014 – CDP 2012 & CDP 2013

As Table 15 indicates, institutional investor's shareholding ratio and foreign shareholding ratio are as high as companies answered CDP. In addition, Table 16 shows that the company answering CDP newly can increase the institutional investor's shareholding ratio and high foreign shareholding ratio largely.

TABLE 15
Result of the response score

	Institutional investor		Foreign investor		Stable holder	
Number of companies	418		418		418	
Adjusted R^2	0.457		0.403		0.642	
Adjusted R^2 (default)	0.450		0.392		0.643	
Response score	1.50	***	1.53	***	-0.30	

TABLE 16
Result of the CDP answer newly

	Institutional investor	Foreign investor	Stable holder
Number of companies	224	224	224
Adjusted R^2	0.427	0.409	0.528
Adjusted R^2 (default)	0.425	0.404	0.530
CDP answer newly	5.56	6.02	-1.76

As shown in Table 17 and Table 18, although the scores are meaningful, the change of scores is not so important. However, the change of performance score is related to foreign shareholding ratio. Therefore, companies should answer CDP aggressively without worrying about the past answering and scores.

TABLE 17
Result of the disclosure score change (2012-2013)

	Institutional investor	Foreign investor		Stable holder	
Number of companies	183	183		183	
Adjusted R^2	0.507	0.404		0.739	
Adjusted R^2 (default)	0.505	0.396		0.731	
Disclosure score (2012)	0.07	0.09	**	-0.10	***
Disclosure score change (2012-2013)	0.05	0.04		-0.06	

TABLE 18
Result of performance score change (2012-2013)

	Institutional investor	Foreign investor		Stable holder	
Number of companies	183	183		183	
Adjusted R^2	0.511	0.418		0.744	
Adjusted R^2 (default)	0.505	0.396		0.731	
Performance score (2012)	1.35 ***	1.81	***	-1.69	***
Performance score change (2012-2013)	0.84	1.61	**	-0.98	

Final Part: CDP 2013 & CDP 2014 – Shareholder Structure 2013

The result from the final part indicates that the relevance between the shareholder structure and the change of scores is not seen. Therefore, it is considered that the shareholder structure does not have enough effect on company's attitudes to CDP in a short time.

The recognition for CDP was shown to have increased from 2013 through 2014. In addition to that, the number of companies answering continually also increased. Therefore, it is considered that the difference of CDP information between companies decreased.

TABLE 19
Result of disclosure score change (2013-2014)

	Disclosure score change (2013-2014)	
Number of companies	187	187
Adjusted R^2	-0.020	-0.023
Adjusted R^2 (default)	-0.023	-0.023
Institutional investor	0.09	
Foreign investor		0.12
Stable holder		-0.11

TABLE 20
Result of performance score change (2013-2014)

	Performance score change (2013-2014)		
Number of companies	187	187	187
Adjusted R^2	-0.035	-0.035	-0.034
Adjusted R^2 (default)	-0.029	-0.029	-0.029
Institutional investor	-0.002		
Foreign in-vestor		0.002	
Stable holder			0.004

CONCLUDING REMARKS

Using CDP Japan 500, the relationship was found between corporate activity to prevent climate change and its shareholder structure. Disclosing the climate performance would affect the investor's activity to hold the share of the company preventing climate change.

CDP's questionnaire is based on the investors' requests that support CDP. The information obtained through CDP has already been used effectively in SRI [FTSE (2010), RobecoSAM (2013)]. Moreover, this study also found that companies also could use CDP effectively to change their shareholder structure. Therefore, considering the information disclosure of climate change and the shareholder ratio, these facts indicate that CDP is a useful disclosure programme not only for investors but also for companies.

Therefore, companies should improve the amount and quality of information they disclose on their climate change prevention activities. The results of the analyses specified that the company that is requested to provide its information on climate change by CDP should answer it and aim at CDP high score. In addition, it is necessary for the company to get at least a "60" on the disclosure score. In fact, it is important that every company sets absolute target and also targets that investors understand its appropriateness easily. Regardless of the continuity of answer and its score, answering the CDP questionnaire itself is meaningful. In other words, it is considered that the company which has not disclosed information can bring about a positive change in its shareholder structure by doing so.

Among Japan's major corporations, the influence of the shareholders on information providing to CDP is not significant. As the number of investors who are concerned about climate change has increased, while the recognition of investors on CDP has widely been recognised in stock market.

Then, it is expected that the influence from the company's shareholder on its disclosure through CDP programme can be significant. Although this study subject is CDP Japan 500, it is hoped that activities for climate change progress around the world by carrying out an analysis for other countries.

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Longitudinal Study of Corporate Tax Planning: Analysis on Companies' Tax Expense and Financial Ratios

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ABSTRACT

Globally, the corporate tax planning activities remain unresolved issues faced by the various tax authorities. In Malaysia, these issues have received serious attention from policymakers, especially among the tax authorities concerned with either direct or indirect taxes. The transformations in the tax systems and accounting standards have given companies opportunities to manage their tax affairs for the benefit of their shareholders. Hence, using the longitudinal approach, this study analysed tax expense and financial ratios of 4,500 firm-years from publicly listed companies prepared for the years 2001 to 2012. A company's tax planning is reflected in its effective tax rate reported in the financial statements. Thus, the difference between the statutory tax rate and the effective tax rate shows the gap which indicates the level of aggressive tax planning undertaken by the companies. The statistical results from the pooled OLS regression model disclosed that financial ratios such as inventory intensity, capital intensity, leverage and research, as well as development expenditure have a significant relationship with the level of companies' tax expense. Thus, the findings implied that companies' financial ratios could be used as red flags to identify aggressive tax planners which can be further investigated for potential tax frauds.

Keywords: Effective Tax Rate, Financial Ratios, Tax Expense, Tax Planning

INTRODUCTION AND BACKGROUND

Nowadays, Tax Planning research has become a widely discussed topic among academic researchers as Tax Planning activities can be used as business strategies to minimise companies' income tax

expenses towards the federal government. Furthermore, business organisations will be able to enjoy minimum income tax expenses towards the government. One of the largest sources of government revenue comes from the tax collection from the corporate sectors in the capital market (Aminu, Eluwa, & Malgwi, 2013). This scenario has contributed to a negative relationship between the interests of the business organisations and the government since an approximate 70 percent of the government's revenue is derived from tax collection activities (Noor, Matsuki, & Bardai, 2008). Therefore, when business organisations employ aggressive Tax Planning activities in their business transactions, the government will lose its optimum revenue from the companies' income tax expenses. There might be an increase in strategies for Tax Planning activities due to the initiative schemes provided by the tax authorities. Such an initiative is known as a tax incentive scheme to the corporate sectors. This means that business organisations have been provided by the tax authorities with certain tax provisions under the tax regulation system to enable them to utilise the tax provisions for the purpose of Tax Planning strategies. With such a provision for Tax Planning activities, the business organisations usually will try to utilise the incentives given by the tax authorities to minimize their income tax expense level.

Nevertheless, it is important for stakeholders to understand that the provisions of tax incentives to business organisations in the capital market have not directly contributed to the loss of revenue on behalf of the federal government. The government's aim in the provision of tax incentives to business organisations is to attract more participants to the capital market activities. Therefore, the tax authorities should make a continuous assessment of the tax regulation system to meet the complexity of the business organisations's activities. This is because business transactions in the capital market are not limited to their local boundaries since they also involve global business transaction activities. In addition, the continuous assessment of the tax regulations system will enable business organisations to continuously utilise the optimum Tax Planning activities for their business transactions.

Meanwhile, in order to safeguard all stakeholders' interest with regards to Tax Planning activities, it is important to know how the accounting transactions in business organisations may influence Tax Planning activities in the capital market transactions (Graham, Raedy, & Shackelford, 2012). This is because potential or existing stakeholders usually focus on how business organisations are able to minimise their expense level and increase profits to an optimum level. This concern includes business organisations' level of income tax expenses. In other words, Tax Planning activities will interest them as a way to assess how business organisations manage their business expenses to generate an optimum level of profits (Bryant-Kutcher,

Guenther, & Jackson, 2012).–In addition, when potential and existing stakeholders have a better understanding of how business organisations manage their income tax expenses, it will lead to a better decision making process with regards to business organisations. Therefore, one of the possible ways to assess the Tax Planning activities of business organisations is through key components of the financial ratios in a company's financial statements. This study has provided some evidence to explain how the financial ratios in the income statement of business organizations may influence the Tax Planning activities in business organisations. Hence, the goal of this study is to investigate the possible association between the financial ratios towards the effective tax rate level (ETR) among business organisations in the capital market. Several financial ratios have been identified in order to test their possible association with the income tax expense level in business organizations (Noor, Fadzillah, & Mastuki, 2010; Richardson & Lanis, 2007).

Tax Planning Activities

In this particular study, the term "Tax Planning" is defined as an initiative by business organisations in minimising their corporate tax burdens to the tax authorities. In other words, corporate taxpayers employed Tax Planning activities in order to get some tax benefits in the future (Abdul Wahab & Holland, 2012). This is because Tax Planning activities will allow business organisations to bear less tax burdens to the

tax authorities. Further, corporate taxpayers usually utilise the tax incentive schemes provided to them by the tax authorities. They will also try to reduce their tax expenses with certain tax exemptions provided from the tax incentive schemes for their Tax Planning strategies. Meanwhile, Tax Planning activities can also be described as tax mitigation activities in order to safeguard the economic benefits in a future (Rydqvist, Schwartz, & Spizman, 2014). It was expressed as tax mitigation activities because under Tax Planning strategies, managers in business organisations will usually mitigate the expense level to the minimum level. Thus, this approach has been related to Tax Planning activities in business organisations because the mitigation approach for Tax Planning activities has contributed to an increase in business organisations' business income level.

The term "Tax Planning" arose from a wide discussion among previous and current academic researchers. The issues covered were between the impacts of this activity towards business organisations as well the interest from the government revenue issues. Business organisations will try to implement efficient Tax Planning activities in their business transactions because lower levels of actual income tax expenses derived from the business transactions will lead to an optimum level of income for companies in the capital market activities (Armstrong, Blouin, & Larcker, 2012). Meanwhile, the federal government has provided a comprehensive

platform to business organisations in order to safeguard its interests from the collection of income tax expenses from the companies.

However, the complexity of the tax regulation systems provided by the federal government towards all of the stakeholders in the capital market activities will lead to inefficient Tax Planning strategies by business organisations (Hebous & Lipatov, 2014). For example, despite pressure from their stakeholders to meet targets from business transactions, poor Tax Planning activities are still employed to have a lower burden of income tax expenses and a higher company business income level. Nevertheless, the problems of understanding the complexity of the Tax Planning system in companies may be resolved by having an alternative method to determine the appropriate level of income tax expenses in the business organisation. Thus, the financial ratios can be used by the stakeholders to assess the companies' capability in managing their Tax Planning activities in the business transactions (Edgerton, 2010). Apart from this, the performance level of business organisations is closely related to the Tax Planning activities in their transactions (Graham *et al*., 2012). Therefore, it is important to take note that the financial ratios could be used as a methodology by the stakeholders to assess the capabilities of business organisations' Tax Planning activities.

Financial Ratios and Tax Planning

In the accounting ratios, there are several types of financial ratios which might be used in assessing business organisations' Tax Planning activities. Some of them, as suggested by Richardson and Lanis (2007) and Noor *et al*. (2010), are classified as inventory intensity ratio (INVINT), capital intensity ratio (CAPINT), return on asset ratio (ROA), leverage ratio (LEV) and research and development ratio (R&DINT). The term "inventory intensity ratio" (INVINT) can be defined as the amount of investment made by a business organisation towards the inventory level (Kolias, Dimelis, & Filios, 2011). The inventory intensity is a crucial factor that managers in the business organisations should be concerned with because proper management of an inventory intensity system could lead to better production costs in the business transaction activities. Further, this approach could also directly affect the level of business income and the income tax expense level in business transaction activities. In other words, the inventory intensity is believed to have a significant impact on various ETR (Tax Planning activities) among business organisations. Thus, the inventory intensity ratio can be further interpreted by dividing the inventory towards the total asset of the business organisations.

Furthermore, another financial ratio that is believed to have an association with the ETR level in this particular study is capital intensity ratio or (CAPINT). This ratio can be defined as the amount of

investment made by the companies towards the business properties, plants and the equipment. In other words, capital intensity refers to the investment made by business organisations on their fixed assets (Lee, Koh, & Kang, 2011). The capital intensity ratio can be interpreted by dividing the total fixed asset towards the total asset in the business organisation. In addition, the investment in fixed asset which is related to the capital intensity ratio is believed to have an association towards the variation of ETR in business organisations (Wong, 2011). This is because the current tax laws in Malaysia have provided some capital allowances to the companies with the ETR level. Another useful financial ratio in assessing business financial performance is return on asset ratio or (ROA). This ratio can be defined as the portion of pre-income tax towards the total asset in the companies (Santoro, & Wei, 2011). In other words, this ratio can be interpreted by dividing the amount of pre-income tax to the total asset in business organisations. Meanwhile, this ratio also represents companies' profitability level from their business transaction activities. This means an increase in return on asset level will result in an increase in the pre-income tax level in companies' transaction activities. Therefore, it is believed that the return on asset will have a positive association towards the income tax expenses by business organisations. Consequently, potential and existing stakeholders might use this financial mechanism in order to evaluate the performance of business organisations in their capital market activities.

Leverage ratio (LEV) is also widely used to measure the portion of long term debts towards the total asset of business organisations' activities. In other words, leverage ratio can also be defined as the capability of a business organisation in financing its total asset with long-term debt for the business activities in the capital market (Danielova & Sarkar, 2011). Moreover, the previous study by (Ruf, 2008) showed that the leverage level of the business organisation would result in a negative association towards the income tax expenses in the business activities. Lim (2011) argued that such an occurrence is due to the interest in the long-term debts which might be used as a tax deductible item in the business transaction activities. The last financial ratio that has been tested in this particular study is the research and development intensity ratio (R&DINT). This ratio can be defined as the amount of sales that could be generated from business organisations' research and development activities in the capital market (Richardson & Lanis, 2007). In other words, this financial ratio is measured by research and development expenses divided by the total sales from the business activities. A study by Gallemore and Labro (2014) also observed that R&DINT ratio had a negative association with effective tax rate levels in business organisations. This is due to this financial ratio being entitled to the tax deductions for the business transaction activities. Hence, the more cash flow on these types of expenses, the more tax deductions will be accounted for the purpose of Tax Planning activities.

RESEARCH METHODOLOGY

This particular research comprised of selected public listed companies on Bursa Malaysia from 2001 to 2012. Therefore, companies not listed during the investigation period were excluded from the sample selection for this research. Therefore, the samples were collected based on the availability of the companies which had already been listed during the period of the investigation. Meanwhile, the second criterion that was considered for sample selection was the availability of the selected companies' financial data required for the analyses in this study. Besides that, companies which had losses in their business transaction activities were also excluded from the samples in this research.

Furthermore, selection of the samples was based on the list of companies provided by the Securities Commission of Malaysia (SC). Therefore, the database of Thompson Data Stream was used in order to retrieve the data from the selected companies. Thus, the final sample that was gathered for this particular study comprised of 375 public listed companies on Bursa Malaysia. The type of data used in this study is in the form of balance panel data. Hence, from these samples, the total firm years of companies tested in this particular study was 4500. For the data analyses, the study employed Pooled OLS regression method in order to investigate the association between financial ratios and Tax Planning activities or the ETR level among of the selected companies. Consequently, from the data recoding aspects, those selected companies which had negative tax expenses were recoded as "0" while for those who had an ETR with more than 100% were recorded as 100. This step is crucial in order to eliminate the extreme values in the data analysis process.

Next, the analyses of the study began with some descriptive analyses related to the variation of ETR and statutory tax rate or STR among the selected companies on Bursa Malaysia. Based on these analyses, further research was conducted to investigate the relation between the independent variables and the corporate income tax expenses (ETR*).* At this stage of the research, the investigation was concerned with the significant level between the variables tested. In addition, the analyses focused on the association between the variables. Finally, the study also examined the extent of the relationships between all the financial ratios towards effective tax rate (ETR). Therefore, the model developed for the purpose of this study is:

$$ETR = \beta 1 \; INVNT + \beta 2 \; CAPINT + \beta 3 \; ROA + \beta 4 \; LEV + \beta 5 \; R\&DINT + \varepsilon$$

EMPIRICAL RESULTS

TABLE 1
Descriptive statistics of ETR (2001-2012)

	ETR %	STR %
Mean	0.146	0.268
Median	0.148	0.275
Maximum	0.250	0.280
Minimum	0.113	0.250
Std. Dev.	0.004	0.013
Observations	4500	4500

Table 1 above illustrates the descriptive analyses between effective tax rate level (ETR) as compared to statutory tax rate (STR) among the selected companies on Bursa Malaysia. According to these results, the average level of effective tax rate level (ETR) is 0.146 or 14.6%. This figure also represents the actual payment of corporate taxation to the tax authorities on behalf of the federal government. In other words, the result proves that the companies employed aggressive tax planning strategies in their business transaction activities. This is because the actual level of corporate income tax expenses paid by the companies was lower than the statutory tax rate level which was around 0.268 or 26.8%. This situation might also be influenced by the initiatives taken by the companies to utilise the tax incentives given by the tax authorities for their Tax Planning activities (Abdul Wahab & Holland, 2014). In other words, there is an interaction between the tax incentives with the Tax Planning strategies in the business transaction activities. In addition, Table 1 above also clearly shows the lowest ETR reported, i.e. 0.113 or 11.3%.

