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Editors' Note

The *Asian Journal of Business Accounting* (*AJBA*) is proud to present the first issue of Volume 13 for 2020. In this issue, we present ten papers that demonstrate an array of challenges faced by businesses. The authors, comprising both local and international scholars are from Iran, Thailand, Indonesia, Libya, Malaysia, Australia and Jordan.

Global financial crises have been a pervasive phenomenon throughout history, with information asymmetry being one of the causes. In this issue, the first paper by Aflatooni and Khazaei examines whether firms' leverage deviation (i.e., actual leverage minus target leverage), and firms' leverage adjustment speed are influenced by information asymmetry. The magnitude of the world's financial crisis has also accelerated the need for the accounting sector to reform the audit reporting model used. In the second paper, Pratoomsuwan and Yolrabil examine the effects of key audit matter (KAM) disclosures in auditors' reports, and their impact on auditors' legal exposure in cases of fraud and error misstatements. The third paper which examines the reporting model is written by Dovi and Goerdano. They disclosed that both the weak and strong warning messages are successful in reducing the framing effect bias of auditors during their decision making process. After a series of global financial crises, there has also been much discussions on the importance of earnings quality. Under unfavourable economic conditions, companies are under an increasing pressure to employ earnings management strategies to report higher profits as a means of ensuring investors' confidence. Realising the pertinence of this phenomenon, the subsequent paper by Abd Alhadi, Senik, Johari and Suhaimi Nahar looks into the role of investor protection as a moderator on the relationship between ownership structure and earnings quality, after and before, the implementation of the International Financial Reporting Standards (IFRS).

The complexities and the volatilities of the global environment have also pressured companies to terminate their complacent approach, and to look for more innovative tools that can help them to stay sustainable. For this purpose, firms may supplement their standard financial accounting and reporting with some elements of social accounting. In the fifth paper, Al-Sartawi develops a new disclosure index based on the *Shariah* perspective in relation to the corporate social responsibility (CSR) engagement of the Islamic financial institutions in the Gulf Cooperation Council countries. In the paper following this, Azhar conducts a longitudinal case study which analyses the institutionalisation of the high performance culture of one subsidiary of a Malaysian government-linked company. It had recently undertaken a business re-engineering exercise to improve its financial performance. Within the context of Jordan, Albloush, Al-Utaibi, Taha, Nassoura and Abuhussein show that even though *Wasta* has been institutionalised in the hiring and promotion process of companies in the Arab countries, it has a negative effect on employees' performance. The negative impact, however, could be reduced with the provision of equal training opportunities. Today's world recognises the close link between technology usage and firm performance, especially in the digital age. Thus, the eighth paper by Cheah and Tajudeen investigate the use and impact of artificial intelligence (AI)-based accounting software among organisations in Malaysia. As AI appears to be the catalyst of the industry revolution 4.0, firms have no choice but to adopt this technology in order to sustain themselves.

The small and medium scale businesses is the sector most affected by the uncertain economic environment. The subsequent lock down, due to the recent COVID-19, for example, has caused disruptions in the supply chain of SMEs due to the lack of or minimal business operations allowed. Although it is imperative for these SMEs to be supported by the government, perhaps, it is time that they learn to develop their innovative capabilities so as to stay competitive. In the next paper, Indriastuti, Kasuma, Zainurrosalamia, Darma, and Sawangchai assert on the importance of innovativeness as a means to reap the benefits derived from producing acculturative products. Innovativeness is found to help the Sarong *Samarinda* business operators to gain sales and revenues. Linked to that is the issue of unemployment which has become a major issue throughout the world during the economic downturn, where businesses had to lay-off employees. To battle unemployment, entrepreneurship may be the weapon that could help address the issue. This practice may help to overcome unemployment as well as create new employment opportunities for others. The importance of entrepreneurship has led Abdul Khalid, Jabar, Hasim, and Jamaris to investigate the factors affecting entrepreneurial intentions among technology and engineering students.

The papers presented in this issue show that businesses throughout the world are currently operating within a chaotic and uncertain environment, which threatens their sustainability. With the volatile, uncertain, complex and ambiguous environment, businesses are threatened by the possibility of disruptions in productions and supply chains. They are also vulnerable to the sharp contractions of the financial market, thereby leading to an uncertain financial, regulatory and legal aftermath. Consequently, businesses are required to be agile, flexible and resilient. It is believed that the ideas and recommendations offered in this issue could serve as important guidelines for firms to respond to the emerging risks. As a note of conclusion, we also take this opportunity to thank the Malaysian Accountancy Research and Education Foundation as well as the Malaysian Ministry of Higher Education for the financial support provided thus far. We also wish to express our appreciations to the members of the editorial and advisory boards as well as the reviewers for their time and effort put into AJBA.

Happy reading!

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Chief Editor

Suhana Mohezar
Deputy Chief Editor

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CONTENTS

Information Asymmetry, Leverage Deviation and Leverage Adjustment Speed

Abbas Aflatooni* and Mahdi Khazaei

ABSTRACT

Manuscript type: Research paper
Research aims: This paper aims to examine whether firms' leverage deviation (i.e., actual leverage minus target leverage) and leverage adjustment speed are influenced by information asymmetry.
Design/Methodology/Approach: This paper uses archival data retrieved from firms listed on the Tehran Stock Exchange from 2004 to 2017. The static and dynamic panel data approaches are used for analysis.
Research findings: Results show that an increase in information asymmetry increases firms' leverage deviation. Results also indicate that firms with a higher (lower) level of information asymmetry tend to adjust their actual leverage towards the target, slower (faster) than that of other firms. These results are robust when using different sample periods, alternative set of leverage determinants and various estimation methods.
Theoretical contribution/Originality: This study investigates the effect of information asymmetry on leverage deviation and leverage adjustment speed in an emerging market. The results offer insights into the theoretical framework showing the relationship between the transparency of the business environment and capital structure.
Practitioner/Policy implication: The result derived from the current study should be of interest to board of directors and policymakers. The findings are significant because more transparent firms may be

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more successful in achieving the optimal leverage, consequently lowering the capital cost.
Research limitation/Implications: One limitation of the study is that the measures used for information asymmetry are based on the bid–ask spread, and the probability of informed trading. These measures may not completely reflect all of the information asymmetry among market participants. Future research could address this limitation by employing alternative proxies for information asymmetry.