This figure was compared to the minimum statutory tax rate, i.e. 0.250 or 25%. The following section provides details the regression results for the model tested in current of the study.

REGRESSION RESULTS

Table 2 shows the regression results obtained from the pooled OLS regression method of analyses. The results indicate there are significant associations exist between the INVINT, CAPINT, LEV, R&DINT towards the effective tax rate level (ETR). However, the results also show that there is an insignificant association between the ROA and the corporate tax rate level or ETR. Furthermore, the regression model shows that there is a negative association between the INVINT towards the effective tax rate (ETR). Thus, this result is not consistent with the findings in the previous study by Taylor and Richardson (2014) whereby a positive association was found to exist with the corporate Tax Planning level. Meanwhile, CAPINT, LEV and R&DINT indicate negative associations towards the effective tax rate (ETR) or

Tax Planning activities in the business organisations. In other words, these results support the findings in the previous study

indicating a negative association existed with the effective tax rate (ETR) level in the companies.

TABLE 2
Summary of the Regression Analyses

	Pooled OLS
Mean ETR	0.146
(P-Values) Coefficient	
INVINT	0.0000***
	-0.042
CAPINT	0.0000***
	-0.231
ROA	0.6427
	-0.003
LEV	0.0000***
	-0.056
R&DINT	0.0000***
	-0.032
R^2	0.513
Adjusted R^2	0.512
F-Statistic	947.155
Prob (F-statistic)	0.000***

Note: *** Significant at 1% level

DISCUSSION AND CONCLUSION

The results obtained from the analyses indicate that there is a negative association between inventory intensity (INVINT) and the effective tax rate (ETR) among the selected companies listed on Bursa Malaysia. However, these results do not support the findings of the study by Taylor and Richardson, 2013) since inventory intensity is not applicable to Tax Planning strategies in business organisation activities in the capital market transactions (Lee & Swenson, 2012). This is because inventory intensity was not subjected to tax

deductible under tax system. Nevertheless, managers in the business organisations need to be more creative in managing their inventory intensity to minimise the corporate tax burden level. In other words, inefficient of inventory evaluation method will lead to high operation cost and consequently affect the level of business income. Meanwhile, capital intensity ratio or CAPINT was identified to have a significant association towards effective tax rate or ETR in business organisations' activities. This result is supported by the previous findings of Hong and Smart

(2010) which indicated a significant association between CAPINT and corporate Tax Planning strategies (Heltzer, Mindak, & Shelton, 2012). Furthermore, this result is also consistent with the tax system in Malaysia, particularly since some tax incentive schemes have been provided for the transactions related to the capital intensity in the business transaction activities. For instance, corporate taxpayers usually enjoyed the capital allowance provision for their capital investment in the business organisations. The rationale from this provision is that it encourages the corporate taxpayers to expand their business facilities in the current capital market activities (Oueslati, 2014). With rapid development in the current capital market, it is believed to influence the movements of infrastructure development activities for the local capital market.

Further, another result presented in Table 2 indicates an insignificant association between the return on asset or ROA towards effective tax rate or ETR level in the business organisations. Additionally, the regression result also reported a negative association between ROA and the corporate Tax Planning strategies in the business organisations. This situation is a consequence of the initiatives employed by the business organisations in order to reduce their corporate tax burden of their business income. In other words, the business organisations tend to minimise their corporate tax burden to be as low as possible so as to increase the net income from their business activities (Armstrong

et al., 2012). Therefore, this financial ratio is suitable as another financial mechanism among stakeholders in order to access the corporate Tax Planning strategies in the business organisations' activities. In other words, potential and existing stakeholders will be able to use this financial ratio to monitor the corporate Tax Planning strategies in their business transaction activities and to assist their decision making process.

With reference to Table 2 in the previous section, a significant association could be seen between leverage ratio or LEV and corporate Tax Planning or ETR. Consequently, a negative association was found between leverage levels with effective tax rate or ETR, which means that higher leverage levels in the business transaction activities contribute to a lower level of effective tax rate. Thus, this situation contributes to lower the tax burden by business organisations from their Tax Planning strategies. This result agrees well with the finding of a previous study by Richardson, Taylor, and Lanis (2015) which revealed a significant association with a negative relationship towards the actual level of corporate income tax expenses. This is because under accounting tax transactions, tax deductible from interest payments activities is allowed. In other words, the higher the interest paid by business organisations, the lesser the corporate tax burden to be enjoyed by the tax authorities. In addition, other findings in this study also suggested a negative association between research and

development intensity (R&DINT) and ETR. Therefore, the hypotheses made during the investigation process are accepted. The rationale from this result is the element of R&DINT, which was considered as a tax exemption to the companies. This means that the business organisations were able to reduce their corporate income tax level through tax deductions from their research and development expenses. Thus, this activity has contributed to lower income tax expenses to the tax authorities, which is also supported by a previous study that found a negative association between R&DINT and ETR (Huseynov & Klamm, 2012).

As a conclusion, this study has revealed several evidences regarding the associations between the financial ratios and Tax Planning activities among the selected companies on Bursa Malaysia. The results have indicated significant associations between INVINT, CAPINT, LEV and R&DINT towards effective tax rate or ETR in the business transaction, which means that the financial ratio information can influence the level of corporate Tax Planning activities in the capital market. Thus, such information could be used as a financial mechanism by stakeholders to assess the efficiency of Tax Planning strategies by business organisations in the capital market activities. Therefore, inefficiency in managing these financial ratios will lead to inefficient Tax Planning strategies by business organisations. Nevertheless, this study has its limitation because it has only

provided the empirical evidence regarding the financial ratios towards Tax Planning strategies without considering changes in the accounting tax legislations during the period of study. Any future research in this area of the study should therefore consider embarking on another research activity to investigate these financial ratios and the earnings management level in the business transaction activities in the capital market. Furthermore, future researchers should explore other methods of panel data analyses such as Fixed Effect and Random Effect regression methods as this particular study only utilised the Pooled OLS regression method to assess any possible association between the financial ratios and effective tax rate "ETR" or corporate Tax Planning activities among the business organisations.

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PERTANIKA JOURNALS

Costs of Financing and Diversification: Evidence from Malaysia

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ABSTRACT

This study examines the extent of geographical diversification of Malaysian public listed firms and its effects on the costs of debt and equity financing. All companies, except those in the utilities and financial industries listed on Bursa Malaysia with segmental and foreign asset information available in Thomson One Banker database from 2008 to 2012, are used. Herfindahl index is used to compute the degree of diversification for firms, while weighted average costs of debt, equity and capital are used to estimate the costs of financing. The results show that less than half of the sample companies are geographically diversified. Although cost of capital is higher in diversified firms and it increases corresponding to the degree of diversification, confirming diversification in this country is not efficient. Debt has a much lower cost of financing compared to equity, which is consistent with the return tradeoff theory and tax shield effects. The debt ratio has the greatest influence on the weighted cost of debt, while P/E ratio has the greatest influence on the weighted cost of equity. It is also found that the relationships are contingent on the level of diversification of the firms. The more geographical diversification of the firms, the higher the cost of debt. As for the equity, the positive interactive coefficient between P/E and H-index shows that the more geographical diversification of the firms, the lower the cost of equity. Overall, the study concludes that Malaysian firms do not pursue efficient diversification as the cost of capital is higher for diversified firms.

Keywords: Cost of debt, cost of equity, costs of financing, diversification, H-index, Malaysia

INTRODUCTION

It is well documented that corporations in East Asia have high degrees of corporate diversification (Claessens *et al*., 1999). The reasons for diversification include achieving coinsurance effects, using

internal capital markets to allocate resources more efficiently and achieving lower costs of financing. Diversification is found to increase debt capabilities as a debt holder perceives that different divisions could offset cash flow variances among divisions, consequently and increase the capability in debt payment (Stein, 1997). Peyer (2001) concludes that an efficiently diversified or multiple segment firms under-invest less compared to single segment firms as they face more under-invest investment problems due to their financial constraints. Based on this argument, firms in emerging markets, which face issues of external capital, will incline to diversify to increase their efficiency in investments. Inevitably, this leads to higher levels of debt and other moral hazard problems.

Hence, studies on the effect of corporate diversification and the efficiency of firms in terms of financing are essential especially in emerging economies. This is largely due to the inefficiency of their capital market. Although diversification could help to create an internal capital market with lower cost of capital to complement external capital market in an efficient market (Peyer, 2001), studies on this perspective in emerging market is relatively few. Therefore, this study aims to provide further insights into one of the East Asian countries, namely Malaysia, in relation to its corporate diversifications and efficiency in financing.

Malaysia firms suffered from over borrowings and diversification during East Asian financial crisis (Claessens *et al*., 2003). Since then, various corporate governance reforms have been introduced, and the economy has since recovered. The Central Bank of Malaysia reported that due to "ease of access to loans", financing from the banking and capital market towards private sector has increased from 8.4% to 11.3% in 2013 (BNM, 2013). However, it is also uncertain whether Malaysian firms experience a lower cost of capital amid higher degree of capital financing. Therefore, research questions raised in this study are as follows: 1) To what extent Malaysian companies have geographically diversified their businesses in the global market in recent years?; 2) What are the costs of financing in those public listed firms?; and 3) Would diversifications reduce the costs of financing?

The study is important and needs the attention of the policy makers as well as business decision makers in order to stay competitive in the global market. Furthermore, the competition in the Asian region is expected to become more intense in the future if greater liberalisation is in place. A good understanding of the financial market and the firms' costs efficiency is therefore crucial. In particular, it will help Malaysia achieve the economic transformation objectives, move towards a more sustainable business environment and attain its ambition for a high income society. In addition, the study could serve as a reference point to other East Asian countries in developing their financial strategies.

Thomson Reuter databases were used to extract various types of costs

of financing. The Herfindahl index was computed to estimate the extent of corporate diversification in the public listed firms in Malaysia. The findings show that geographical diversified firms have higher costs of financing compared to more focused firms.

LITERATURE REVIEW

Generally, East Asian corporations exhibit a high degree of corporate diversification (Claessens *et al*., 1999). In fact, it was argued that the East Asian financial crisis was attributed to the excessive diversification of corporations in this region. The reasons for diversification, as argued by Nam (2001), are due to the constraints of underdeveloped external factor markets. By creating a group-wide internal capital market through diversification, a business group would be able to finance its new or existing businesses by mobilising the in-group financial resources. As information asymmetry is assumed to be less of a problem within a group, an internal capital market may operate on superior information and therefore allocate capital more efficiently and gain financial synergy (Williamson, 1985). This is especially important at the early stage of economic development, when factor markets particularly the financial market usually suffers from serious imperfections such as weak legal framework and investor protection (Shin & Stulz, 1996).

By increasing the size of company through diversification, either through internal growth or external acquisitions,

it may lower its systematic risks. The coinsurance effect as a result of diversification lowers the degree of correlation between the cash flows of the unrelated business units (Seth, 1990) and thus a more stable cash flow will prevail. In addition, diversification could complement the internal markets by eventually lowering the costs and increasing bargaining power with suppliers or customers (Williamson, 1985). Resources within a firm will be allocated in such a way that the most profitable project will be given priority and a firm will be able to allocate its resources more efficiently in line with the efficiency theory (Trautwein, 1990). Thus, the costs of capital are expected to be lower as compared to that of a more focused firm.

Nevertheless, there is also strong evidence that corporate diversification yields suboptimal results (Ozbas & Scharfstein, 2010; Ammann, Hoechle, & Schmid, 2012; Berger & Ofek, 1995). Diversified firms were valued less than matching portfolios of specialised firm and diversifying acquisitions decrease shareholder wealth. Claessens *et al*. (2003) contended that the over-diversification of the East Asian corporations has led to the misallocation of capital in some of these countries due to agency problems.

Given the growth in the East Asian capital market, for instance, Claessens *et al*. (2003) found that more than 70 percent of the Malaysian corporations were involved in multi-segment businesses, while Song (2007) also found that on average, about 46 percent of the cases involved different

lines of business in M&A announcements. As financial synergy is a widely cited motivation for diversification (Aggrawal & Zhau, 2004; Nam, 2001), there is still a large gap remaining in our knowledge about the efficiency of diversified firms in utilising financial resources. Hence, it would be beneficial to investigate the firms' costs of capital as a result of the diversification.

The cost of capital is vital in the business world as it affects a wide spectrum of corporate decisions such as investment, divestments and measures of economic profits. It also represents the minimum rate of returns that a project must earn to increase firm value. If the proclaim coinsurance effects prevail after a diversification, the cost of capital should be lower. Until recently and after the Asian financial crisis where pressures to call for a more transparent and accountability of managements of public listed firms, the governments in these countries have imposed more stringent guidelines on corporate disclosure, including segmental information. In order to minimise the overall costs of capital for the entire firms, it was also highlighted that institutional features of national financial systems such as corporate tax rate, creditor rights, as well as inflation and political risk, corruption index, legal origin, and other factors also affect the capital structure of the firms (Aggarwal & Kyaw, 2004).

As suggested by the literature, the costs of financing and the performance of diversified firms are influenced by many factors and the empirical findings in this area are still very limited, especially in developing countries. Therefore, this study aims to close the gap by investigating the public listed companies in one of the East Asian countries, namely Malaysia, in relation to their corporate diversifications and the efficiency in financing their businesses.

METHODOLOGY

Sample and Data

All companies, except those in the utilities and financial industries listed on Bursa Malaysia with segmental information available in Thomson One Banker database from 2008 to 2012, were selected. The same database was also used to extract the financial information of the firms. From 2008 to 2012, an average of 365 firms with foreign assets and geographical segmental information were obtained.

Method

Geographical segments by sales and number of diversification were computed. Degrees of diversification were computed using the Herfindahl Index. It is computed as $\sum S_i^2$, sum of square of the percentage of each geographical sales from a firm's total sales. Meanwhile, he cost of capital, cost of debt and cost of equity were extracted from Thomson One Banker database. Comparisons were made to assess the effective costs of financing across the firms.

Multiple linear regression analyses were used to generalise the effects of

diversification and various factors on the costs of financing. The base model for the regression analysis is as follows:

Performance (cost of financing) = f(Diversification, control variables)

Cost of financing =
$a + \beta_1 Div + f(cont.\,variables)$

Where costs of financing include weighted average cost of debt (WCD) and weighted average cost of equity (WCE) and weighted average cost of capital (WACC). The data were extracted from Thomson One bankers and described as follows:

$$WCD = \frac{Int}{TotDebt} x(100 - taxrate)\text{ x}$$
$$\frac{TotDebt}{TotDebt + Stock + TotEquity} \qquad [1]$$

$$WCE = DivYield + ROE \text{ x } \frac{Ret.rate}{100} \text{ x}$$
$$\frac{TotEquity}{TotDebt + PrefStock + TotEquity} \qquad [2]$$

$$WACC = WCD + WCE \qquad [3]$$

Control variables include those performance ratios such as free cash flow (FCF) to represent the cash management of the firms, current ratio (CR) for liquidity, Debt ratio (DR) for leverage potential, beta for risk and price to earning ratio (P/E) for signaling the potential growth of the company and total asset for the size of the firms.

RESULTS

The results obtained from Thomson One Banker database indicate that, excluding those firms in the financial and utilities industries, 788 companies were active. There were 467 companies with information on the cost of capital, cost of debt and cost of equity. In terms of segmental information, only 345 firms disclosed their segmental information for the year 2012. For the past 5 years, the average of disclosure was about 366. Table 1 shows the final sample obtained with the available segmental and cost of capital information after screening and combing from the database.

TABLE 1
Diversified firms in the manufacturing industries, Malaysia (2008-2012)

Year	Herfindahl Index <1	Herfindahl Index = 1	Total	% of Diversified Firms
2008	136	219	355	38.3
2009	143	229	371	38.5
2010	146	224	370	39.4
2011	145	242	387	37.5
2012	141	204	345	40.9

TABLE 2
Categories of Herfindahl Index from 0– 0.99 (<1)

Year	0 - 0.24	0.25 - 0.49	0.5 - 0.74	0.75 - 0.99	Total
2008	2	34	53	47	136
2009	2	34	53	54	143
2010	1	34	68	43	146
2011	-	34	72	39	145
2012	-	24	75	42	141

Table 2 shows the distribution of the Herfindahl Index of the firms. The Herfindahl index less than one indicates that the firms are geographically diversified, while that equals to 1 indicates only serves one segment. The majority, or about 60 percent of the companies, were in the single segment geographical sales diversification. The h-index for firms actively involved in diversified business was about 25 percent, which is shown by the h- indices range below 0.5.

TABLE 3
Descriptive statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
h index	140	.349	1.000	.85867	.197
Total Assets (xxxx)	140	9.09	16256.79	451.7851	1821.008
Total Debt (RM mil)	140	.00	9196.49	117.3807	794.409
Yr End Market Cap (RM xxx)	140	3.93	6156.51	311.3909	945.101
WACC	140	.15	38.45	9.4693	6.137
WCD	140	.00	6.17	.7324	.783
WCE	140	.04	38.45	8.7362	6.238

Table 3 indicates that WACC for the firms on average was at 9.5 percent (median 8.7%), while cost of equity (WCE) was about 8.7 percent (Median 8%) and the cost of Debt (WCD) was the lowest at .73 percent (median 0.6%). Meanwhile, cost of debt was so much lower than the cost of equity, the finding which is consistent with the risk return trade off theory and the tax benefits of using debts.