Keywords: Information Asymmetry, Leverage Adjustment Speed, Leverage Deviation
JEL Classification: G32, M41

1. Introduction

One of the key questions in corporate finance is how firms finalise their financial decisions. Since Modigliani and Miller (1958), researchers have been struggling to understand firms' financing policies and have proposed four main theories to explain firms' financing behaviour. They include the trade-off theory (Miller, 1977), the agency cost theory (Jensen & Meckling, 1976), the pecking order theory (Myers, 1984; Myers & Majluf, 1984) and the market timing theory (Baker & Wurgler, 2002). Empirical studies (e.g., Leary & Roberts, 2005; Flannery & Rangan, 2006) have shown that firm-level, industry-level and country-level characteristics play an essential role in determining the firms' financing behaviour, and consequently, the firms' leverage. However, some findings (Graham & Leary, 2011) implied that firms with similar characteristics have different leverage ratios. Therefore, to explore other firm-level determinants that can explain firms' financial behaviour, further studies are required. In this paper, we examine the effect of information asymmetry on leverage deviation and adjustment speed towards the target (optimal) leverage.

Since leverage may affect firms' risk, expected returns and firms' sensitivity to micro and macro business conditions, optimising the leverage is of great importance for all firms (Cooney & Kalay, 1993). The trade-off theory assumes that firms have an optimal leverage ratio; it also assumes that by achieving an optimal leverage ratio, firm value would be maximised. Therefore, firms should quickly remove any deviations from their optimal leverage (Flannery & Rangan, 2006). Recent studies (e.g., Graham & Harvey, 2001; Leary & Roberts, 2005; Flannery & Rangan, 2006; Huang & Ritter, 2009; Faulkender, Flannery, Hankins, &

Smith, 2012; Lin, Hu, & Li, 2018) have investigated the above conjecture, and their results showed that firms in fact, have an optimal leverage.

The role of information asymmetry in firms' financing decisions can be traced back to Myers and Majluf (1984) who believed that information asymmetry causes firms to rely on internal sources of funds and prefer debt to equity. Noe (1988), however, argued that information asymmetry could lead to non-optimal leverage. In a capital market with asymmetric information caused by the adverse selection of costs, firms cannot adequately meet their financial needs through the equity market. As a result, firms tend to finance through debt markets. This will increase the role of debts in firms' leverage (Synn & Williams, 2015; Zhou, Tan, Faff, & Zhu, 2016). Information asymmetry can thus lead to a non-optimal capital structure in the form of over-leverage or under-leverage (van Binsbergen, Graham, & Yang, 2010). Although studies showing the association between information asymmetry and firms' leverage is abundant (e.g., Gao & Zhu, 2015; Petacchi, 2015; Fosu, Danso, Ahmad, & Coffie, 2016), those looking at the effect of information asymmetry on leverage deviation are few and far between.

While achieving optimal leverage has many benefits, moving towards it can be costly; it also reduces the speed of adjustment (e.g., Korajczyk & Levy, 2003; Strebulaev, 2007; Shivdasani & Stefanescu, 2010). For instance, Cook and Tang (2010) believed that the overall economic condition affects adjustment costs and reduces adjustment speed. Öztekin and Flannery (2012) had also shown that the information environment affects the adjustment speed, thereby accelerating the assumption that information asymmetry reduces the adjustment speed. Other studies such as Öztekin (2015), Halling, Yu and Zechner (2016), and Jiang, Jiang, Huang, Kim and Nofsinger (2017) noted that the adjustment speed may be influenced by macroeconomic factors. Devos, Rahman and Tsang (2017) had categorised adjustment costs into specific opportunity costs and securities issuance costs. Their results were able to show that specific opportunity costs can adversely affect adjustment speed.

To test our hypotheses, we used data retrieved from firms listed on the Tehran Stock Exchange (TSE) from 2004 to 2017. The TSE listed firms prepared their financial reports following the Iranian national accounting standards which is mostly similar to the IFRS. The firms listed on the TSE were selected because of two reasons. First, Iran is an emerging market and the second largest economy in the Middle East and North Africa (MENA) region (Soltani, Syed, Liao, & Iqbal, 2015). Second, the TSE market is a young market but its rules and regulations have not been able to decrease information asymmetry to the desired level. Further, the TSE does not have a team of official financial analysts or a professional press that is effective at reducing information asymmetry (Mashayekhi & Mashayekh, 2008).

Following Flannery and Rangan (2006), and An, Li and Yu (2016), we used market leverage and book leverage as our proxies for firms' leverage ratio. Adhering to the recommendations of Byoun (2008), Uysal (2011) and Zhou et al. (2016), we initially estimated the target leverage as fitted values from the regression of leverage ratio on the determinants of firms' leverage. We further calculated the leverage deviation by subtracting the target leverage from the total leverage ratio. We then measured information asymmetry by using the bid–ask spread (Venkatesh & Chiang, 1986) and probability of information-based trading (PIN) (Easley, Kiefer, & O'Hara, 1996). Finally, we investigated the association between information asymmetry and leverage deviation by using ordinary least squares (OLS). Following Chen, Hribar and Melessa (2018), we considered leverage determinants as control variables in the model so as to gain unbiased coefficients and standard errors. To address the possible dynamics in leverage deviation (considering a situation in which the current year information asymmetry affects the next year leverage), we incorporated one-period lag of leverage deviation in an alternative specification. For its estimation, we used Arellano and Bond (1991) difference-GMM and Blundell and Bond (1998) system-GMM estimators. To study the effect of information asymmetry on leverage adjustment speed, we followed Öztekin and Flannery (2012) and Zhou et al. (2016), where we used the partial adjustment model. To control all sources of endogeneity, we used difference-GMM and system-GMM estimators, following Zhou et al. (2016).

This paper contributes to empirical literature by showing that higher information asymmetry is associated with higher leverage deviation. There is evidence suggesting that firms with higher (lower) information asymmetry have a slower (faster) adjustment speed. The findings of this study have several implications for academics, investors and policymakers in Iran, and other similar emerging markets. First, this paper offers insights into the theoretical framework explaining the association between information asymmetry and leverage deviation. In this regard, the results would highlight the clarity of the area being analysed, hence informing the academics on how information asymmetry affects capital structure. Secondly, the results of this study may interest investors. It appears that firms with lower information asymmetry have lower leverage deviation, faster leverage adjustment speed, thereby, lowering the cost of capital. As a result, investors can be more confident in their investments. Finally, policymakers need to take steps in setting rules and regulations that can reduce information asymmetry among firms. Policymakers, for instance, can set appropriate rules and regulations emphasising the role of official financial analysts as well as offer incentives which can increase voluntary disclosure among firms listed on the TSE.

It is worth mentioning that almost all of the studies looking at optimal leverage and leverage deviations (e.g., Liao, Mukherjee, & Wang, 2015; Synn & Williams, 2015; Zhou et al., 2016) were based in developed capital markets. Therefore, the generalisability of the outcome for developing capital markets is questionable. This study extends on past studies by including a study of a developing capital market, thereby contributing to literature. The empirical evidence provided by the current study suggests that information asymmetry is significantly associated with leverage deviation and leverage adjustment speed.

The remainder of this paper is structured as follows: Section 2 explains the study's institutional setting. Section 3 presents the theoretical motivation and hypotheses. Section 4 describes the research design. Section 5 reports the empirical results. Section 6 presents the additional analysis and the robustness tests, and Section 7 concludes the paper.

2. Literature Review and Hypotheses

2.1 Institutional Setting

To better understand the institutional setting of the current study, Iran's capital market, which is similar to other developing countries, is further explained. As is the case with many Asian and Latin American countries (Heng, Ivanova, Mariscal, Ramakrishnan, & Wong, 2016), the Iranian government implemented macroeconomic policies in the late 1980s so as to liberalise its financial systems. This served as a suitable infrastructure for the Iranian capital market to thrive. Since the year 2000, the Iranian government has also been seeking ways to reduce inflation, bring foreign debts under control, and strengthen key economic and social performance indicators. These reforms had gradually increased the total market capital of the country to the GDP ratio of about 30 per cent (Hesarzadeh, 2019). The growth of the TSE is similar to many developing capital markets in Asia and Latin America (Vandenbrink &

Wei-Yen, 2005; Rotaru, 2016; Yasser Qaiser, 2016) and at the time of the study, it had more than 300 listed firms.

In the past ten years or so, institutional owners have played a significant role in improving the status of the Iranian capital market. They have tried to create a sustained demand for securities. Likewise, online stock trading and the advancement of the computerised financial reporting system have greatly enhanced the volume of transactions and efficiency of the capital market. However, previous empirical research (e.g., Oskooe, 2011; Salimifar & Shirzour, 2011) showed that the daily stock prices in the Tehran Stock Exchange follow a random pattern, and that the Iranian capital market is of the weak-form efficiency.

In financial reporting, the basics of drafting regulations on corporate reporting, corporate governance and investor protection are the same between developing and advanced capital markets (Hesarzadeh, 2019). Although Iran has its own national accounting and auditing standards, it has been trying to narrow down the differences between the national and international standards over the past decade. Its current national accounting standards are largely similar to international standards. Since 2016, many large Iranian companies and banks listed on the Tehran Stock Exchange were required to comply with international accounting standards.

2.2 *Information Asymmetry and Leverage Deviation*

Modigliani and Miller (1958) had contended that in a frictionless market without information asymmetry, a firm's financing policies do not affect its value. However, in a market with information asymmetry, adverse selection costs can link a firm's financing policies to its values (Myers, 1984; Myers & Majluf, 1984; Nachman & Noe, 1994). The trade-off theory suggests that the optimal leverage is determined by balancing the costs (e.g., bankruptcy costs), and benefits (e.g., tax shield) of debts. This theory suggests that market imperfections create a link between financing decisions and firm value. Consequently, firms take corrective measures to remove any deviation from the optimal leverage. However, if the cost of moving towards the optimal leverage is greater than its benefits, firms do not adjust their leverage (Flannery & Rangan, 2006).