From the sample, 80 firms or about 57% of the sample are geographically undiversified or mainly serving Malaysian customers only (Table 4). About 43 percent have diversified their business into foreign countries. The results are much lower than the study by Claesssen et al. (2003) but quite consistent with the findings by Song et al. (2007) by less than 50 percent. Generally, Malaysian companies are not seen as that aggressive and competitive in terms of international diversification. This is also consistent with the narrowing surplus in the current account of the national income in recent years.

Table 4 also shows the distribution of the H-index and various costs of financing. Contradicting to the co-insurance effects suggestion, the findings of this study show that the costs of financing are lower for those undiversified firms as compared to those of diversified firms. In particular, WCE is also much higher than WCD, which is consistent with the characteristics of the types of financing. This initial finding indicates that diversification in Malaysian firms is not efficient as Malaysian firms do not achieve lower cost of capital.

TABLE 4
H-Index and Costs of Capital

H-Index		WACC	WCD	WCE
<1.00	Mean	11.024	.84	10.187
	N	60	60	60
	Std. Deviation	6.683	.922	6.860
	Minimum	.22	0	.12
	Maximum	31.79	6	31.63
	Median	10.430	.68	8.995
1.00	Mean	8.303	.66	7.648
	N	80	80	80
	Std. Deviation	5.446	.656	5.525
	Minimum	.15	0	.04
	Maximum	38.45	3	38.45
	Median	7.445	.38	7.000

The regression results in Table 5 (Panel A) show that the h-index is a significant variable in explaining the variation in the cost of capital, cost of debt and cost of equity. Generally, the negative relationship shows that the more diversified the firms are, the higher the cost of financing will be, which is against the co-insurance effects that suggest lower cost of capital for diversification firms. However, the effect of the H-index peters out when some control variables are included in the models. It is found that debt ratio has significant negative effects on the WACC and WCE, but positive effect on WCD. The higher the debt, the higher the cost of debt will be, as creditors would view that the firms have higher risks. Meanwhile, the cost of equity would reduce as a higher debt ratio is a signal to the equity holders that creditors will act as a governance mechanism to monitor the act of the managers in the firm.

CR is consistently and significantly negative for all the three models. This finding indicates that the higher the current ratio, the lower the cost of capital is. This indicates that the ability of the firms to meet their current obligations results in lower cost of capital.

Similarly, the P/E ratios are also consistently negative for the three model specifications. This finding indicates that

the higher the growth potential of the companies, the lower the cost of capital especially the equity capital. Therefore, the PE ratio is not a significant variable in explaining the variations in cost of debts.

Nevertheless, FCF (which indicates how well the firms manage their cash, Beta (which indicates the riskiness of the stock) and TA (for the size of the company) are not significant in the three models.

In terms of level of significance, the standardised coefficients show that the P/E ratio has the greatest impact on the cost of equity, while the debt ratio has the greatest impact on the cost of debt.

In order to further investigate whether the relationship between the cost of financing (namely, debt and equity) and debt ratio, as well as PE ratios, are contingent on the degree of diversification, the interaction effects between the h-index and debt ratio (HDR) and PE ratio (HPE) were examined. It is interesting to note that an HDR coefficient changes to negative, signifying that the more geographical diversification the firms are, the higher their cost of debt. As for the equity, the positive interactive coefficient shows that the more geographical diversification the firms are, the lower the cost of equity. The regression results show that R^2 was able to explain 60 percent of the variations of the costs of financing. Another 40% were due to other factors which could be further explored in the future research. Meanwhile, factors such as political risks, corruption index and legal origin are suggested.

TABLE 5
Regression Results

Dependent Variable	WACC		WCD		WCE	
	Beta	t-stat	Beta	t-stat	Beta	t-stat
Constant	14.989	6.411***	1.416	4.629***	13.570	5.657***
H-index	-5.978	-2.252**	-.777	-2.239**	-5.198	-1.908**
R^2		0.038		0.038		0.028
H-Index and Control variables:						
Constant	17.677	5.545***	.726	2.301**	16.951	5.322***
H-Index	-3.480	-1.394	-.398	-1.609*	-3.080	-1.235
FCF	.005	.377	.001	.622	.005	.315
DR	-.145	-3.695***	.040	10.386***	-.185	-4.728***
CR	-.412	-1.982**	-.022	-1.069	-.390	-1.878*
Beta	.535	.681	.065	.841	.470	.599
PE	-.216	-5.025***	-.002	-.474	-.214	-4.983***
LnTA	.175	.428	-.049	-1.209	.224	.548
Adj R^2		0.238		0.564		0.270
F-Stat		6.764***		24.806***		7.810***

TABLE 5 (continue)

Interact Effects						
Constant	21.541	5.086***	-1.129	-2.120**	22.671	5.357***
H-Index	-11.979	-2.778**	1.291	2.381**	-13.271	-3.080***
FCF	.022	1.964**	-.001	-.976	.023	2.088**
DR	-.068	-.545	.082	5.221***	-.150	-1.203
CR	-.320	-2.011**	-.025	-1.232	-.295	-1.858*
Beta	.464	8.609***	.009	1.315	.455	8.451***
PE	.162	.273	.067	.898	.095	.159
LnTA	-1.316	-3.617***	.095	2.068**	-1.411	-3.882***
HDR	-.027	-.187	-.049	-2.726**	.022	.156
HPE	1.172	3.177***	-.098	-2.111**	1.270	3.447***
Adj R^2		0.562		0.595		0.58
F-Stat		19.376***		20.051***		20.785***

* Significantly different from zero at the 10 percent level, using a two-tailed test.
** Significantly different from zero at the 5 percent level, using a two-tailed test.
*** significantly different from zero at the 1 percent level, using a two-tailed test.

Note: FCF denotes free cash flow, DR and CR are debt ratio (debt/total assets) and the current ratio (current assets/current liability) respectively, beta represents firms' responsiveness to systematic risk, PE is the firms' Price to earnings ratio and LnTA is log Total assets.

CONCLUSION

This paper examines the extent of Malaysian companies diversifying their businesses in the international markets and the effects of diversification on their costs of financing. It was found that less than 50 percent of the firms had ventured into international diversification. Overall, the cost of capital increases in tandem with the degree of diversification, and this suggests that diversification in Malaysia is not efficient as there is no co-insurance effect. However, the cost of debt is much lower than the cost of equity as the levels of diversification increase. This implies that debt holders perceive that the risk is lower when firms pursue diversification as compared to shareholders. Meanwhile, the debt ratio has the greatest influence on the weighted cost of debt, while the P/E ratio has the greatest influence on the weighted cost of equity. It was also found that the relationships are contingent on the levels of diversification of the firms. Putting all these together, diversification in Malaysia is not efficient yet as higher costs of capital implying firms may pursue diversification for other objectives rather than maximising shareholders' value. Further studies on this perspective are suggested.

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Intellectual Capital as the Essence of Sustainable Corporate Performance

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ABSTRACT

The term 'intellectual capital' (IC) may sound unfamiliar to the wider public. However, IC has started to cast greater attention in the corporate world. IC refers to intangible asset which is closely related with the development of strategic decision and corporate performance. With endless challenging business environment and complicated electronic transactions, IC is argued to act as a vital essence for a business to innovate which then drives business sustainability. The ultimate purpose of this study was to investigate whether IC is acknowledged and managed towards improving performance, be it financial or non-financial performance. For this purpose, a questionnaire survey was distributed to the head of internal audit of Malaysian public listed companies. Questions tapping on core IC components including human capital, structural capital, relational capital and spiritual capital were included. Data were analysed using inference analysis methods, including ANOVA, t-test and regression. Findings revealed that IC does exist, but not much of IC management is sought in the companies, although the practice is in place. The results also demonstrate that relational capital emerged as the most influential IC component on corporate performance, while human capital ranked the last. This is an obvious indication that IC is well in fact has developed within Malaysian companies and become an important source for business performance.

Keywords: Human capital, intellectual capital, performance, relational capital, spiritual capital

INTRODUCTION

The success of a business is constantly associated with the people and all available resources within the organisation. According to Bounfour (2003), intellectual capital (IC) is known as the resources of an

organisation which are valuable in building innovativeness and creativity to accelerate corporate competitiveness. IC empowers new knowledge, new innovations, competitive business strategies and help creates organisational values (Bontis *et al*., 2000; Bounfour, 2003; Tayles *et al*., 2007, Joshi *et al*., 2013). It indicates that the capability of valuing IC prepares companies with a platform to develop a competitive edge, innovativeness, sustainable business performance and will potentially be less affected by global economic crisis. With that in mind, it suggests that the strength of a business lies in its resources, be it human talent, skill, operating system, marketing strategy, and financial resources.

IC is an important asset that carries unconditional value in every organisation. Hence, a systematic way of managing IC is vital in order to provide a better decision making process which consequently helps to improve corporate performance (Bounfour, 2003; Marr, 2008, Maditinos *et al*., 2011). Likewise, according to Manton (2006), companies such as Dow Chemicals, IBM and Sony, generate revenue from strong company and product branding image. The importance of IC, specifically human capital, is explicitly highlighted in the Ninth Malaysian Plan and Tenth Malaysian Plan. In fact, the Malaysian 2012 budget with the theme "Transformational Nation" emphasised on utilising resources and development of human capital (Ninth Malaysia Plan 2006-2010, 2006; Tenth Malaysia Plan 2011-2015, 2010). Additionally, IC

disclosures in companies report have started to gain reputation and increases in trend in Malaysia (Haji & Ghazali, 2011). This signals that IC elements and its development are vital in today's business and economic sustainability. IC is definitely a global phenomenon and mechanically Malaysia is part of it. The critical importance of valuing IC and how it could enhance business performance has been widely discussed. Nonetheless, less evidence is found on IC practices and IC management within Malaysian companies. In fact, Tayles *et al*. (2007) expressed their surprise when they discovered that Malaysian managers revealed that the term 'knowledge' is more common that the term 'intellectual capital' itself.

THE IMPORTANCE OF INTELLECTUAL CAPITAL

Realising the fact that the world is experiencing a revolving globalisation process and information age, IC is the dynamic of wealth creation which is more significant than the physical assets. Additionally, Guthrie (2001) states that the shift of attention from physical assets to intangible assets as company's core value drivers has also raised concern about the need to capture IC in the traditional accounting and management report. Indeed, IC is an ultimate powerful and valuable component that helps the company achieve its strategic objectives, improves its operation efficiency and boosts its market value (Marr, 2008; Maditinos *et al*., 2011). Inevitably, with strong characteristics of

all core IC components (human capital, structural capital and relational capital) or any other intangibles that it associates with, it is essential for companies to consistently acknowledge, measure, manage, report and utilise IC to its optimum with the aim to create value and competitive edge (Bontis *et al*., 2000; Joshi *et al*., 2013). Furthermore, with extensive IC management and utilisation, companies will not be vulnerable to economic pressures (Tayles *et al*., 2007). The stock of knowledge in the mind of employees and the organisation should not be wasted. Instead, it has to be effectively managed to the advantage of fostering corporate performance (Bontis, 1999; Maditinos *et al*., 2011). Undeniably, IC in an organisation is the key to corporate success; hence, it should not be left unnoticed.

Definition of Intellectual Capital

IC is commonly categorised into several components including human capital, structural capital and relational capital (Roos *et al*., 2005; Marr, 2008). Additionally, spiritual capital was added as a new component after considering the lack of evidence within the current literature incorporating spiritual capital as one vital element that shapes business success. More importantly, Zohar and Marshall (2004) and Malloch (2010) affirmed the view that any organisations having high spiritual capital have greater prospect at positioning themselves in achieving sustainable wealth, goals and vision. Hence, the inclusion of spiritual capital in this study is critically relevant.

Human capital is known as the attribute which is uniquely embedded in an individual and it cannot be transferred into a physical element (Roos *et al*., 2005). Generally, human capital includes individual's competency, experience, skills, expertise, attitudes, technological know-how, creativity, knowledge, education, innovativeness and adaptability (Bontis *et al*., 2000; Marr, 2008). Meanwhile, structural capital is regarded as an organisational stock of knowledge that includes systems, procedures, programmes, policies, distribution networks, organisational structure, corporate culture, business strategies and/or any resources that carry greater value that is different from its measurable value (Bontis *et al*., 2000; Marr, 2008). These values reside and are controlled by the organisation (Roos *et al*., 2005). The company utilises these resources as a guidance and reference in its operation in the course of achieving its goal.

Relational capital is described as the intangible values that an organisation possesses over time, between the organisation and external parties such as marketing channels, alliances, relationships with customer and suppliers, government agencies, industrial networking, joint ventures, investors and financiers (Tayles *et al*., 2007; Marr, 2008). Interestingly, spiritual capital came into sight in the recent years as an important value that should exist in individuals. In an organisation, if an individual or the company culture possesses high spiritual values such as

ethics, trusts, belief, faith, love, honesty, ethics, beliefs, commitment, desire and motivation, good management, honest financial reporting and business practice, an improved corporate performance is expected to follow (Zohar & Marshall, 2004; Rego & e Cunha, 2008; Long & Mills, 2010; Malloch, 2010). Nevertheless, Zohar and Marshall (2004) strongly underlined the mounting need to nurture spiritual capital, of which then a company (organization) with high spiritual capital becomes sustainable and evolutionary.

Intellectual Capital and Performance

Prominently, the topic entailing IC has received a considerable attention in Malaysia. The importance of human capital was enlightened in Chapter Eleven of the Ninth Malaysian Plan, which was announced in 2006. Malaysia, amidst of its technology shift and with the establishment of Malaysia's own multimedia super corridor (MSC) (Bontis *et al*., 2000), is seen as a sign that this country is moving forward to endeavour the country's economic development aggressively. A study on IC and business performance of Malaysian industries led by Bontis *et al*. (2000), among others, discovered that Malaysian senior managers (not indicative of sectors) are aware of the importance of IC, particularly human capital, which is important to capture market orientation and customers. Interestingly, IC and corporate performance were found to have a significant relationship regardless of the type of industry.

Another important study on IC, which was a case study on Telekom Malaysia Berhad (TMB) by Ismail *et al*. (2005) found that leveraging and managing IC, knowledge management and spiritual capital do have superior impacts on TMB's overall performance as compared to other types of capital. The findings also indicated the inability of TMB to manage and leverage IC to an optimum scale has contributed to the slow performance growth. Interestingly, the study by Tayles *et al*. (2007) on Malaysian companies revealed that the amount of IC investment is closely linked to management accounting practices, business performance and company's adaptability to counter the negative effects of market changes. Indeed, this study highlights that awareness among executives on the importance of IC in a company does exist. However, the practice of IC management and reporting is absent, making IC concept less explicit in Malaysian companies although IC is acknowledged to exist in the company and its employees.

The Resource-Based View Theory

The resource-based view (RBV) theory of a firm argues that a firm's resources instil competitive advantages, profitability and superior performance. Resources in this context include both tangible and intangible resources. The tangible resources are in physical form such as buildings, land, equipment, machineries and plant, while the intangible resources include knowledge, skilled employees,

patent, trademark, goodwill, corporate culture, efficient procedures, technological advancement and customer trust (Wernerfelt, 1984; Raja Ahmad *et al.*, 2009). RBV began to emerge as highly significant in the 1990s, suggesting that higher financial performance and greater business success could be achieved when there is an effective management of the firm's stock of resources (Wernerfelt, 1984; Raja Ahmad *et al.*, 2009). Indeed, RBV signifies that a company's resources have to be unique and superior of the competitors to create strategic values, and thus must be deployed in a systematic manner to achieve an improved performance.

Research Framework

The research framework adopted in this study is based mainly on the studies undertaken by Bontis *et al.* (2000) and also Tayles *et al.* (2007) with a modification of inserting spiritual capital which was initially introduced in a case study by Ismail *et al.* (2005). The aim of this study was mainly to examine whether IC (independent variable) influenced corporate performance (dependent variable) of companies in Malaysia. The research framework is illustrated in Fig.1 below.

The research questions (RQ) of this study are listed below:

RQ1: Is a company with high IC within a high IC industry and large in size?

RP1.1: Malaysian PLCs with high IC are within high IC industry.

RP1.2: Malaysian PLCs with high IC are large in size (total annual revenue).

RQ2: Does IC influence corporate performance of Malaysian PLCs?

RP2.1: IC influences corporate performance.

RP2.2: Human capital influences corporate performance.

RP2.3: Structural capital influences corporate performance.

RP2.4: Relational capital influences corporate performance.
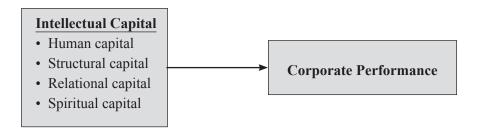
RP2.5: Spiritual capital influences corporate performance.

Fig.1: The Research Framework

RESEARCH METHODOLOGY

A quantitative approach was adopted in this study. Data were gathered using a questionnaire survey which was distributed to selected Malaysian PLCs using postal mail. The population, which refers to the entire group of the intended investigation (Sekaran, 2003), included all the publicly traded companies listed on the Malaysian Bourse stock market, with 857 companies in the total population. The head of internal audit of Malaysian PLCs is the targeted respondents to represent each company. They were selected on the basis of their professional background, extensive knowledge about the organisation's activities and exclusive authority to perform duties of internal auditing with important functions within the management of Malaysian PLCs. The respondents were required to rate their opinions based on the given statements using a 7-point Likert Scale ranging between 1 (strongly disagree) to 7 (strongly agree). The quantitative data collected were analysed using the statistical analysis method using Statistical Packages for Social Sciences (SPSS) Version 16.0.