Information asymmetry between managers and external investors create a hierarchical process in selecting the type of financial resources. In the context of severe information asymmetry, firms prefer debts to equity capital for external financing (Myers & Majluf, 1984). In particular, equity capital has the most adverse selection costs, and firms prefer to use this as a last resort. Due to this, firms with higher asymmetric information tend to have a larger leverage ratio (Gao & Zhu, 2015; Petacchi, 2015). Under severe information asymmetry conditions, the gap between the cost of debts and the cost of equity capital can be considerable. Therefore, it would seem that there should be optimal leverage in which the total cost of capital is minimised (Fosu et al., 2016). Financing frictions, which results from information asymmetry, can lead to leverage that deviates from the optimal level (van Binsbergen et al., 2010). In other words, by increasing information asymmetry, and consequently increasing financing frictions, firms tend to raise debt financing so as to reduce the adverse selection costs of information asymmetry (Gao & Zhu, 2015; Petacchi, 2015). Although higher leverage may result in tax benefits, it may also raise bankruptcy costs (Myers, 1984; Myers & Majluf, 1984). Therefore, higher leverage does not necessarily mean a lower cost of capital. In other words, in response to a rise in information asymmetry, higher debt financing diverges a firm's leverage from its optimal level (van Binsbergen et al., 2010). Therefore, our first hypothesis is as follows:

> H_1: Information asymmetry is positively associated with leverage deviation.

2.3 *Information Asymmetry and Leverage Adjustment Speed*

While many studies have confirmed the existence of an optimal leverage (e.g., Leary & Roberts, 2005; Flannery & Rangan, 2006; Huang & Ritter, 2009; Faulkender et al., 2012; Öztekin, 2015; Lin et al., 2018), there is no consensus on how fast firms adjust their actual leverage towards the optimal level (Lin et al., 2018). Some studies have found that firms' actual leverage slowly moves towards the target level (e.g., Flannery & Rangan, 2006; Kayhan & Titman, 2007; Lemmon, Roberts, & Zender, 2008). In comparison, Graham and Leary (2011) pointed out that the estimated adjustment speed noted in previous studies was between 10% and 40%, Frank and Shen (2013) claimed that the adjustment speed tend to be measured based on a static optimal leverage which has remained dynamic over time.

Some studies (Drobetz & Wanzenried, 2006; Cook & Tang, 2010) showed that adverse economics tend to focus on factors affecting the adjustment speed. These studies have also found that an increase in adjustment costs decreases the adjustment speed. Drobetz and

Wanzenried (2006) and Cook and Tang (2010) had shown that in a favourable economic environment, firms adjust their leverage more quickly. This was endorsed by Elsas and Florysiak (2011) who noted that the costs of deviations derived from the optimal leverage encouraged managers to quickly adjust any deviations. Öztekin and Flannery (2012) found that different business environments may impose different costs and benefits on firms, which in turn, affect the adjustment speed. They believed that lower information asymmetry would lead to faster adjustment speed. Devos et al. (2017) and Lockhart (2014) noted that a firm's credit lines and debt contracts impact on its adjustment speed. Chang, Chou, and Huang (2014) and Liao et al. (2015) also mentioned that firms with stronger corporate governance tend to adjust their leverage more quickly. The results derived from Smith, Chen and Anderson (2015) further emphasised that the capital structure of over-levered firms, as compared to under-levered firms, moved faster towards optimal leverage. Zhou et al. (2016) also observed that firms which had a higher cost of capital were comparatively more sensitive to deviations derived from optimal leverage. In this regard, they possessed faster adjustment speeds. Öztekin (2015), Halling et al. (2016) and Jiang et al. (2017) believed that better institutional conditions reduced adjustment costs and increased adjustment speed. Lin et al. (2018) stated that under-levered (over-levered) firms have slower (faster) adjustment speeds when compared to other firms. Given the above, our second hypothesis is as follows:

> H_2: Firms with higher information asymmetry have slower leverage adjustment speed.

3. Data and Methodology

3.1 Data and Variable Definition (Samples)

Data were collected from the financial statements contained in several databases – CODAL[1], RDIS[2] and Rahavard Nowin[3]. We also gathered share price information from the Tehran Stock Exchange[4] from 2004 to 2017. Our initial samples comprised 6,678 observations, but subsequent

[1] www.codal.ir
[2] www.rdis.ir/CompaniesReports.asp
[3] www.mabnadp.com/rahavardnovin3
[4] http://new.tse.ir/en

screening filtered banks and financial institutions and also regulated utility firms. Next, delisted firms with industry-years of fewer than eight observations as well as those that carried firm-years with a negative equity book value were also excluded from the samples. To reduce the potential impact of outliers, we then winsorised all the variables at the 1st and 99th percentiles. This process limited the samples to 4,508 observations, which were then grouped into 15 industries, as shown in Table 1.

Table 1: Sample Selection Procedure and Industry Distribution

Panel A: Sample Selection Procedure

	Number of observations
Initial samples between 2004-2017	6678
Delisted firms	(168)
Banks, financial firms and regulated utilities	(826)
Industry-years with fewer than eight observations	(434)
Firm-years with a negative equity book value	(308)
Firm-years with missing values	(434)
Total observations in the final analysis	4508

Panel B: Industry Distribution

Industry classification	Number of observations	% Distribution
Agriculture and related services	168	3.73
Metal products	448	9.94
Non-metallic mineral	266	5.90
Equipment and machinery	210	4.66
Telecommunications	434	9.63
Automobile and parts	462	10.25
Medical tools and pharmaceutical	294	6.52
Chemical	378	8.39
Information and communication	238	5.28
Textiles	154	3.42
Rubber and plastic	350	7.76
Electrical appliances	196	4.35
Cement	364	8.07
Real estates	238	5.28
Accommodation, cafes and restaurants	308	6.83
Total	4508	100

3.2 *Variable Definitions*

3.2.1 The Measure of Leverage Deviation

Based on Byoun (2008), Uysal (2011) and Zhou et al. (2016), we estimated the target leverage ($TLEV_{it+1}$) as the fitted values from the regression of leverage ratio on the determinants of capital structure ($\mathbf{Z}_{it}$). The model is specified as follows:

$$LEV_{it+1} = \omega + \psi \mathbf{Z}_{it} + \zeta_{it+1} \tag{1}$$

where LEV_{it+1} is sequentially set equal to book leverage (BL), and market leverage (ML) as the dependent variable, at the end of period $t+1$. Following this, $\mathbf{Z}_{it}$ served as the target leverage determinant. In following An et al. (2016), we defined book leverage as the book value of total debts scaled by the book value of total assets. As recommended by Flannery and Rangan (2006) and An et al. (2016), we then defined market leverage as the book value of debt scaled by the sum of the book value of debt and the market value of equity. Although different sets of determinants have been used as a proxy for target leverage, as noted in literature (e.g., Flannery & Rangan, 2006; Öztekin & Flannery, 2012; Zhou et al., 2016), all of these determinants essentially measure the same characteristics of the firm (Zhou et al., 2016). In taking the steps of Flannery and Rangan (2006), Marchica and Mura (2010) and Zhou et al. (2016), ten variables were considered for estimating the target leverage. They include: earnings before interest and tax, earnings scaled by total assets (EBIT), market-to-book ratio (MTB), asset tangibility (TANG), depreciation expenses scaled by total assets (DEP), effective tax rate defined as the ratio of current income taxes to income before taxes (TAXR), logarithm of total assets (LNTA)[5], asset liquidity (LIQ) was defined as current assets divided by current liabilities, median industry leverage (IBL or IML), annual inflation rate was defined as growth in consumer price index (INFL), and growth in GDP (GDPG). The absolute value of the abnormal level of LEV_{it+1} is the leverage deviation ($DLEV_{it+1}$). It is calculated as the actual leverage minus the fitted values from regression (1). More specifically, the absolute value of residuals derived from model (1) was defined as the level of deviation from the target leverage (i.e. $DLEV_{it+1} = |\zeta_{it+1}|$).

[5] Because of the high inflation rate in Iran, we also use logarithm of sales revenues and logarithm of total stock market values as two proxies for firm size. Untabulated key results remain robust to these proxies.

3.2.2 The Measure of Information Asymmetry

In this study, two metrics were used to measure information asymmetry (IASY). First, following Venkatesh and Chiang (1986), we used the bid–ask spread (SPREAD) which measures the differences between stocks bid and ask prices. Second, following Easley et al. (1996), we used the probability of information-based trading (PIN) to measure the intensity of information asymmetry across equity investor groups. In the equation, $High\_IASY_{it}$ (i.e. $High\_SPREAD_{it}$ and $High\_PIN_{it}$) were the dummy variables that referred to the firm-years with a high level of IASY. Specifically, if the firm-years belonging to the top quartile were sorted by $IASY_{it}$, then $High\_IASY_{it}$ is taken to equal to 1, and zero as otherwise.

3.3 Empirical Models

3.3.1 The Measure of Leverage Deviation

To test H_1, we estimated the following model:

$$DLEV_{it+1} = \alpha + \beta IASY_{it} + \psi \mathbf{Z}_{it} + \vartheta_{it+1} \tag{2}$$

where DLEV is leverage deviation and refers to book leverage deviation and market leverage deviation, and IASY is considered as SPREAD and PIN. In following Chen et al. (2018), we took ten factors ($\mathbf{Z}_{it}$) from model (1) and entered them into model (2) as control variables so as to gain unbiased coefficients, and standard errors. As our baseline regression model, model (2) ignored the dynamics of leverage deviation which was estimated by using the OLS. As the leverage deviation can be serially correlated, we incorporated its dynamics using $DLEV_{it}$ as an explanatory variable. Flannery and Hankins (2013) had argued that in the case of endogeneity, Blundell and Bond (1998) system-GMM estimators would provide the most reliable result for the dynamic short panels. Therefore, we estimated our new dynamic model by utilising system-GMM. We also employed Arellano and Bond (1991) difference-GMM for robustness check. Factors comprising industry and year effects were controlled by adding dummies to the regression model. To save space, we only reported the coefficient estimates, and the associated robust t-statistics (enclosed in parentheses) for leverage determinants. The t-statistics were then corrected for heteroskedasticity and firm-level clustering. According to H_1, it is expected that the coefficient on IASY would be positively significant.

3.3.2 Information Asymmetry and Leverage Adjustment Speed

Following Öztekin and Flannery (2012) and Zhou et al. (2016), we tested H_2 using the partial adjustment model:

$$LEV_{it+1} - LEV_{it} = \lambda(TLEV_{it+1} - LEV_{it}) + \vartheta_{it+1} \tag{3}$$

where LEV_{it} is leverage ratio at the end of period t, defined in the previous section, $TLEV_{it+1}$ is target leverage ratio that is measured as the fitted value based on model (1) and, λ is leverage adjustment speed. Substituting the fitted values from equation (1) into equation (3) produces the following dynamic regression model:

$$LEV_{it+1} = \alpha + (1 - \lambda)LEV_{it} + (\lambda\psi)\mathbf{Z}_{it} + \vartheta_{it+1} \tag{4}$$

Next, to test the significance of $IASY_{it}$ on leverage adjustment speed, we augmented model (4) with $High\_IASY_{it}$ and $High\_IASY_{it} * LEV_{it}$. Eventually, we used the following dynamic model to test H_2:

$$LEV_{it+1} = \alpha + (1 - \lambda)LEV_{it} + \beta High\_IASY_{it} + \theta High\_IASY_{it} * LEV_{it} + (\lambda\psi)\mathbf{Z}_{it} + \vartheta_{it+1} \tag{5}$$

We used the system-GMM estimator as our primary empirical approach to test H_2. We employed difference-GMM for robustness check of model (5). We also controlled industry and year effects. To save space, we omitted the coefficient estimates for industry and year dummies. The t-statistics were corrected for heteroskedasticity and firm-level clustering. According to H_2, the coefficient on the interaction term ($High\_IASY_{it} * LEV_{it}$) is expected to be positive. This means that H_2 predicts a positive θ. When compared to other firms, the coefficient on lagged leverage would be greater for firms with higher asymmetric information. As a result, $High\_IASY_{it}$ would exhibit slower leverage adjustment speed, in comparison with other firms.