A reliability test using Cronbach's Coefficient Alpha was conducted to examine the reliability level of the data gathered. Consistent with Pallant (2007), from the analysis performed, the variables showed an alpha coefficient above 0.70, while an inter-item correlation value above 0.30 indicated that the overall result is satisfactory. Following that, a simple linear regression analysis was performed to determine the influence of an independent variable on a dependent variable (Hair *et al*., 2003). In this study, the regression analysis was aimed to examine the effects of IC on Corporate Performance. In this analysis to identify the influence of an independent variable on a dependent variable, R^2 must show significant effect where the observed significance value is smaller than the significance level of 0.05 (Hair *et al*., 1998).

RESEARCH FINDINGS

Research Objective 1: To determine whether IC varies with corporate characteristics

This section elaborates the results for the mean differences of the four IC components which are human capital, structural capital, relational capital and spiritual capital against two selected demographic factors: type of industry and size of company (by revenue).

RP1.1: Malaysian PLCs with high IC are within high IC industry.

A comparison of the mean scores comparison between high IC and low IC industry is illustrated in Table 1. The T-test analysis conducted for human capital reveals that there is a significant difference in the score for high IC ($M = 32.46$, SD = 5.24) and low IC ($M = 30.74$, $SD = 5.15$); t (143) = 1.97, $p = 0.05$ (two-tailed). Nonetheless, the magnitude of the differences in the means (mean difference = 1.72, 95% CI: -.003 to 3.45) is rather small (eta squared = 0.025). As for structural capital, there is a significant difference in

the score for high IC (M = 55.54, SD = 7.64) and low IC (M = 51.49, SD = 8.35); t (143) = 3.02, p = 0.003 (two-tailed). The magnitude of the differences in the means (mean difference = 4.05, 95% CI: 1.40 to 6.69) is moderate (eta squared = 0.061). As for relational capital, there is no significant difference in the score for high IC (M = 44.60, SD = 6.29) and low IC (M = 43.34, SD = 6.08); t (143) = 1.22, p = 0.226 (two-tailed). The magnitude of the differences in the means (mean difference = 1.26, 95% CI: -.79 to 3.32) is small (eta squared = 0.01). This indicates that an overall, all Malaysian PLCs, regardless of industries, are not statistically different in the relational capital scores. Finally, for spiritual capital, there is a significant difference in the score for high IC (M = 44.10, SD = 6.62) and low IC (M = 41.78, SD = 6.34); t (143) = 2.13, p = 0.05 (two-tailed). The magnitude of the differences in the means (mean difference = 2.32, 95% CI: .16 to 4.47) is relatively small (eta squared = 0.031). This signifies that there is a statistical difference in the spiritual capital scores between high IC and low IC companies. The overall result reveals that the respondents' perception on the level of IC is high IC companies contain higher IC values.

TABLE 1
Results of T-test between High and Low IC Companies

Demographic Factor	HC	SC	RC	SPC
Type of Industry (High IC/ Low IC)	p= .05**	p= .003**	p= .266	p= .035**

Note: HC = Human Capital, SC=Structural Capital, RC = Relational Capital, SPC = Spiritual Capital, **p value < 0.05

RP1.2: Malaysian PLCs with high IC are large in size (annual revenue)

A one-way ANOVA was run to identify whether background (i.e., annual revenue) of a company has an impact on the perception of the respondents towards IC. The findings from the one-way ANOVA confirmed that there is no significant difference (p < 0.05) in IC between the income groups (F [4, 124] = 1.046, p = .386). The p value of .386 is more than the threshold significant p value of 0.05 or less. Hence, regardless of the level of revenue of companies, the respondents' perceptions on IC are similar across the income group. In other words, companies with high IC are not necessarily large in size (annual revenue). Therefore, the above proposition is not supported.

Research Objective 2: To Examine the Influence of IC on Corporate Performance.

Preliminary analyses were performed prior to regression analysis confirmed that there is no violation of the assumptions of normality, linearity and homoscedasticity. Therefore, the use of multivariate analysis in this study is appropriate.

RP2.1: IC influences corporate performance.

The findings presented in Table 2 revealed that all four components of the IC jointly explained 46.1% (Adjusted $R^2 = 0.461$) of the variance in corporate performance (F [1, 142] = 123.40, $p <$ 0.001), which is considerably a higher effect. The size of the effect is in accordance with Cohen's guideline (Rosenthal & Rosnow, 2008). More importantly, the results confirms that IC has a significant influence on corporate performance of Malaysian PLCs.

TABLE 2
The Regression Analysis Results of IC and Corporate Performance

Variable	R^2	Adjusted R^2	F	Sig	Rank
IC on Corporate Performance	.465	.461***	123.40	.000	-
Human Capital on Corporate Performance	.284	.279***	56.22	.000	4
Structural Capital on Corporate Performance	.315	.311***	65.43	.000	3
Relational Capital on Corporate Performance	.529	.526***	159.46	.000	1
Spiritual Capital on Corporate Performance	.384	.380***	88.66	.000	2

Note: *** p value < 0.001

RP2.2: Human capital influences corporate performance.

Table 2 shows that human capital explains 27.9% (Adjusted $R^2 = 0.279$) of the variance in corporate performance (F [1, 142] = 56.22, $p <$ 0.001), which is also categorised as a large effect size. The result verifies that high level of human capital does significantly influence on corporate performance of Malaysian PLCs. In other words, high level of human capital such as knowledge, expertise, innovativeness and skills does contribute to a higher corporate performance.

RP2.3: Structural capital influences corporate performance.

Findings in Table 2 reveal that 31.1% (Adjusted $R^2 = 0.311$) of the variance in corporate performance is explained by structural capital (F [1, 142] = 65.43, $p <$ 0.001). This confirms the tested propositions where structural capital, which includes efficient operating system, policies and procedures, has a significant influence on corporate performance of Malaysian PLCs.

RP2.4: Relational capital influences corporate performance.

The results shown in Table 2 reveal that relational capital explained 52.6% (Adjusted $R^2 = 0.526$) of the variance in corporate performance (F [1, 142] = 159.46, $p <$ 0.001). This result proves that relational capital also has a significant influence on the corporate performance of Malaysian PLCs, indicating that high relational capital (e.g., good relationship with customers, partners and stakeholders) will improve corporate performance.

RP2.5: Spiritual capital influences corporate performance.

Table 2 shows that spiritual capital explains 38.0% (Adjusted R^2 = 0.380) of the variance in corporate performance (F [1, 142] = 88.66, p < 0.001), and thus, the above proposition is supported. The R^2 value is adequate and well above large effect on the relationship examined. The findings disclose that spiritual capital (e.g., spiritual values like ethical values, commitment, determination and trust), which was introduced as a new IC component in this study, has a significant influence on the corporate performance of Malaysian PLCs.

DISCUSSION AND CONCLUSION

The findings of this study gauged various information on IC in Malaysian PLCs. The results revealed a compelling evidence of whether IC and its components do influence corporate performance of Malaysian PLCs. As for the first research question, the one-way ANOVA results disclosed that there are differences in the levels of human capital, structural capital and spiritual capital between high IC and low IC company categories. Therefore, it can be assumed that these three components may be prominent only in high IC companies and vice versa. Remarkably, relational capital does not show any difference between both categories which relay an indication that the level of relational capital is equally high across all Malaysian PLCs. On the other hand, the one-way ANOVA tested based on the income group of all companies showed

no evidence of any significant difference between the IC level and income groups. It can be concluded that the level of IC has no association with the company's level of income, which also means that companies with high level of IC are not necessarily earning a very high income or companies with lower levels of IC may be earning more than those companies with higher IC. Overall, this finding indicates that companies within low IC categories such as construction, industrial products, infrastructure, plantation and properties are expected to possess lower IC level. This confirms the findings highlighted in the studies conducted by Bontis *et al*. (2000) and Tayles *et al*. (2007).

IC and Corporate Performance

The second research question seeks to investigate the influence of IC and each of its core components on corporate performance. Statistical analysis disclosed that IC and its core components do imposed positive impacts on the corporate performance of Malaysian PLCs. The overall regression results showed that IC explained 46.1% of the variance in the corporate performance, which is relatively high. Thus, this result signifies that IC has a strong influence on performance. This finding is consistent with the finding in studies engaged by Bontis *et al*. (2000), Ismail *et al*. (2005) and Tayles *et al*. (2007) which found that IC does positively affect organisational performance. Meanwhile, the finding on human capital is somehow inconsistent with the results from previous

studies which established that it has the strongest influence on corporate performance. Likewise, this resut also contradicts the findings revealed by Bontis *et al*. (2000) and Tayles *et al*. (2007), which indicated that human capital has the highest importance and most influential IC components in Malaysia. One plausible reason for this is perhaps there is a shift of trend on the degree of importance of human capital where relational capital becomes the focus of attention on attracting business, which thus improves business performance.

More importantly, the findings from this study indicate that relational capital turns out to have the highest influence on corporate performance while human capital falls last in the list. This is unlike past studies which labeled human capital as the most important component in any organisation. Therefore, this finding shows that relational capital values such as maintaining a continuous good relationship with suppliers and customers, allied partners and other stakeholders have become increasingly important. The emerging importance of relational capital indicates the greater need to keep customers at reach and stay close with them by understanding and attending to their needs. This is consistent with the statement emphasised by Bounfour (2003) on the critical importance of maintaining good affiliation and rapport with parties surrounding the business. With today's advanced technology and cyber settings, it is not surprising that the trend in reaching to the customers need has changed. Hence, in order to retain customers' trust and maintain good rapport with business partners or suppliers, a greater focus on relational capital is essential. This can be done by understanding customers' want and listening customers' or suppliers' comments.

Spiritual capital was introduced as a new component in this study. The decision to include spiritual capital was mainly because of the known strong value that the individual possess, which could infer a remarkable distinction in organisational performance. The findings indicate that higher spiritual capital means higher corporate performance. Surprisingly, spiritual capital turns out as the second most important component after relational capital. This new finding confirms the conception highlighted by Zohar and Marshall (2004) and Ismail *et al*. (2005) on how spiritual capital and spiritual intelligence could boost organisational wealth. Indeed, consistent with the RBV theory, companies that acknowledge and optimise their IC resources are expected to be able to attain sustainable performance and achieve business goals. Hence, it is time that Malaysian PLCs take a deeper thought and understand the concept of IC and IC management, and thus cultivate a culture of understanding IC and its practices as a vital concept in business.

Direction for Future Research

This study has forward the attention and need for future research that could further

enhance knowledge on IC. First and foremost, future research is encouraged to investigate the trend and changes of IC development in Malaysia. Past studies showed that it was human capital that became the most important IC component in the past years, whereas the current study revealed relational capital standout as the most influential among all IC components. It signals that this trend will probably change in several years to come. Hence, future research is encouraged to engage in a longitudinal study to offer a more holistic view and understand development of IC while observing its expansion in Malaysia. Additionally, since the sample focused on Malaysian PLCs with only in-house IAF, data gathered from the internal auditors cannot generalise the perception of all managers within Malaysian PLCs. As such, it is recommended that future research consider drawing together information from other managers such as the Human Resource Manager, Chief Executive Officer or Audit Committee members to explore more insightful views of IC and its direction for improvement. This can also be extended with in-depth interviews with the managers.

CONCLUSION

IC concept is accepted in Malaysia PLCs, however, the practice of IC management has not shown an optimum development. Part of the reason stems from lack of IC expertise, whereas establishing an IC management system requires huge investment which some company may not willing to do. Despite the lack of IC experts, the overall results indicate that higher IC forces higher corporate performance, be it financial or non-financial performance. These findings appear as vital evidence that IC resides within Malaysian companies. Likewise, consistent with the growth and diversity of business activities and the environment, IC is increasingly being acknowledged, and it should be promoted in business organisations, particularly Malaysian PLCs. The heightened focus on relational capital and spiritual capital has also shown a changing pattern on the mounting importance of these two components, leaving human capital as the last in rank. This could be due to the evolution in the current awareness on the importance of the knowledge economy and advanced technology in today's business world practice. Today's business trend and how it is managed have changed; hence, this urges companies to start recognising any possible IC components available in the organisation. Values such as knowledge, experience, innovativeness, creativity, technology, a solid operation system, reputation, communication skills, honesty, integrity and empathy should all be nurtured, gathered, organised, utilised and managed in a systematic approach by employing an IC management system to achieve utmost sustainable business goals and success.

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Decision Facilitating Role of Comprehensive Performance Measurement System (CPMS) and Job Performance: Influence of Role Ambiguity and Locus of Control

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ABSTRACT

This research examines the decision facilitating role of CPMS on manager's role ambiguity and also influence of personality traits of locus of control between CPMS and job performance. Incorporating role theory and social learning theory, this research hypothesises that informational characteristic of CPMS is useful to reduce manager's role ambiguity and in turn enhance their job performance. Data were collected from 120 business unit managers of manufacturing firms listed in the Federation of Malaysian Manufacturers (FMM) 2011 Directory. The results provide evidence that CPMS reduces manager's role ambiguity, which in turn enhances job performance. Additionally, the results also indicate that locus of control moderates only the relation between CPMS and role ambiguity and that there is no evidence of moderation identified between CPMS and job performance.

Keywords: Performance Measurement System, locus of control, role ambiguity, job performance

INTRODUCTION

Research has previously examined behavioural consequences of management accounting system (MAS), particularly in the context of contemporary PMS and traditional PMS. Contemporary PMS refers to PMS such as Balanced Scorecard (BSC), Strategic Performance Measurement System (SPMS), Comprehensive PMS (CPMS) and/or other terms of PMS that are interchangeably used in prior research. BSC is defined as a set of measures that

provide top managers comprehensive views of the business performance (Kaplan & Norton, 1996; Malina & Selto, 2001). SPMS permits an organisation to communicate comprehensive information regarding its long-term strategy, the relations among various organisational strategic objectives and the link between strategic goals and employees' actions (Burney & Matherly, 2007). BSC is mainly used as a decision facilitating role and decision influencing role in an organisation. Sprinkle (2003) claimed that performance measure for decision-facilitating refers to the use of performance measure to provide information and guide managers in decision-making, whereas performance measure is used for decision-influencing role in the performance evaluation functions.

Prior research identified several factors influencing the relation between PMS and individual outcome such as role ambiguity and job relevant information (Burney & Widenner, 2007), procedural fairness, organisational commitment (Lau & Moser, 2008), psychological empowerment and role clarity (Hall, 2008), trust and fairness (Lau & Sholihion, 2005) and justice perception (Burney, Henle, & Widener, 2009). Consistent with organisational theory, this line of research emphasises the important role of PMS as in influencing manager's behaviour, which in turn contributes to organisation's long-term success (De Haas & Kleingeld, 1999). The use of SPMS (BSC) can be problematic due to limitations in managers' cognitive abilities to process a lot of information that causes them to ignore certain information from PMS (Banker, Chang, & Pizzini, 2004). Thus, they may not be able to cope with complex and incompatible demands from multiple goals (Cheng, Luckett, & Mahama, 2007). In view of the limitations, the use of contemporary PMS may result in detrimental effects to reduce mission clarity and subordinate trust that may result in reduced motivation (Rinsum & Verbeeten, 2010). Thus, there is a need to further investigate other factors such as manager's cognitive abilities that may influence the relationship between PMS and performance.

Based on the accounting decision making theory, decision-maker and task characteristics, as well as the interactions between these characteristics may influence decision-making behaviour (Peters, 1993; Hogath, 1993). Prior research examining the moderating role of individual differences such as locus of control personality on the relation between MAS and individual performance found that locus of control affected how manager accept, perceive and respond to MAS information (Chong & Eggleton, 2003; Luckett & Eggleton, 1991). Thus, the objective of this research is to identify other factors specifically personal factors that may contribute to the effective use of PMS. In more specific, this study examines the influence of personality variable and locus of control in the relationship between PMS feedback on role ambiguity and job performance.

THEORETICAL FRAMEWORK AND FORMULATION OF HYPOTHESES

The theoretical framework of this study, as shown in Figure 1, is developed based on the role theory and social learning theory. The role theory describes that MAS information is useful to communicate role expectation. A more comprehensive PMS provides information that can reduce managers' role ambiguity, which can lead to enhanced job performance. The social learning theory describes the locus of control dimensions into internal and external (Rotter, 1960). Internals are individuals who believe that behaviour causality is caused by the individuals themselves, but externals are influenced by external factors. Internals have higher generalised expectancy such that own effort is crucial for attainment of goal, while externals have low generalised expectancy and believe that own effort is not fundamental for goal attainment. Thus, LOC personality may influence the use of PMS information by managers. Internals perceive CPMS information to be useful for them compared to the externals to reduce their role ambiguity and enhance their performance.
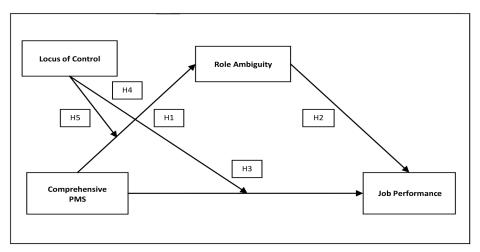
Fig.1: Conceptual framework presents the relationship between CPMS, role ambiguity and job performance

CPMS and Role Ambiguity

According to Atkinson, Waterhouse and Wells (1997), comprehensive PMS plays important role in coordinating, monitoring and diagnostic in an organisation. The monitoring role of PMS refers to the feedback provided by the system on assessment of progress in achieving organisational goal. Feedback from MAS (internal source) can provide comprehensive information that can clarify the role of managers (Ilgen, Fisher, & Taylor, 1979). Since PMS is part of MAS, the role theory may explain how individual behaviour could be influenced by role expectation suggesting feedback from

comprehensive PMS may help to provide clear and comprehensive information about role and job expectation which may reduce manager's uncertainty or role ambiguity (Birnberg, Luft, & Shield, 2006). Meanwhile, Burney and Widener (2007) found direct and indirect associations between SPMS and role ambiguity that provide evidence that the relationship between SPMS and role ambiguity is via enhancing job relevant information (JRI). Similarly, Hall (2008) also identified the mediating effect role clarity (goal clarity and process clarity) in the relation between CPMS and managerial performance. Thus, based on these empirical evidence, the research proposes that the cognitive role of comprehensive PMS is expected to reduce subordinates' levels of role ambiguity and consequently lead to enhanced job performance.