4. Results and Discussion

4.1 Estimation and Empirical Results

4.1.1 Descriptive Statistics

Table 2 provides the descriptive statistics, including the mean, standard deviation, minimum, first and third quartiles, median and maximum for the main research variables.

Table 2: Descriptive Statistics for the Main Variables

Variables	#obs	Mean	SD	Min.	Q1	Median	Q3	Max
BL_{it+1}	4186	0.6027	0.2121	0.0501	0.4687	0.6337	0.7618	0.9730
ML_{it+1}	4186	0.4288	0.2299	0.0333	0.2364	0.4149	0.6080	0.9047
DBL_{it+1}	4186	0.1171	0.0906	0.0002	0.0464	0.0976	0.1667	0.5704
DML_{it+1}	4186	0.1333	0.0993	0.0001	0.0531	0.1107	0.1947	0.5780
$SPREAD_{it}$	4508	0.0835	0.0312	0.0105	0.0585	0.0832	0.1091	0.1631
PIN_{it}	4508	0.2161	0.0690	0.0398	0.1643	0.2144	0.2693	0.3953
$EBIT_{it}$	4508	0.1130	0.1485	0.4033	0.0325	0.1057	0.1930	0.5127
MTB_{it}	4508	3.4659	4.0052	0.4094	1.2933	2.2476	3.9828	6.7180
$TANG_{it}$	4508	0.2622	0.2130	0.0005	0.0996	0.2064	0.3737	0.9078
DEP_{it}	4508	0.1685	0.0573	0.0489	0.1273	0.1656	0.2070	0.3146
$TAXR_{it}$	4508	0.1021	0.0928	0.0000	0.0000	0.0946	0.1941	0.2918
$LNTA_{it}$	4508	13.3094	1.7440	9.7683	12.0772	13.1863	14.3547	18.0815
LIQ_{it}	4508	1.4047	1.3044	0.1022	0.8250	1.1242	1.4967	9.9485
IBL_{it}	4508	0.6181	0.0960	0.2858	0.5620	0.6395	0.6912	0.8151
IML_{it}	4508	0.4328	0.1553	0.0705	0.3170	0.4174	0.5636	0.8002
$INFL_{it}$	4508	0.1690	0.0729	0.0901	0.1169	0.1542	0.1983	0.3479
$GDPG_{it}$	4508	0.0267	0.0488	0.0771	-0.0020	0.0314	0.0552	0.1252

Note: This table reports the descriptive statistics. The full sample consists of 4,508 firm–year observations over the period 2004-2017.

The results show that the mean for book leverage and market leverage are 0.6027 and 0.4288, respectively. This suggests that about 60% of the corporate financial resources are provided through debts. The equity market value is about 1.33 times the debt value. The average book leverage deviation and market leverage deviation are 0.1171 and 0.1333, respectively. The average SPREAD and PIN are noted as 0.0865 and 0.2161, respectively. The results show that the stock market value is about 3.5 times the stock book value. Fixed assets are 26% of the total assets, and the depreciation cost is 16% of the total assets. The effective tax rate is 10%, and current assets are 1.4 times the current debts. In the period under review, the average inflation rate is about 17% and the average GDP growth rate is about 3%.

Table 3 reports the mean of the leverage and the leverage deviation for five annually rebalanced portfolios, based on the levels of SPREAD and PIN. These results show that the increase in information asymmetry also increases the leverage and leverage deviations. The comparison of

Table 3: The Mean for Leverage and Leverage Deviation in Different Quintiles of SPREAD and PIN

Portfolios: $SPREAD_{it}$	BL_{it+1}	ML_{it+1}	DBL_{it+1}	DML_{it+1}
1–Lowest	0.4996	0.3246	0.0941	0.1181
2	0.5589	0.3979	0.1136	0.1311
3	0.5779	0.4135	0.1178	0.1313
4	0.5725	0.4234	0.1175	0.1334
5–Highest	0.6297	0.4567	0.1424	0.1526
Diff. Highest-Lowest	0.1300***	0.1321***	0.0482***	0.0345**
Portfolios: PIN_{it}	BL_{it+1}	ML_{it+1}	DBL_{it+1}	DML_{it+1}
1–Lowest	0.5063	0.3343	0.0970	0.1238
2	0.5490	0.3869	0.1097	0.1235
3	0.5748	0.4119	0.1221	0.1370
4	0.6059	0.4561	0.1172	0.1362
5–Highest	0.6359	0.4981	0.1396	0.1459
Diff. Highest–Lowest	0.1296***	0.0426***	0.1638***	0.0221*

Note: *, ** and *** represent significance at the 10%, 5% and 1% level, respectively. This table reports the mean of leverage and leverage deviation for five annually rebalanced portfolios based on the levels of SPREAD and PIN. Portfolio 1 (5) consists of firms with the lowest (highest) leverage (leverage deviation) in every year. The table reports t-statistics (in parentheses) to test the significance of differences in means of leverage and leverage deviation measures in portfolios 1 and 5.

the leverage and leverage deviations in the first and last portfolios shows that in response to the increase in information asymmetry, the increase in the leverage and leverage deviation are also significant. These results support H_1.

4.2 Correlations

Table 4 reports Pearson's correlation coefficients for the main research variables. The results show that book leverage is significantly correlated with market leverage (0.7124), book leverage deviation (0.1557), market leverage deviation (0.0584), SPREAD (0.2774) and PIN (0.2550). The results further show that market leverage is positively correlated to book leverage deviation (0.0971), market leverage deviation (0.1635), SPREAD (0.1156) and PIN (0.904). The positive and significant correlation

Table 4: Correlation Coefficients

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ML_{it+1}	1														
DBL_{it+1}	0.097^{***}	1													
DML_{it+1}	0.164^{***}	0.442^{***}	1												
$SPREAD_{it}$	0.306^{***}	0.183^{***}	0.116^{***}	1											
PIN_{it}	0.280^{***}	0.164^{***}	0.090^{***}	0.391^{***}	1										
$EBIT_{it}$	-0.501^{***}	-0.042^{**}	-0.144^{***}	-0.197^{***}	-0.182^{***}	1									
MTB_{it}	-0.332^{***}	0.036^{*}	-0.053^{***}	-0.03	-0.023	0.212^{***}	1								
$TANG_{it}$	0.014	-0.04^{*}	-0.032	0.05^{**}	0.055^{***}	-0.079^{***}	0.026^{*}	1							
DEP_{it}	0.016	-0.003	0.002	0.020	0.024	-0.059^{***}	0.024	0.686^{***}	1						
$TAXR_{it}$	0.040^{**}	-0.188^{***}	-0.081^{***}	0.017	0.022	0.337^{***}	-0.017	0.022	0.036^{**}	1					
$LNTA_{it}$	-0.054^{***}	0.094^{***}	0.031	0.024	0.04^{*}	0.210^{***}	-0.089^{***}	0.077^{***}	0.041^{***}	0.016	1				
LIQ_{it}	-0.412^{***}	0.135^{***}	0.046^{**}	-0.190^{***}	-0.185^{***}	0.187^{***}	-0.123^{***}	-0.232^{***}	-0.162^{***}	-0.059^{***}	0.008	1			
IBL_{it}	0.319^{***}	-0.061^{***}	0.034^{*}	0.126^{***}	0.101^{***}	-0.069^{***}	0.066^{***}	0.002	-0.004	0.053^{***}	-0.252^{***}	-0.200^{***}	1		
IML_{it}	0.540^{***}	-0.076^{***}	0.065^{***}	0.125^{***}	0.106^{***}	-0.239^{***}	-0.336^{***}	-0.027^{**}	-0.014	0.042^{***}	-0.168^{***}	-0.144^{***}	0.501^{***}	1	
$INFL_{it}$	-0.083^{***}	0.045^{**}	0.010	-0.033	-0.024	0.109^{***}	0.029^{**}	-0.013	-0.010	0.120^{***}	0.104^{***}	0.079^{***}	-0.169^{***}	-0.164^{***}	1

Note: *, ** and *** represent significance at the 10%, 5% and 1% level, respectively. This table reports the Pearson correlation coefficients for the main variables. The full sample consists of 4,508 firm–year observations over the period 2004-2017.

between book leverage deviation and SPREAD (0.1833), and between book leverage deviation and PIN (0.1644) as well as the positive and significant correlation among market leverage deviation, and two metrics of information asymmetry, includes SPREAD (0.1156) and PIN (0.904). This outcome provides the preliminary evidence in support of H_1.

4.3 Target Leverage Regressions

Panel A (Panel B) in Table 5 presents the estimation results of model (1) which used book leverage (market leverage) at the end of period $_{t+1}$ as the dependent variable. The first column of each panel shows the expected sign according to literature. In model estimation, we controlled for industry and year effects. The estimation results of model (1) indicate that the sign of the most coefficients is consistent with literature. Results further show that the leverage determinants explain 58% (21%) of the variations in book (market) leverage at the end of period $_{t+1}$. The result of the F-test also shows that the coefficients of the year dummies are jointly, not equal to zero. After estimating model (1), we used book (market) leverage at the end of period $_{t+1}$ as the dependent variable. We then derived the absolute value of the residuals as the book (market) leverage deviation.

4.4 Results of Testing H_1

Table 6 presents the estimation results of model (2) using SPREAD as the independent variable. Panel A (Panel B) reports the estimation results of model (2) using book leverage deviation (market leverage deviation) as the dependent variable.

In each panel, the first, second and third columns provide the estimation results derived from using the OLS, system-GMM and the difference-GMM estimators, respectively. By adding industry and year dummy variables to the regression models, we then controlled for industry and year effects. The robust t-statistics (presented in parentheses) were calculated using standard errors corrected for firm-level clustering. H_1 predicts a positive association between SPREAD and leverage deviations. Consistent with this, the estimation results of model (2) in Panel A indicates that the coefficients on SPREAD by using the OLS (0.0593), system-GMM (0.0462) and difference-GMM (0.0470) were positive and significant. In addition, the coefficients on SPREAD noted in the first column (0.0236), second column (0.0172) and third column