H1: There is a negative relation between CPMS and role ambiguity

Role Ambiguity and Job Performance

Role ambiguity is one of the major concepts of role theory (Schuler, Aldag, & Brief, 1977) and extensive studies focusing on the relationship between role ambiguity and ranges of their antecedents, consequences and correlates have been conducted (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Earlier research identified inconsistent findings between these role constructs and individual performance (Schuler *et al.*, 1977). A meta-analysis based on the results of 43 past studies clarified prior

findings that role ambiguity is negatively and consistently related to job satisfactions (Fisher & Gitelson, 1983). Additionally, recent meta-review research also found a negative relationship between job performance and role ambiguity (Tubre & Collin, 2000). Studies examining the cognitive effect of participative budgeting on role ambiguity also found negative relationships between role ambiguity and job performance (Chong, Eggleton, & Leong, 2006). As there is strong theoretical and empirical evidence indicating the negative effect of role ambiguity on job performance, the following hypothesis is proposed:

H2: There is a negative relation between role ambiguity and job performance.

Comprehensive PMS and Job Performance

More comprehensive PMS provides managers with complete feedback about SBU operations and results (Malina & Selto, 2001). Managers who use BSC (2 characteristics: perspective framework and strategy link) establish strong connections with the strategy are better informed about actions desired. Additionally, inclusion of non-financial measures in BSC categories is positively related to job satisfaction (Burney & Swanson, 2010). Broad scope MAS information is associated with PEU, particularly integrated information is useful to those managers with independent operation (Tubre & Collin, 2000). Under high perceived environmental

uncertainty (PEU), the broad scope of MAS information (including financial, nonfinancial and future management accounting information) is effective for managerial decision and performance (Gul & Chia, 1984). An interactive model of work performance by Blumberg and Pringle (1982) suggests how work performance is being influenced by capacity, willingness and opportunity. A capacity to perform refers to the physiological and cognitive capabilities whereas opportunity consists of forces beyond individual's direct control surrounding task that enables individual to perform task effectively. Information is one of the variables in the opportunity that interacts with the capacity and willingness to ensure performance more probable. Thus, H3 proposes that managers perform better when information is available to them to perform their job.

H3: There is positive relation between CPMS and job performance

LOC Influence in the Relationship between CPMS and Job Performance

Prior budgeting literature suggests that individuals' differences affect how managers use information (Brownell, 1981; Chong & Eggleton, 2003). Brownell (1981) found significant positive effects of traditional PMS on managerial performance for internals although the effect was negative for externals. A review of research in psychology and accounting identified locus of control as one of the four (4) factors influencing behavioural consequences of feedback (Luckett & Eggleton, 1991).

Internals would be more likely to initiate remedial actions rather than external under high environmental uncertainty. Similarly, psychological studies also found internals to be more insistent in searching for task relevant information (Organ & Green, 1974). Remedial action due to feedback is more likely to be initiated by internals (Feather, 1968). An assemblage of the broad scope of MAS information such as BSC has been identified to improve internal manager performance whist the information is insensitive to external managers (Chong & Eggleton, 2003) (pg. 168). Thus, this research proposes the following hypothesis:

H4: LOC moderates the relation between CPMS and job performance.

LOC Influence in the Relationship between CPMS and Role Ambiguity

Apart from organisational factors, personal characteristics may also have significant influence on individual role ambiguity. In particular, personal characteristics may contribute to the differences in the way individuals act in different situations. A meta-analytic review found positive correlations between LOC and role ambiguity providing evidence of high ambiguity associated with external LOC (Jackson & Schuler, 1985). Internals are also better informed about their occupations and tend to rely more upon self-generated role definitions to bring clarity and consistency in a particular situation than externals (Organ & Greene, 1974). Internals are also

claimed to have more ability to exercise control over their environment (Anderson, 1977). Research in a non-western culture like Taiwan indicates that LOC plays an important role in predicting levels of role ambiguity. Internals have lower job stress (ambiguity and conflict) as they have more positive views of work role, able to cope with stress (Chen & Silverthorne, 2008) and have a strong sense of personal control (Thomas, Kelly, & Lillian, 2006). Hence, the following hypothesis is proposed:

H5: LOC moderates the relation between CPMS and role ambiguity

RESEARCH METHODOLOGY

Sample

Data were collected using a questionnaire survey administered to the business unit managers within randomly selected Malaysian manufacturing companies listed in the Federation of Malaysian Manufacturer (FMM) directory of Malaysian Industries 2011. From September to December 2011, a total of 600 surveys were sent to 600 managers via email. Out of 134 responses, 14 were incomplete leaving 120 useable responses that yielded a final response rate of 20%. The independent t-test result indicates that the non-response bias does not appear to be problematic.

Data Analysis and Measurement of Variables

Data were analysed using Partial Least Square Analysis (PLS) through SmartPLS version 2.00 for hypotheses testing (Ringle,

Wende, & Will, 2005) and Statistical Package for Social Science (SPSS). PMS comprehensiveness is measured using an instrument consisting of 9 items developed by Hall (2008). A Likert scale ranging from 1 (not at all) to 7 (to a great extent) is used to indicate the extent of each characteristic in the business unit PMS. Role ambiguity is measured using 6 items with a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) developed by Rizzo et al. (1970). The terms are reversed scored and negatively worded in an effort to reduce the effects of response bias (Dale & Fox, 2008). Chance scale developed by Levenson (1973) provides an expedient way to measure locus of control and is more factorially stable (Blau, 1984). Job performance is measured using eight items with a seven-point Likert scale ranging from one (of little importance) to seven (extremely important) developed by Govindarajan and Gupta (1985) and Nouri and Parker (1998). The performance is measured in relation to the superior expectations considering the subunit's strategic objectives relevant to the following eight performance dimensions: product quality, product quantity, product timeliness, new product development, personnel development, budget achievement, cost reduction programs, and political or public affairs.

RESULTS AND DISCUSSION

Descriptive Analysis

Table 1 presents a descriptive statistics for the main variables. The observed mean

for CPMS is higher, while role ambiguity is slightly below the theoretical mean. As expected, the low mean observed for the locus of control indicates high internality since internals are considered to be more suitable of holding managerial positions and have better ability to exercise control over their environment taking appropriate information-seeking and utilisation behaviour (Anderson, 1977).

TABLE 1
Descriptive Statistics of the Main Variables (n=120)

Variable	Mean	Median	Std Deviation	Actual Range		Theoretical Range	
				Min	Max	Min	Max
CPMS	5.12	5.11	0.91	1.78	7.00	1.00	7.00
ROLEAMB	2.74	2.83	0.86	1.00	5.67	1.00	7.00
JOBPERF	5.13	5.12	0.85	3.13	6.75	1.00	7.00
LOC	3.14	3.12	1.04	1.00	5.88	1.00	7.00

Validity and Reliability

The measurement model was assessed with regard to its reliability and validity of the multi-item scales. Factor loadings for each variable indicate that all items load on their respective constructs, except two items load below 0.5 (RA1 = 0.466 and JP8 = 0.416) being removed from the scale to avoid potential biasing (Hulland, 1999). Individual item reliability suggests satisfactory item reliability as all factor loadings are higher than 0.6 (Chin, 1998).

All composite reliability indicators are above 0.7, indicating satisfactory construct reliability. Convergent validity appeared acceptable for all the reflective constructs. In Table 2, the average variance extracted (AVE) was at least 0.597, suggesting that on average, more variance was explained than unexplained in the variables associated with a given construct (Fornell & Larcker, 1981). Discriminant validity can be determined in two ways: (1) The Fornell-Larcker criterion and (2) the cross loadings.

TABLE 2
Properties of Measurement Model

	Indicators	Factor loadings	Composite reliability	Average variance extracted	Cronbach alpha
CPMS	CPMS1	0.822	0.945	0.658	0.934
	CPMS2	0.640			
	CPMS3	0.839			
	CPMS4	0.847			
	CPMS5	0.827			
	CPMS6	0.891			
	CPMS7	0.847			

TABLE 2 (continue)

	CPMS8	0.808			
	CPMS9	0.752			
Role Ambiguity	RA2	0.790	0.927	0.719	0.901
	RA3	0.797			
	RA4	0.840			
	RA5	0.915			
	RA6	0.890			
Job Performance	JP1	0.763	0.912	0.597	0.888
	JP2	0.799			
	JP3	0.767			
	JP4	0.638			
	JP5	0.834			
	JP6	0.816			
	JP7	0.777			

Table 3 shows that sufficient discriminant validity of constructs as all diagonal elements exceed the off-diagonal elements in the corresponding rows and columns. All indicators load higher on the intended measured construct than on any other constructs in Table 4 (Chin, 1998).

TABLE 3
Construct means, standard deviations and intercorrelations from the measurement model

Variable	Mean	SD	Correlations		
			CPMS	ROLEAMB	JOBPERF
CPMS	5.120	0.912	0.811		
ROLEAMB	2.743	0.856	-0.592	0.848	
JOBPERF	5.131	0.852	0.559	-0.591	0.773

TABLE 4
Cross-loading (full sample, n = 120)

	CPMS	JOBPERF	ROLEAMB
CPMS1	0.822	0.407	-0.494
CPMS2	0.640	0.502	-0.466
CPMS3	0.839	0.447	-0.471
CPMS4	0.847	0.507	-0.449
CPMS5	0.827	0.475	-0.412
CPMS6	0.891	0.497	-0.565
CPMS7	0.847	0.387	-0.475
CPMS8	0.808	0.474	-0.476
CPMS9	0.752	0.349	-0.489

TABLE 4 (continue)

JP1	0.297	0.763	-0.521
JP2	0.443	0.799	-0.568
JP3	0.382	0.767	-0.433
JP4	0.239	0.638	-0.222
JP5	0.544	0.834	-0.511
JP6	0.498	0.816	-0.391
JP7	0.523	0.777	-0.451
RA2	-0.459	-0.405	0.790
RA3	-0.432	-0.480	0.797
RA4	-0.503	-0.512	0.840
RA5	-0.568	-0.557	0.915
RA6	-0.535	-0.537	0.890

Test of Hypotheses

For the evaluation of the structural model and hypotheses testing, Partial Least Square (PLS) analysis and Moderated Regression Analysis (MRA) were used to test mediating and moderating effects, respectively. As shown in Table 5, the t values confirm the significance of hypotheses H1 (β = -0.592), H2 (β = -0.401) and H3 (β = 0.321). Role ambiguity has negative association with CPMS (t = 13.764, p<0.01) (H1) and also negative association with job performance (t = 9.047, p<0.01) (H2). Thus, H1 and H2 are supported. As for the path between CPMS and job performance, there is a positive association (t = 6.166, p<0.01) (H3).

TABLE 5
Path Coefficient and PLS Structural Model Results

Hypothesis	Path	Path coefficient	t value	Results
H1	CPMS -> ROLEAMB	-0.592	13.764***	Supported
H2	ROLEAMB -> JOBPERF	-0.401	9.047***	Supported
H3	CPMS -> JOBPERF	0.321	6.166**	Supported

* p<0.10, ** p<0.05, ***p<0.01 (one-tailed)

The variance explained (R^2) of the key endogenous construct is shown in Table 6; where job performance (0.417) and role ambiguity (0.351) indicate predictive power in the structural model.

According to Baron and Kenny (1986), there is mediation effect with the following conditions: (1) the independent variable significantly predicts mediator, (2) the mediator variable significantly predicts dependent variable, and (3) if the link between independent and dependent variable is also significant, it indicates partial mediation, but the insignificant

link suggests a full mediation. The results in Table 6 explain how the initial direct relation (CPMS and job performance) was altered by the subsequent introduction of the proposed mediator variables. Initially, path coefficient from CPMS and JP shows a direct positive and statistically significant effect on JP ($\beta = 0.572$, p<0.01, t = 17.858). When role ambiguity construct is introduced into the model, the relationships between CPMS and RA ($\beta = -0.592$, p<0.01, t = 13.764) and RA and JP ($\beta = -0.401$, p<0.01, t = 9.047) are significant. Meanwhile, although the path coefficient between CPMS and JP is still significant, it is at a lower significant value ($\beta = 0.321$, p<0.01, t = 6.166) suggesting the existence of partial mediation of role ambiguity between CPMS and job performance.

TABLE 6
Direct and indirect effects

Path	Direct relationship	Partial mediated relationship	R^2
n = 120			
Mediator		RA	
Effect on job performance			0.417
CPMS > JP			
RA > JP	0.572 (17.858)***	0.321 (6.166)***	
		-0.401 (9.047)***	
Effect on role ambiguity			
CPMS > RA			
		-0.592 (13.764)***	0.351

CPMS=Comprehensive PMS; RA = Role ambiguity; JP = Job performance
Each cell reports the path coefficient (t-value); * p<0.10, ** p<0.05, ***p<0.01 (one-tailed)

The significance of the indirect effect was also assessed using Sobel test (Sobel, 1982). The indirect effect between CPMS and job performance consists of the following paths: *CPMS – ROLEAMB – JOBPERF* indicating the indirect effect exclusively via role ambiguity. From the estimation of standard deviation presented in Table 7, the T-values related to the indirect effect were found to be statistically significant at 1% significance level. Thus, this finding confirmed the mediating effect of role ambiguity in the relationship between CPMS and job performance.

TABLE 7
Analysis of the Indirect Effects (n = 120)

Indirect effect CPMS on JOBPERF through	Indirect effect coefficient	Standard deviation of coefficient	t-value
ROLEAMB	0.326	0.059	5.515

Note: CPMS = Comprehensive PMS; ROLEAMB = Role ambiguity; JOBPERF = Job performance
All t-values are statistically significant at the 1% level (one-tail test). Formula for the standard deviation of coefficient is presented in Appendix A. Indirect effect coefficients were calculated using unstandardised path coefficients.

Moderated Regression Analysis was used to test the moderation effect of LOC, whereby X_1 is CPMS; X_2 is LOC, and Y is role ambiguity. Table 8 shows there is no evidence of moderation (F = 15.926, p > 0.10) when CPMS interacts with LOC on job performance. This shows that the inclusion of the interaction terms between CPMS and LOC has not significantly improved the model, as the F change shows insignificant values (p>0.1). Hence, H4 is not supported.

TABLE 8
Hierarchical Regression Results for Testing Moderating Effects of LOC between CPMS and Job Performance (n = 120)

Dependent variable	Independent variable & moderator variable	Standardised beta	p-value	R^2	F	Sig F change	Findings
JOBPERF	CPMS	0.266	0.210	0.285	45.379	0.000	H4 Not supported
	LOC	-0.469	0.254	0.288	22.873	0.461	
	CPMS*LOC	0.635	0.191	0.299	15.926	0.191 (ns)	

* p<0.10, ** p<0.05, ***p<0.01 (two-tailed)
Note: CPMS = Comprehensive PMS; ROLEAMB = Role ambiguity; LOC = Locus of control

TABLE 9
Hierarchical Regression Results for Testing Moderating Effects of LOC between CPMS and Role Ambiguity (n = 120)

Dependent variable	Independent variable & moderator variable	Standardised beta	p-value	R2	F	Sig F change	Findings
ROLEAMB	CPMS	0.036	0.858	0.294	47.847	0.000	H5 Supported
	LOC	1.230	0.002	0.295	23.812	0.714	
	CPMS*LOC	-1.437	0.002	0.350	20.312	0.002	

* p<0.10, ** p<0.05, ***p<0.01 (two-tailed)
Note: CPMS = Comprehensive PMS; ROLEAMB = Role ambiguity; LOC = Locus of control

On the other hand, in Table 9, the inclusion of the interaction term between CPMS and LOC on role ambiguity has significantly improved the model. The result indicates statistically significant evidence of moderation (F = 20.312, p < 0.01) when LOC interacted with CPMS on role ambiguity (b = -1.437, p < 0.01). The result shows a negative interaction which indicates that the comprehensiveness of PMS will result in lower role ambiguity with lower values of LOC (Hartmann & Moers, 1999).

DISCUSSION

Consistent with MAS literature, this research provides evidence of the moderating effect of the locus of control only in the relationship between CPMS and role ambiguity. Prior literature has identified the

difference in the use of MAS information between internal and external locus of control personality (Chong & Eggleton, 2003). Internal locus of control managers would be able to perform more effectively than their "external" counterparts, in high task uncertainty situations, through greater utilisation of broad scope MAS information such as Balanced Scorecard (BSC) in their decision-making processes. The finding is also consistent with Brownell (1981) who identified that the positive effect of traditional PM such as budget on performance for individuals who have a large degree of control over their destiny (i.e., internal locus of control) than the external locus of control managers. Thus, findings of the research suggest that the behavioural implications of CPMS could be influenced by managers' locus of control personality. In particular, behavioural implication of CPMS is different between managers who have a large degree of control over their destiny (internal) or managers who perceive that their destiny is controlled by luck, chance or fate (external). Managers with internal and external locus of control personality perceive, process, utilise and react to information differently.

Theoretically, this research contributes to the existing literature on MAS, particularly, the PMS design. Drawing on the social learning theory, research contributes to further examine the moderating effects of personality variable, LOC, in the context of PMS. Prior research that examined the moderating effects of evaluative process,

complexity, and managerial experience in the relation between PMS and performance (Burney & Widener, 2007). The findings of the current research show moderation effect is identified only in the relation between CPMS and role ambiguity. Practically, this research is expected to provide evidence in relation to PMS practice among the Malaysian manufacturing companies. This research is also subject to a few limitations that are common across many quantitative studies. First, the questionnaire survey is the main data collection method used in this study, whereby the survey might not reach the intended respondents. Therefore, future studies should consider examining the same topic but adopt an in-depth qualitative case study approach to obtain further insight of the relationship. Secondly, the sample was drawn from only the manufacturing sector which might have limited the generalisability of the findings.

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SOCIAL SCIENCES & HUMANITIES

PERTANIKA JOURNALS

Affective, Social and Cognitive Antecedents of Attitude towards Money among Undergraduate Students: A Malaysian Study

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ABSTRACT

Attitude towards money (ATM) often determines an individual's overall subjective well-being or happiness. Most past studies have investigated individual values, societal influences and financial acumen largely in isolation from one other. This study aims to develop a more comprehensive model of the antecedents of ATM by taking into account affective, cognitive and social dimensions concurrently by integrating concepts of the Theory Planned Behaviour (TPB) and the Social Cognitive Theory (SCT). Furthermore, this study focused on Generation Y youths in Malaysia as SCT, which suggests that individuals belonging to a particular generation/era and country/jurisdiction share certain collective social realities, hence ATM. In terms of methodology, a survey involving 248 respondents was carried out by utilising multiple regression analysis to test established hypotheses. The empirical findings suggest that, among others, financial awareness has a significant influence on all dimensions of ATM. In addition, parental influence significantly encourages savings and instils restraint tendency in spending, whereas peer influence acts as an influential substitute to parental influence and mass media effectively promotes materialistic values. In terms of practical implications, the study contributes to the understanding of Generation Y's ATM so as to inform the formulation of better financial planning practices and education-related policies.

Keywords: Attitude towards money, financial awareness, Generation Y

INTRODUCTION

An individual's attitude towards money (ATM) influences his/her money spending and saving behaviour, which ultimately impact the attainment of that particular individual's life goals (Zhao, 2001;

Yamauchi & Templar, 1982). The meaning of money extends beyond being a medium of transaction to one that encompasses one's measure of achievement and subjective well-being (Farid & Lazarus, 2008). In this context, an individual's ATM is culturally nurtured and individually modelled through a process that encompasses affective dimensions (such as hope and religiosity), sociological factors (such as materialism) (Durvasula & Lysonski, 2010) and finance-related outcomes (such as overall degree of credit indebtedness) (Wang, Lv, & Jiang, 2011). In fact, Azjen's (1991) Theory of Planned Behaviour (TPB) posits that an individual's behaviour is guided by one's attitudinal beliefs, subjective norms and perceived control over a situation.

Social and personal values inadvertently intertwine albeit, differently across generational cohorts (Zhao, 2001). The social cognitive theory (SCT) posits that individuals belonging to a particular generation/era share certain social realities in response to their exposure to similar economic, political and education systems (Bandura, 2002; Bandura, 1977).

Most past studies have investigated antecedents of ATM in terms of individual values, societal influences and financial acumen but largely in isolation from one other. This study addresses the lacuna of knowledge by integrating the concepts of the TPB and SCT in investigating the antecedents of ATM in terms of the affective (hope and religiosity), social (parental, peers and media influence) and cognitive (financial awareness and perceived risk) dimensions in a single, comprehensive model.

This study also focused on the ATM phenomenon exhibited by Generation Y in Malaysia. A study of 1,002 young Malaysian workers highlighted that 47% of them had 30% of their collective gross income tied up in debt and 15% of them indicated that they had no savings (Consumer Resource and Research Centre, 2012). The primary sources of indebtedness for these young Malaysians are car loans (50%), credit cards (39%), educational loans (33%), housing loans (29%) and personal loans (15%). The respondents indicated that they have only an average of four months' worth of savings. In addition, they tend to fall back on their parents for financial security and succumb to social pressure, especially in the consumption of the latest technological gadgets and fashion. These spending behaviours are fundamentally influenced by their distinctive beliefs and ATM (Kidwell & Turrisi, 2004).

The situation stated above clearly suggests that even as income levels rise through time, wealth accumulation will be a stumbling block to many if individuals spend indiscriminately and lack the commitment and awareness towards financial planning (Lau & Sipagal, 2012). In fact, a Malaysian report indicates that 86% and 90% of urban and rural households have zero savings, respectively (Shukri, 2014).

Generation Y (1982 to 2004), which is the focus of this study, has been enjoying a higher quality of life as compared to their parents who were born in the post-war and post-recession eras (Comeau & Lai,

2013). Thus, it is important to understand that endowing more luxuries in life without instilling in them good ATM could be detrimental. Besides, a highly leveraged society without savings would add to social problems and hamper Malaysia's vision of becoming a developed nation.

Having considered the overall context of the financial predicaments besetting Generation Y in Malaysia, we contend that this will provide a fitting opportunity to further academic knowledge regarding the various antecedents of ATM. The conceptual framework of this study is depicted in Fig.1.
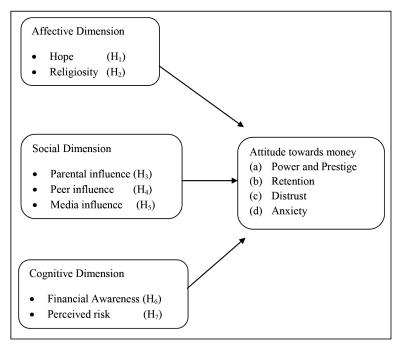

Fig.1: Conceptual Framework of the Study
Source: Developed for this study

LITERATURE REVIEW

Attitude towards Money (ATM)

Money can be a tool and/or a drug. The tool theory describes money as a medium of exchange and an incentive in motivating desired behaviour. However, the drug theory suggests that money can lead to adverse psychological and behavioural manifestations such as extreme obsession, greed, fear and gambling (Chen, Dowling, & Yap, 2012; Lea & Webley, 2006). The meaning of money has also been linked to various beliefs such as good, evil, achievement, budgeting, respect, freedom/power and Machiavellianism (Tang & Chen, 2008; Tang, 1995; Tang, 1992).

The ATM has been investigated from four dimensions of power/prestige, retention, distrust and anxiety (Yamauchi & Templar, 1982). The power/prestige dimension emphasises money as a symbol of success and promotes a sense of life achievement linked to the worship of money, materialism, vanity and an inflated ego (Durvasula & Lysonski, 2010; Tang, Tang, & Arocas, 2004; Christopher, Marck, & Carroll, 2004; Tang, 1995).

The retention dimension promotes saving, prudent spending and money management (Yamauchi & Templar, 1982). The retention dimension manifests positively in the areas of conscientiousness, self-restraint and frugality (Beutler & Gudmunson, 2012; Davey & George, 2011) but negatively in the area of revolving credit usage among credit card users (Wang *et al.*, 2011).

The distrust dimension is characterised by insecurity in making purchase and financial decisions. Distrust includes constantly being suspicious of prices charged and hesitance when it comes to spending money due to the lack in confidence in one's financial acumen (Yamauchi & Templar, 1982).

Finally, the anxiety dimension incorporates worries associated with either having too much or too little money (Yamauchi & Templar, 1982). A shortage of money may trigger acute risk-averseness, where individuals become extremely cautious on spending decisions (Hansen, Kutzner, & Wänke, 2012). This stems from the fear of losing one's financial safety net. The Prospect theory posits that the irrational fear of making losses often causes investors to sell out winning stocks too soon while holding on to loss-making ones for too long in investing (Kahneman & Tversky, 1979).

Affective Dimensions

This study adapts Azjen's (1991) Theory of Planned Behaviour (TPB) in encapsulating the affective dimensions of hope and religiosity under attitudinal norms as determinants of ATM.

Hope

The Hope Theory is grounded upon the principles of possibility, agency, worth/purpose and connection (Snyder, Rand, & Sigmon, 2002). A hopeful individual is cognizant of the pathways and possesses the drive to actualise the desired outcome value in the face of uncertainty (Snyder *et al*., 2002). Hope has also been found to be a better predictor of life satisfaction compared to self-efficacy (O'Sullivan, 2011; Valle, Huebner, & Suldo, 2006).

In terms of money management, researchers have found that the hope of winning is often a strong motivator for lottery buyers (Ariyabuddhiphongs, 2011; Ariyabuddhiphongs & Chanchalermporn, 2007) and the propensity to undertake debt (Barros & Botelho, 2012). Hence:

H₁: Hope has a significant influence on (a) Power/Prestige and (b) Retention (c) Distrust and (d) Anxiety dimensions of ATM.

Religiosity

Religiosity reflects the commitment of an individual to follow principles believed to be ordained by God that forms the foundation of his/her faith (Chen & Tang, 2013; Vitell, Paolillo, & Singh, 2006). An individual with high intrinsic religiosity would exhibit a strong commitment by adhering to his/her beliefs to do what is right as an integral part of everyday life. Previous empirical research found that individuals with high intrinsic religiosity are disinclined towards Machiavellianism and unethical behaviour (Chen & Tang, 2013). High intrinsic religiosity is also linked less extravagance, lesser willingness to expose oneself to moral risk and increased conscientiousness (Furnham and Okamura, 1999). Hence:

H_2: *Religiosity will have a negative influence on (a) Power/Prestige and (b) Anxiety dimensions, but positive influence on (c) retention dimension of ATM.*

Social Influence

The SCT conceptualizes the role of agents such as parents, peers and media, as well as individual life cycle situations in facilitating the social learning process in developing skills, knowledge and attitudes of the young consumers (Mochis & Churchill, 1978). Similarly, Azjen's (1991) TPB includes social influences as part of the subjective norms antecedent.

Parental Influence

With regards to money management, indulgent parenting has been found to contribute towards the "entitlement" mentality among young adults (Beutler & Gudmunson, 2012). Parental involvement has been found to positively influence responsible credit card usage by young adults and lead to lower average balances (Palmer, Pinto, & Parente, 2001). Past studies have also found that parental support and influence lead to better self-esteem and lower materialism amongst young adults (Adib & El-Bassiouny, 2012; Chaplin & John, 2010). In addition, parental autonomy-support also helps to reduce extrinsic life goals (emphasis on wealth), apart from promoting intrinsic goals (self-actualisation) among youths (Lekes *et al.*, 2010). However, parental influence has not always contributed to higher financial literacy (Sabri *et al.*, 2012). Hence:

H_3: *Parental influence will have a significant impact on all dimensions of ATM.*

Peer Influence

Young individuals' consumption behaviour has been found to be partly shaped by the pressure to fit in with their peers (Adib & El-Bassiouny, 2012; Penman & McNeill, 2007; Mochis & Churchill, 1978). The self-determination theory posits that besides personal autonomy and competence, a person's motivation is significantly influenced by social relatedness (Deci & Ryan, 2000; Vallerand, 2000). Past empirical research also revealed that

peer influence has a positive relationship with materialism and impulsive spending (Bindah & Othman, 2012; Penman & McNeill, 2007). Hence:

H$_4$: Peer influence will have an impact on all dimensions of ATM.

Media Influence

Media advertisements have often been implicated for the erosion of virtue ethics through the subconscious stimulation of greed, instant gratification and conspicuous consumerism (Bagwell & Bernheim, 1996). Furthermore, television and internet exposure has been linked to the promotion of self-enhancement values promoting power/ prestige as defined by prevailing social standards (Besley, 2008). In relation to the ATM, the desire to accumulate fast fame and riches and the high stakes involved may cause anxiety. Hence:

H$_5$: Media influence will have an impact on dimensions of ATM.

Cognitive Dimensions

In terms of Azjen's (1991) TPB, cognitive capabilities form part of perceived behavioural control. The cognitive dimensions investigated are financial awareness (explicit) and perceived risk (tacit).

Financial Awareness

Financial awareness (FA) relates to the literacy or knowledge of the concepts of financial management and/or planning

(Huhmann & McQuitty, 2009). These practices include budgeting, saving for the future, as well as tax and retirement planning. Past studies have shown that financial literacy moderates the relationship between materialism and compulsive buying (Pham, Yap, & Dowling, 2012). Students' financial literacy has also been found to significantly influence their financial well-being (Sabri *et al*., 2012). Conversely, the lack of financial knowledge and an indifferent attitude towards credit card use among college students have been associated with increased indebtedness (Norvilities *et al*., 2006).

Behavioural finance suggests that human intuition is fallible as personal beliefs and attitudes intermingle with rational thought (DeBondt *et al*., 2010; DeBondt *et al*., 2008). As such, even though an individual may be equipped with good financial knowledge, he/she may not apply them consistently (Vitt, 2004). However, research on how financial literacy could influence the ATM is still lacking. Hence:

H$_6$: Financial awareness will have an influence on all dimensions of ATM.

Perceived Risk

Perceived risk relates to how an individual reacts to events that may potentially produce uncertain and unfavorable outcomes (Barros and Botelho, 2012). Definitions of risk perception in making investment decisions usually include elements of distrust, adverse consequences, volatility of returns and poor knowledge

(Diacon, 2003). Prospect theory posits that individuals are not risk neutral or completely rational in how they perceive risk. Individuals are almost twice as sensitive to perceived losses as compared to equivalent gains (Rabin & Thaler, 2001).

Psychologically-induced behavioural biases such as anchoring, representative, availability and overconfidence often cloud rationality and perception towards risk (DeBondt *et al.*, 2008). Furthermore, the love of money has been found to be positively correlated with risk tolerance (Tang, Chen, & Sutarso, 2008). An individual's risk threshold may differ as a result of economic and social acculturation, demographics as well as personality (Nga & Leong, 2013; Mayfield, Purdue & Wooten, 2008). In addition, the willingness to take risk has also been posited to moderate the relationship between financial numeracy and financial decisions such as borrowing and savings (Huhmann & McQuitty, 2009). Hence:

H₇: Perception of risk will have an influence on the retention dimension of ATM.

MATERIALS & METHODS

Sampling Design

As the primary purpose of our study is to verify the theoretical generalisability of the conceptual framework depicted in Figure 1, a non-probability, convenience sampling method was utilised. The final sample of our study consisted of 248 undergraduate students from a private higher education institution in the Klang Valley, Malaysia. An anonymous, quantitative survey method was employed.

Measurement Constructs

The various items constituting the chosen constructs of the study were adapted from past empirical studies based on a review of extant literature (refer to Table 1). All constructs have been measured by using 5-point Likert scales.

TABLE 1
Measurement Constructs

Constructs	No. of items	Adapted for the study based on
Attitude towards Money (ATM): - Power/Prestige - Retention - Distrust - Anxiety	8 8 7 8	Yamauchi and Templar (1982)
Affective Dimension: - Religiosity - Hope	8 8	Vitell *et al.* (2009) O'Sullivan (2011); Snyder *et al.* (2002)

TABLE 1 (continue)

Social Dimension:		
- Parental Influence	8	Developed for this study
- Peer Influence	8	
- Media Influence	8	
Cognitive Dimension:		
- Financial Awareness	10	Nga *et al.* (2010)
- Perceived Risk	8	Barros and Botelho (2012)

The reliability of each measurement scale was verified by examining the corresponding Cronbach's Alpha scores. A Cronbach's Alpha of 0.70 denotes that the items within the scale display intra-construct consistency (Nunnally, 1978). Construct validity was verified via Factor Analysis to determine inter-construct reliability. The cut-off factor loading of 0.45 is used to identify valid scale items (Hair *et al.*, 2010).

Hypotheses

The dependent constructs of this study are the four (4) attitude towards money (ATM) dimensions of POWER, RETENTION, ANXIETY and DISTRUST. The independent constructs are the affective dimensions (HOPE and RELIGIOSITY), social dimensions (PARENT, PEER and MEDIA) and cognitive dimensions (FIN_AWARE and PCV_RISK).

In order to address the established research question, four (4) separate runs of the multiple linear regression were conducted. Significance is accessed via the acceptable p-values of less than 0.05 and/or 0.10.

RESULTS & DISCUSSION

Majority of our sample were females (62.5%) and of Chinese descent (77.8%). In terms of reliability, all the constructs yielded Cronbach's Alpha of above 0.70 except for ANXIETY which was 0.68. The total variance explained for the four dependent constructs are 53.75% and for the seven independent constructs was 53.77%.

Results relating to the study's independent constructs are as follows:

TABLE 2
Results of Measurement Assessment for Independent Constructs

	Independent Constructs						
	RELIG	PEER	PARENT	P_RISK	FIN_AW	HOPE	MEDIA
ir4 - My whole approach in life is based on my religion.	.879						
ir8 - Holding on to my religious beliefs is more important than any other things in my life.	.875						

TABLE 2 (continue)

ir7 - It is more important for me to be right in the sight of God than men.	.874							
ir6 - I would be lost without seeking guidance from God.	.873							
ir5 - I have a strong sense of God's presence in my life.	.860							
ir3 - I pray for guidance before I make important decisions.	.803							
ir2 - I try hard to live up to my religious beliefs.	.801							
ir1 - It is important for me to spend private time in prayer.	.775							
peer3 - It is important for me to make decisions that are agreeable with my friends.		.740						
peer2 - I often consult my friends before I buy something special.		.693						
peer7 - My friends' opinions matter to me.		.681						
peer5 - I find it difficult to make decisions when my friends are not available.		.647						
peer4 - My friends are able to give me good advice.		.607						
peer8 - I value the advice of my friends.		.563						
peer6 - I will be lost without help from my friends on financial matters.		.545						
peer1 - My friends provide me with important advice on financial matters.		.492						
parent1 - I value advice from my parents on my career choices.			.724					
parent4 - I consult my parents on important decisions in my life.			.684					
parent5 - My parents are an important source of moral support.			.653					
parent2 - I value advice from my parents on my financial matters.			.646					

TABLE 2 (continue)

parent8 - My parents' opinion is of great importance to me.		.633				
parent3 - I share concerns with my parents on everyday matters.		.587				
parent7 - I will not go against my parents' wishes.		.462				
risk8 - The decision to go to university involves great risk.			.776			
risk4 - I am often concerned that my decision to attend university could be a mistake.			.758			
risk5 - I feel that going to university may bring me negative consequences.			.705			
risk6 - I am concerned I may not be able to pay my university tuition fees.			.629			
risk7 - I feel that I might not be able to find a good job with my university degree.			.590			
fa10 - I will do my own research before I invest.				.704		
fa3 - In general, riskier investments offer higher returns.				.643		
fa9 - Financial planning is important to me.				.616		
fa4 - In general, safe investments offer lower returns.				.595		
fa5 - "Get rich quick" generally has high risks.				.558		
fa8 - I keep track of the money I spend.				.474		
hope4 - I am committed to find my dream job.					-.712	
hope3 - I will be satisfied only if I am able to find my dream job.					-.705	
hope7 - Achieving my dream job is part of my life's greatest goals.					-.697	
hope2 - Achieving my dream job is important to me.					-.664	

TABLE 2 (continue)

hope6 - I am fully guided by my life goal in making decisions.						-.645	
hope5 - I have a well-defined plan for my life.						-.589	
media4 - Before I decide on a credit card, I will check newspaper advertisements.							-.739
media2 - I rely on newspaper advertisements to get information on personal loans.							-.658
media3 - I rely on bank websites to get information on personal loans.							-.623
media6 - I find that social media advertisements a good source of information on financial products.							-.619
media5 - Before I make a purchase, I will check out advertisements on it.							-.608
media7 - I find advertisements exciting.							-.492
Eigenvalues	6.768	3.976	3.543	2.993	2.785	2.541	2.127
Percentage of variance explained	14.713	8.644	7.703	6.505	6.055	5.525	4.624
Cummulative variance explained	14.713	23.357	31.060	37.565	43.620	49.145	53.769
Cronbach's Alpha	0.946	0.794	0.769	0.775	0.713	0.779	0.738
Scale Mean	22.860	24.910	26.080	14.210	22.550	22.410	18.520
Scale Standard Deviation	6.898	4.453	3.648	3.865	3.262	3.408	3.460
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.760						
Bartlett's Test of Sphericity							
Chi-Square	5196.93						
df	1035						
p-value	.000						

Results relating to the study's dependent constructs are presented in the following table.

TABLE 3
Results of the Measurement Assessment for Dependent Constructs

	Dependent Constructs			
	POWER	RETENTION	ANXIETY	DISTRUST
power6 - Money reflects a persons' accomplishments in life.	.816			
power7 - Money is a symbol of success.	.790			
power5 - I feel I am successful only if I can earn lots of money.	.760			
power2 - I believe that having lots of money is one of the important signs of a person's wealth.	.677			
power3 - I tend to show more respect to people who are wealthier than I am.	.647			
power8 - Rich people have a lot of influence in society.	.614			
power4 - I sometimes boast about my financial wealth or how much money I make.	.600			
power1 - I sometimes purchase things because I know they will impress other people.	.568			
retention2 - I keep a close watch on how much money I have.		.762		
retention4 - Saving up money is one of my priorities.		.754		
retention3 - I keep a monthly budget to monitor my expenditures.		.725		
retention5 - I believe in being careful with my spending at all times.		.714		
anxiety5 - I worry that I will not have enough money in the future.			.683	
anxiety3 - I cannot control myself from buying at a sale.			.680	
anxiety7 - I am not confident on managing my own finances.			.637	
anxiety8 - I often spend money to make myself feel better.			.545	
anxiety4 - I usually say: "I can't afford it" even when I can.			.529	

TABLE 3 (continue)

anxiety2 - I feel nervous when I don't have enough money.			.513	
distrust7 - I always question the price I have to pay for things.				.792
distrust6 - In general, I hesitate to spend money				.710
distrust5 - If I have to make an expensive purchase, I would feel suspicious about the price.				.632
distrust4 - I think for a long time before I buy things that I need.				.533
Eigenvalues	4.987	3.325	1.831	1.683
Percentage of variance explained	22.666	15.112	8.322	7.652
Cummulative variance explained	22.666	37.779	46.101	53.753
Cronbach's Alpha	0.843	0.839	0.680	0.743
Scale Mean	25.020	14.960	19.800	13.740
Scale Standard Deviation	5.482	2.621	3.766	2.570
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.825			
Bartlett's Test of Sphericity				
Chi-Square	1,841.181			
df	231.000			
p-value	0.000			

With the exception of religiosity, Tables 2 and 3 above indicate that all the independent variables significantly influence at least one or more of the ATM dimensions. Therefore, H_2 is not supported.

Three out of the five variables making up the Social and Cognitive Dimensions (namely, Peer Influence, Media Influence and Financial Awareness) were found to exert significant positive influences on the POWER dimension. Hence, H_{4a}, H_{5a} and H_{6a} are supported at $p<0.05$. The Beta coefficient indicates that Peer Influence exerted the largest influence on the POWER dimension followed closely by Media Influence.

The RETENTION dimension recorded the highest model fit, as indicated by a close-to-large Adjusted R-Squared of 22.9% (Cohen, 1992). It is the only dependent variable that shows significant relationships across Affective (Hope), Social (Parental and Media) and Cognitive (Financial Awareness) Dimensions. More specifically, H_{1b}, H_{3b}, H_{5b} and H_{6b} are supported at $p<0.05$. The Beta coefficients indicate that Financial

Awareness has the largest explanatory power on RETENTION followed by hope, media and parental influence, respectively.

Peer Influence was found to have a positive influence while Financial Awareness has a negative influence on ANXIETY. This indicates support for H_{4c} and H_{6c}. Based on the derived Beta coefficients; Peer Influence had a greater influence as compared to Financial Awareness.

Parental and Peer Influence exerted significant influences on DISTRUST at $p<0.05$ and $p< 0.10$, respectively. As such, H_{3d} and H_{4d} are supported. Both Cognitive Dimensions (Financial Awareness and Perceived Risk) were found to exert positive influences on DISTRUST, and these support H_{6d} and H_{7d}.

TABLE 4
Results of the Multiple Linear Regression

Independent Variable	Ref	Attitude towards Money Dimensions Dependent Variable							
		(a) POWER		(b) RETENTION		(c) ANXIETY		(d) DISTRUST	
(Constant)		5.895		.777		12.667	*	-.526	
HOPE	H1	.165		.121	*	.067		.029	
RELIGIOSITY	H2	-.066		-.005		.050		.002	
PARENT	H3	-.078		.089	**	.018		.128	*
PEER	H4	.276	*	-.022		.113	**	.065	***
MEDIA	H5	.309	*	.097	**	.064		.057	
FIN_AWARE	H6	.235	**	.327	*	-.142	***	.232	*
PCV_RISK	H7	.084		.045		.217		.160	*
Adjusted R-Squared		0.115		0.229		0.086		0.183	
F-Statistic		5.379	*	10.970	*	10.970	*	8.480	*
* p-value < 0.01 ** p < 0.05 *** p < 0.10									

The various findings summarised and reported in Table 4 above, when considered concurrently, reveal a number of key underlying trends.

First, the findings suggest that parents are influential in encouraging savings (Sabri *et al.*, 2011) and in developing a restraint tendency in spending (by cultivating in their children a healthy dose of distrust). Consistent with Palmer *et al.* (2001), parents are indeed good role models for their children's savings and spending behaviours as consumers. However, many parents may grant their children more liberal access

to money, partly to compensate for the more limited "parental time and affection" devoted and pressure to maintain a certain social status. As such, parental influence in curbing materialistic values is under threat of insignificance (Chan, 2013). Children need to develop a healthy ATM and parental restraint on the use of money as educational reinforcements towards personal financial planning is necessary.

Second, where parental influence is lacking, peer influence acts as an influential substitute. Peer influence has strong positive influences on power/prestige and anxiety aspects, and to a certain extent, on distrust. Although insignificant, it is interesting to note that peer influence is negative on the retention dimension. Thus, in general, peer influence seems to be a double–edged sword. The positive influence on power/prestige reinforces previous research findings that peer influence has on materialistic values (Blázquez & Bonáz, 2013; Chan, 2011).

Third, the media can be an effective educational reinforcement of financial planning besides being an influential tool for consumerism. Furthermore, the media seem to be able to suppress negative perceptions of money (i.e., insignificant influence on the distrust and anxiety components). This may suggest some bias in the messages emphasised by the media, especially those that are aimed at young adults. Perhaps, regulators should work closely with the media to promote and reinforce the importance of financial planning education and in promoting more

noble money values among these young minds.

Finally, in terms of financial awareness, the findings of this study show that it exerts positive influences on the power/prestige, retention and distrust aspects of ATM and a negative impact on anxiety. The "illusion of control" bias may cause overconfidence in one's financial knowledge and lead to excessive risk-taking in investments and/or spending behaviours (Hansen, Kutzner, & Wänke, 2012).

On the contrary, good financial awareness may promote more criticality (i.e., distrust) regarding the appropriateness of one's financial decisions. Also, increased financial awareness is found to have a positive influence on retention. The role of hope, as a psychological pillar in spurring the need to accumulate savings as a life stressor, is also reinforced (Valle *et al*., 2006).

CONCLUSION

Overall, this study has shown that the development of ATM requires holistic integration of cognitive, social and affective dimensions. As the nurturing of values and beliefs takes time, proper ATM needs to be consciously reinforced by a concerted effort by society, educators and the relevant governmental authorities at an earlier stage in life.

This is because poor inter-generational financial planning and misguided ATM may result in high collective burden of debt which leads to unnecessary stress, social hardship, additional burden in terms of

social welfare, incidences of bankruptcy, as well as contribution to persistent poverty.

In terms of policy implications, a highly indebted Generation Y with poor financial management and planning skills do not augur well for Malaysia's vision of becoming a developed nation by 2020. This study has shown that while financial awareness/literacy is important, it needs to be complemented by proper parental, media and peer supports to succeed in inculcating a young individual's value of money.

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Pertanika Journal of Social Sciences & Humanities aims to develop as a pioneer journal for the social sciences with a focus on emerging issues pertaining to the social and behavioural sciences as well as the humanities. Areas relevant to the scope of the journal include Social Sciences—Accounting, anthropology, Archaeology and history, Architecture and habitat, Consumer and family economics, Economics, Education, Finance, Geography, Law, Management studies, Media and communication studies, Political sciences and public policy, Population studies, Psychology, Sociology, Technology management, Tourism; Humanities—Arts and culture, Dance, Historical and civilisation studies, Language and Linguistics, Literature, Music, Philosophy, Religious studies, Sports.

Editorial Statement

Pertanika is the official journal of Universiti Putra Malaysia. The abbreviation for *Pertanika* Journal of Social Sciences & Humanities is *Pertanika J. Soc. Sci. Hum.*

Guidelines for Authors

Publication policies

Pertanika policy prohibits an author from submitting the same manuscript for concurrent consideration by two or more publications. It prohibits as well publication of any manuscript that has already been published either in whole or substantial part elsewhere. It also does not permit publication of manuscript that has been published in full in Proceedings. Please refer to Pertanika's **Code of Ethics** for full details.

Editorial process

Authors are notified on receipt of a manuscript and upon the editorial decision regarding publication.

Manuscript review: Manuscripts deemed suitable for publication are sent to the Editorial Board members and/or other reviewers. We encourage authors to suggest the names of possible reviewers. Notification of the editorial decision is usually provided within to eight to ten weeks from the receipt of manuscript. Publication of solicited manuscripts is not guaranteed. In most cases, manuscripts are accepted conditionally, pending an author's revision of the material.

Author approval: Authors are responsible for all statements in articles, including changes made by editors. The liaison author must be available for consultation with an editor of *The Journal* to answer questions during the editorial process and to approve the edited copy. Authors receive edited typescript (not galley proofs) for final approval. Changes **cannot** be made to the copy after the edited version has been approved.

Manuscript preparation

Pertanika accepts submission of mainly four types of manuscripts. Each manuscript is classified as **regular** or **original** articles, **short communications**, **reviews**, and proposals for **special issues**. Articles must be in **English** and they must be competently written and argued in clear and concise grammatical English. Acceptable English usage and syntax are expected. Do not use slang, jargon, or obscure abbreviations or phrasing. Metric measurement is preferred; equivalent English measurement may be included in parentheses. Always provide the complete form of an acronym/abbreviation the first time it is presented in the text. Contributors are strongly recommended to have the manuscript checked by a colleague with ample experience in writing English manuscripts or an English language editor.

Linguistically hopeless manuscripts will be rejected straightaway (e.g., when the language is so poor that one cannot be sure of what the authors really mean). This process, taken by authors before submission, will greatly facilitate reviewing, and thus publication if the content is acceptable.

The instructions for authors must be followed. Manuscripts not adhering to the instructions will be returned for revision without review. Authors should prepare manuscripts according to the guidelines of *Pertanika*.

1. Regular article

Definition: Full-length original empirical investigations, consisting of introduction, materials and methods, results and discussion, conclusions. Original work must provide references and an explanation on research findings that contain new and significant findings.

Size: Should not exceed 5000 words or 8-10 printed pages (excluding the abstract, references, tables and/or figures). One printed page is roughly equivalent to 3 type-written pages.

2. Short communications

Definition: Significant new information to readers of the Journal in a short but complete form. It is suitable for the publication of technical advance, bioinformatics or insightful findings of plant and animal development and function.

Size: Should not exceed 2000 words or 4 printed pages, is intended for rapid publication. They are not intended for publishing preliminary results or to be a reduced version of Regular Papers or Rapid Papers.

3. Review article

Definition: Critical evaluation of materials about current research that had already been published by organizing, integrating, and evaluating previously published materials. Re-analyses as meta-analysis and systemic reviews are encouraged. Review articles should aim to provide systemic overviews, evaluations and interpretations of research in a given field.

Size: Should not exceed 4000 words or 7-8 printed pages.

4. Special issues

Definition: Usually papers from research presented at a conference, seminar, congress or a symposium.

Size: Should not exceed 5000 words or 8-10 printed pages.

5. Others

Definition: Brief reports, case studies, comments, Letters to the Editor, and replies on previously published articles may be considered.

Size: Should not exceed 2000 words or up to 4 printed pages.

With few exceptions, original manuscripts should not exceed the recommended length of 6 printed pages (about 18 typed pages, double-spaced and in 12-point font, tables and figures included). Printing is expensive, and, for the Journal, postage doubles when an issue exceeds 80 pages. You can understand then that there is little room for flexibility.

Long articles reduce the Journal's possibility to accept other high-quality contributions because of its 80-page restriction. We would like to publish as many good studies as possible, not only a few lengthy ones. (And, who reads overly long articles anyway?) Therefore, in our competition, short and concise manuscripts have a definite advantage.

Format

The paper should be formatted in one column format with at least 4cm margins and 1.5 line spacing throughout. Authors are advised to use Times New Roman 12-point font. Be especially careful when you are inserting special characters, as those inserted in different fonts may be replaced by different characters when converted to PDF files. It is well known that 'μ' will be replaced by other characters when fonts such as 'Symbol' or 'Mincho' are used.

A maximum of eight keywords should be indicated below the abstract to describe the contents of the manuscript. Leave a blank line between each paragraph and between each entry in the list of bibliographic references. Tables should preferably be placed in the same electronic file as the text. Authors should consult a recent issue of the Journal for table layout.

Every page of the manuscript, including the title page, references, tables, etc. should be numbered. However, no reference should be made to page numbers in the text; if necessary, one may refer to sections. Underline words that should be in italics, and do not underline any other words.

We recommend that authors prepare the text as a **Microsoft Word** file.

1. Manuscripts in general should be organised in the following order:

   o **Page 1: Running title.** (Not to exceed 60 characters, counting letters and spaces). This page should **only** contain the running title of your paper. The running title is an abbreviated title used as the running head on every page of the manuscript.

      In addition, the **Subject areas m**ost relevant to the study must be indicated on this page. Select the appropriate subject areas from the Scope of the Journals provided in the Manuscript Submission Guide.

   o A **list** of n**umber of black and white / colour figures and tables** should also be indicated on this page. Figures submitted in color will be printed in colour. See "*5. Figures & Photographs"* for details.

   o **Page 2: Author(s) and Corresponding author information**. This page should contain the **full title** of your paper with name(s) of all the authors, institutions and corresponding author's name, institution and full address (Street address, telephone number (including extension), hand phone number, fax number and e-mail address) for editorial correspondence. The names of the authors **must** be abbreviated following the international naming convention. e.g. Salleh, A.B., Tan, S.G., or Sapuan, S.M.

      Authors' addresses. Multiple authors with different addresses must indicate their respective addresses separately by superscript numbers:

      George Swan[1] and Nayan Kanwal[2]
      [1]Department of Biology, Faculty of Science, Duke University, Durham, North Carolina, USA.
      [2]Office of the Deputy Vice Chancellor (R&I), Universiti Putra Malaysia, Serdang, Malaysia.

   o **Page 3**: This page should **repeat** the **full title** of your paper with only the **Abstract** (the abstract should be less than 250 words for a Regular Paper and up to 100 words for a Short Communication). **Keywords** must also be provided on this page (Not more than eight keywords in alphabetical order).

   o **Page 4 and subsequent pages**: This page should begin with the **Introduction** of your article and the rest of your paper should follow from page 5 onwards.

Abbreviations. Define alphabetically, other than abbreviations that can be used without definition. Words or phrases that are abbreviated in the introduction and following text should be written out in full the first time that they appear in the text, with each abbreviated form in parenthesis. Include the common name or scientific name, or both, of animal and plant materials.

Footnotes. Current addresses of authors if different from heading.

2. **Text.** Regular Papers should be prepared with the headings **Introduction**, **Materials and Methods**, **Results and Discussion, Conclusions** in this order. Short Communications should be prepared according to "*8. Short Communications.*" below.

3. **Tables.** All tables should be prepared in a form consistent with recent issues of *Pertanika* and should be numbered consecutively with Arabic numerals. Explanatory material should be given in the table legends and footnotes. Each table should be prepared on a separate page. (Note that when a manuscript is accepted for publication, tables must be submitted as data - .doc, .rtf, Excel or PowerPoint file- because tables submitted as image data cannot be edited for publication.)

4. **Equations and Formulae.** These must be set up clearly and should be typed triple spaced. Numbers identifying equations should be in square brackets and placed on the right margin of the text.

5. **Figures & Photographs.** Submit an original figure or photograph. Line drawings must be clear, with high black and white contrast. Each figure or photograph should be prepared on a separate sheet and numbered consecutively with Arabic numerals. Appropriate sized numbers, letters and symbols should be used, no smaller than 2 mm in size after reduction to single column width (85 mm), 1.5-column width (120 mm) or full 2-column width (175 mm). Failure to comply with these specifications will require new figures and delay in publication. For electronic figures, create your figures using applications that are capable of preparing high resolution TIFF files acceptable for publication. In general, we require **300 dpi or higher resolution for coloured and half-tone artwork** and **1200 dpi or higher for line drawings**.

For review, you may attach low-resolution figures, which are still clear enough for reviewing, to keep the file of the manuscript under 5 MB. Illustrations may be produced at extra cost in colour at the discretion of the Publisher; the author could be charged Malaysian Ringgit 50 for each colour page.

6. **References.** Literature citations in the text should be made by name(s) of author(s) and year. For references with more than two authors, the name of the first author followed by '*et al*.' should be used.

Swan and Kanwal (2007) reported that …
The results have been interpreted (Kanwal *et al.,* 2009).

   o References should be listed in alphabetical order, by the authors' last names. For the same author, or for the same set of authors, references should be arranged chronologically. If there is more than one publication in the same year for the same author(s), the letters 'a', 'b', etc., should be added to the year.

   o When the authors are more than 11, list 5 authors and then et al.

   o Do not use indentations in typing References. Use one line of space to separate each reference. The name of the journal should be written in full. For example:

      ▪ Mellers, B. A. (2006a). Choice and the relative pleasure of consequences. *Psychological Bulletin, 126,* 910-924.
      ▪ Mellers, B. A. (2006b). Treatment for sexually abused children and adolescents. *American Psychologist, 55,* 1040-1049.
      ▪ Hawe, P. (2005). Capturing the meaning of "community" in community intervention evaluation: Some contributions from community psychology. *Health Promotion International, 9,*199-210.
      ▪ Braconier, H., & Ekholm, K. (2006). Swedish multinationals and competition from high and low wage location*. Review of International Economics, 8,* 448-461.

   o In case of citing an author(s) who has published more than one paper in the same year, the papers should be distinguished by addition of a small letter as shown above, e.g. Jalaludin (1997a); Jalaludin (1997b).

   o Unpublished data and personal communications should not be cited as literature citations, but given in the text in parentheses. 'In press' articles that have been accepted for publication may be cited in References. Include in the citation the journal in which the 'in press' article will appear and the publication date, if a date is available.

7. **Examples of other reference citations**:

Monographs: Kalimapour, Y.R. (2004). *Images of the U.S. Around the World: A Multicultural Perspective*. Albany, NY: State University of New York Press.

Chapter in Book: Bjork, R. A. (2007). Retrieval inhibition as an adaptive mechanism in human memory. In H. L. Roediger III & F. I. M. Craik (Eds.), *Varieties of memory & consciousness* (pp. 309-330). Hull: Hull University Press.

o   *Proceedings*: Amir Awang. (2006). Counseling, human resources development and counseling services. In Sulaiman M. Yassin, Yahya Mat Hassan, Kamariah Abu Bakar, Esah Munji and Sabariah Mohd. Rashid (Eds.), *Proceedings of Asia Pacific Conference on Human Development* (p. 243-246). Serdang: Universiti Putra Malaysia.

8. **Short Communications** should include **Introduction, Materials and Methods, Results and Discussion, Conclusions** in this order. Headings should only be inserted for Materials and Methods. The abstract should be up to 100 words, as stated above. Short Communications must be 5 printed pages or less, including all references, figures and tables. References should be less than 30. A 5 page paper is usually approximately 3000 words plus four figures or tables (if each figure or table is less than 1/4 page).

*Authors should state the total number of words (including the Abstract) in the cover letter. Manuscripts that do not fulfill these criteria will be rejected as Short Communications without review.

STYLE OF THE MANUSCRIPT

Manuscripts should follow the style of the latest version of the Publication Manual of the American Psychological Association (APA). The journal uses American or British spelling and authors may follow the latest edition of the Oxford Advanced Learner's Dictionary for British spellings.

SUBMISSION OF MANUSCRIPTS

All articles should be submitted electronically using the ScholarOne web-based system. ScholarOne, a Thomson Reuters product provides comprehensive workflow management systems for scholarly journals. For more information, go to our web page and click "**Online Submission**".

Alternatively, you may submit the electronic files (cover letter, manuscript, and the **Manuscript Submission Kit** comprising *Declaration* and *Referral* form) via email directly to the Executive Editor. If the files are too large to email, mail a CD containing the files. The **Manuscript Submission Guide** and **Submission Kit** are available from the *Pertanika*'s home page at http://www.pertanika.upm.edu.my/home.php or from the Chief Executive Editor's office upon request.

All articles submitted to the journal **must comply** with these instructions. Failure to do so will result in return of the manuscript and possible delay in publication.

Please do **not** submit manuscripts to the editor-in-chief or to any other office directly. All manuscripts must be **submitted through the chief executive editor's office** to be properly acknowledged and rapidly processed at the address below:

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Authors should retain copies of submitted manuscripts and correspondence, as materials can not be returned. Authors are required to inform the Chief Executive Editor of any change of address which occurs whilst their papers are in the process of publication.

Cover letter

All submissions must be accompanied by a cover letter detailing what you are submitting. Papers are accepted for publication in the journal on the understanding that the article is original and the content has not been published or submitted for publication elsewhere. This must be stated in the cover letter.

The cover letter must also contain an acknowledgement that all authors have contributed significantly, and that all authors are in agreement with the content of the manuscript.

The cover letter of the paper should contain (i) the title; (ii) the full names of the authors; (iii) the addresses of the institutions at which the work was carried out together with (iv) the full postal and email address, plus facsimile and telephone numbers of the author to whom correspondence about the manuscript should be sent. The present address of any author, if different from that where the work was carried out, should be supplied in a footnote.

As articles are double-blind reviewed, material that might identify authorship of the paper should be placed on a cover sheet.

Peer review

Pertanika follows a **double-blind peer-review** process. Peer reviewers are experts chosen by journal editors to provide written assessment of the **strengths** and **weaknesses** of written research, with the aim of improving the reporting of research and identifying the most appropriate and highest quality material for the journal.

In the peer-review process, three referees independently evaluate the scientific quality of the submitted manuscripts. Authors are encouraged to indicate in the **Referral form** using the **Manuscript Submission Kit** the names of three potential reviewers, but the editors will make the final choice. The editors are not, however, bound by these suggestions..

Manuscripts should be written so that they are intelligible to the professional reader who is not a specialist in the particular field. They should be written in a clear, concise, direct style. Where contributions are judged as acceptable for publication on the basis of content, the Editor reserves the right to modify the typescripts to eliminate ambiguity and repetition, and improve communication between author and reader. If extensive alterations are required, the manuscript will be returned to the author for revision.

The Journal's review process

What happens to a manuscript once it is submitted to *Pertanika*? Typically, there are seven steps to the editorial review process:

1. The executive editor and the editorial board examine the paper to determine whether it is appropriate for the journal and should be reviewed. If not appropriate, the manuscript is rejected outright and the author is informed.

2. The executive editor sends the article-identifying information having been removed, to three reviewers. Typically, one of these is from the Journal's editorial board. Others are specialists in the subject matter represented by the article. The executive editor asks them to complete the review in three weeks and encloses two forms: (a) referral form B and (b) reviewer's comment form along with reviewer's guidelines. Comments to authors are about the appropriateness and adequacy of the theoretical or conceptual framework, literature review, method, results and discussion, and conclusions. Reviewers often include suggestions for strengthening of the manuscript. Comments to the editor are in the nature of the significance of the work and its potential contribution to the literature.

3. The executive editor, in consultation with the editor-in-chief, examines the reviews and decides whether to reject the manuscript, invite the author(s) to revise and resubmit the manuscript, or seek additional reviews. Final acceptance or rejection rests with the Editorial Board, who reserves the right to refuse any material for publication. In rare instances, the manuscript is accepted with almost no revision. Almost without exception, reviewers' comments (to the author) are forwarded to the author. If a revision is indicated, the editor provides guidelines for attending to the reviewers' suggestions and perhaps additional advice about revising the manuscript.

4. The authors decide whether and how to address the reviewers' comments and criticisms and the editor's concerns. The authors submit a revised version of the paper to the executive editor along with specific information describing how they have answered' the concerns of the reviewers and the editor.

5. The executive editor sends the revised paper out for review. Typically, at least one of the original reviewers will be asked to examine the article.

6. When the reviewers have completed their work, the executive editor in consultation with the editorial board and the editor-in-chief examine their comments and decide whether the paper is ready to be published, needs another round of revisions, or should be rejected.

7. If the decision is to accept, the paper is sent to that Press and the article should appear in print in approximately three months. The Publisher ensures that the paper adheres to the correct style (in-text citations, the reference list, and tables are typical areas of concern, clarity, and grammar). The authors are asked to respond to any queries by the Publisher. Following these corrections, page proofs are mailed to the corresponding authors for their final approval. At this point, only essential changes are accepted. Finally, the article appears in the pages of the Journal and is posted on-line.

English language editing

Pertanika **emphasizes** on the linguistic accuracy of every manuscript published. Thus all authors are required to get their manuscripts edited by **professional English language editors**. Author(s) **must provide a certificate** confirming that their manuscripts have been adequately edited. A proof from a recognised editing service should be submitted together with the cover letter at the time of submitting a manuscript to Pertanika. **All costs will be borne by the author(s)**.

This step, taken by authors before submission, will greatly facilitate reviewing, and thus publication if the content is acceptable.

Author material archive policy

Authors who require the return of any submitted material that is rejected for publication in the journal should indicate on the cover letter. If no indication is given, that author's material should be returned, the Editorial Office will dispose of all hardcopy and electronic material.

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Authors publishing the Journal will be asked to sign a declaration form. In signing the form, it is assumed that authors have obtained permission to use any copyrighted or previously published material. All authors must read and agree to the conditions outlined in the form, and must sign the form or agree that the corresponding author can sign on their behalf. Articles cannot be published until a signed form has been received.

Lag time

A decision on acceptance or rejection of a manuscript is reached in 3 to 4 months (average 14 weeks). The elapsed time from submission to publication for the articles averages 5-6 months.

Hardcopies of the Journals and off prints

Under the Journal's open access initiative, authors can choose to download free material (via PDF link) from any of the journal issues from Pertanika's website. Under "Browse Journals" you will see a link entitled "Current Issues" or "Archives". Here you will get access to all back-issues from 1978 onwards.

The **corresponding author** for all articles will receive one complimentary hardcopy of the journal in which his/her articles is published. In addition, 20 off prints of the full text of their article will also be provided. Additional copies of the journals may be purchased by writing to the executive editor.

Why should you publish in *Pertanika*?

BENEFITS TO AUTHORS

PROFILE: Our journals are circulated in large numbers all over Malaysia, and beyond in Southeast Asia. Our circulation covers other overseas countries as well. We ensure that your work reaches the widest possible audience in print and online, through our wide publicity campaigns held frequently, and through our constantly developing electronic initiatives such as Web of Science Author Connect backed by Thomson Reuters.

QUALITY: Our journals' reputation for quality is unsurpassed ensuring that the originality, authority and accuracy of your work is fully recognised. Each manuscript submitted to Pertanika undergoes a rigid originality check. Our double-blind peer refereeing procedures are fair and open, and we aim to help authors develop and improve their scientific work. Pertanika is now over 35 years old; this accumulated knowledge has resulted in our journals being indexed in SCOPUS (Elsevier), Thomson (ISI) Web of Knowledge [BIOSIS & CAB Abstracts], EBSCO, DOAJ, Google Scholar, AGRICOLA, ERA, ISC, Citefactor, Rubriq and MyAIS.

AUTHOR SERVICES: We provide a rapid response service to all our authors, with dedicated support staff for each journal, and a point of contact throughout the refereeing and production processes. Our aim is to ensure that the production process is as smooth as possible, is borne out by the high number of authors who prefer to publish with us.

CODE OF ETHICS: Our Journal has adopted a Code of Ethics to ensure that its commitment to integrity is recognized and adhered to by contributors, editors and reviewers. It warns against plagiarism and self-plagiarism, and provides guidelines on authorship, copyright and submission, among others.

PRESS RELEASES: Landmark academic papers that are published in Pertanika journals are converted into press releases as a unique strategy for increasing visibility of the journal as well as to make major findings accessible to non-specialist readers. These press releases are then featured in the university's UK-based research portal, ResearchSEA, for the perusal of journalists all over the world.

LAG TIME: The elapsed time from submission to publication for the articles averages 4 to 5 months. A decision on acceptance of a manuscript is reached in 3 to 4 months (average 14 weeks).

> An
> **Award-Winning**
> International-Malaysian
> Journal
> —MAY 2014

About the Journal

Pertanika is an international multidisciplinary peer-reviewed leading journal in Malaysia which began publication in 1978. The journal publishes in three different areas — Journal of Tropical Agricultural Science (JTAS); Journal of Science and Technology (JST); and Journal of Social Sciences and Humanities (JSSH).

JTAS is devoted to the publication of original papers that serves as a forum for practical approaches to improving quality in issues pertaining to **tropical agricultural research-** or related fields of study. It is published four times a year in **February**, **May**, **August** and **November**.

JST caters for **science and engineering research-** or related fields of study. It is published twice a year in **January** and **July**.

JSSH deals in **research or theories in social sciences and humanities research**. It aims to develop as a flagship journal with a focus on emerging issues pertaining to the social and behavioural sciences as well as the humanities, particularly in the Asia Pacific region. It is published four times a year in **March**, **June**, **September** and **December**.

Call for Papers 2015-16
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Pertanika invites you to explore frontiers from all key areas of **agriculture**, **science and technology** to **social sciences and humanities**.

Original research and review articles are invited from scholars, scientists, professors, post-docs, and university students who are seeking publishing opportunities for their research papers through the Journal's three titles; JTAS, JST & JSSH. Preference is given to the work on leading and innovative research approaches.

Pertanika is a fast track peer-reviewed and open-access academic journal published by **Universiti Putra Malaysia**. To date, Pertanika Journals have been indexed by many important databases. Authors may contribute their scientific work by publishing in UPM's hallmark SCOPUS & ISI indexed journals.

Our journals are open access - international journals. Researchers worldwide will have full access to all the articles published online and be able to download them with **zero subscription fee**.

Pertanika uses online article submission, review and tracking system for quality and quick review processing backed by Thomson Reuter's ScholarOne™. Journals provide rapid publication of research articles through this system.

For details on the Guide to Online Submissions, visit http://www.pertanika.upm.edu.my/guide_online_submission.php

Questions regarding submissions should only be directed to the **Chief Executive Editor**, Pertanika Journals.

Remember, *Pertanika* is the resource to support you in strengthening research and research management capacity.

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