Table 5. Book/Market Target Leverage Regression

Variable	Panel A Book leverage (BL_{it}) regression: Sign in the literature	Panel A: Estimated coefficient	Panel B Market leverage (ML_{it}) regression: Sign in the literature	Panel B: Estimated coefficient
Intercept		0.3472*** (9.92)		0.2587*** (7.10)
$EBIT_{it}$	–	-0.4737*** (-18.77)	–	-0.5266*** (-21.02)
MTB_{it}	+	0.0011 (1.06)	+	-0.0110*** (-8.85)
$TANG_{it}$	–	-0.1263*** (-8.41)	–	-0.1316*** (-6.94)
DEP_{it}	–	0.0201 (0.52)	–	0.0301 (0.57)
$TAXR_{it}$	+	0.3523*** (10.30)	+	0.1205*** (3.10)
$LNTA_{it}$	+	0.0878*** (4.09)	+	0.1005*** (4.43)
LIQ_{it}	–	-0.0871*** (-22.57)	–	-0.0733*** (-18.83)
IBL_{it}	+	0.4164*** (18.23)	+	
IML_{it}			+	0.4700*** (18.45)
$INFL_{it}$	+	0.2367*** (11.39)	+	0.3129*** (11.20)
$GDPG_{it}$	+	0.4134*** (7.10)	+	0.2991*** (4.47)
Industry effects		Yes		Yes
Years dummy		Yes		Yes
#obs		4186		4186
Adjusted R^2		58.33%		61.00%
F-test (p-value)		<0.01		<0.01

Note: *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. This table reports the estimation results of the following regression model:

$$LEV_{it+1} = \omega + \psi \boldsymbol{Z}_{it} + \zeta_{it+1}, \quad LEV_{it+1} = \{BL_{it+1}, ML_{it+1}\}$$

In the table, the first column shows each of the dependent variable determinants used in the model. Panel A (Panel B) reports the regression results for book leverage (market leverage) for the next period as the dependent variable. The first column of each panel reports the predicted sign of independent variables ($\boldsymbol{Z}_{it}$), and the second column reports the estimated coefficients. We include both industry and year effects and report coefficient estimates and associated robust t-statistics (in parentheses) for leverage determinants. The t-statistics are corrected for heteroskedasticity and firm-level clustering. F-test is for the null hypothesis of no significant year fixed effect.

Table 6: Bid-ask SPREAD and Leverage Deviation

Variable	Panel A Book leverage deviation			Panel B Market leverage deviation		
	DBL_{it+1} (OLS)	DBL_{it+1} (BB)	DBL_{it+1} (AB)	DML_{it+1} (OLS)	DML_{it+1} (BB)	DML_{it+1} (AB)
Intercept	0.0191 (1.23)			0.0432** (2.27)		
DBL_{it}		0.1753*** (4.55)	0.1511*** (4.01)			
DML_{it}					0.1996*** (6.34)	0.1982*** (5.92)
$SPREAD_{it}$	0.0593*** (14.40)	0.0462*** (8.19)	0.0470*** (6.81)	0.0236*** (4.92)	0.0172** (2.45)	0.0187** (2.31)
$EBIT_{it}$	-0.0327** (-2.22)	0.0744*** (2.63)	0.1193*** (2.73)	-0.1116*** (-7.34)	-0.0702** (-2.21)	-0.0905* (-1.94)
MTB_{it}	0.0025*** (4.96)	-0.0010 (-0.85)	-0.0023* (-1.71)	0.0006 (1.20)	-0.0035** (-2.47)	-0.0075*** (-4.61)
$TANG_{it}$	-0.0178** (-2.01)	0.0040 (0.21)	-0.0189 (-0.66)	-0.0258** (-2.47)	-0.0233 (-1.07)	-0.0089 (-0.31)
DEP_{it}	0.0496 (1.62)	0.0158 (0.47)	0.0439 (1.14)	0.0905*** (2.91)	0.0529 (1.16)	0.1394** (2.58)
$TAXR_{it}$	-0.1343*** (-6.86)	-0.0402 (-1.06)	-0.0286 (-0.66)	-0.0504** (-2.48)	0.0283 (0.65)	0.0542 (1.01)
$LNTA_{it}$	0.0043*** (4.69)	-0.0002 (-0.03)	-0.0355*** (-2.73)	0.0033*** (4.03)	0.0084 (1.01)	0.0153 (1.02)
LIQ_{it}	0.0104*** (5.29)	-0.0128*** (-3.05)	-0.0172*** (-3.03)	0.0036** (2.14)	-0.0001 (-0.02)	0.0010 (0.18)
IBL_{it}	-0.0313** (-2.03)	0.0898** (2.19)	0.0980** (2.21)			
IML_{it}				0.0277* (1.94)	0.0578 (1.58)	0.0311 (0.60)
$INFL_{it}$	-0.0197 (-1.16)	0.0314 (0.19)	-0.0456 (-0.20)	0.0585*** (2.75)	-0.0011 (-0.01)	0.0176 (0.06)
$GDPG_{it}$	-0.0896** (-2.29)	-0.2236 (-0.54)	-0.6949 (-1.40)	0.1474*** (2.94)	0.0822 (0.16)	0.1066 (0.19)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 6: Continued

Variable	Panel A Book leverage deviation			Panel B Market leverage deviation		
	DBL_{it+1} (OLS)	DBL_{it+1} (BB)	DBL_{it+1} (AB)	DML_{it+1} (OLS)	DML_{it+1} (BB)	DML_{it+1} (AB)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
#obs	4186	4186	4186	4186	4186	4186
Adjusted R^2	14.61%			17.02%		
Sargan-Hansen (J-statistic)		35.12	30.08		51.68	53.02
Arellano-Bond test for:						
AR(1) in first differences		-7.65***	-7.70***		-7.03***	-8.70***
AR(2) in first differences		0.22	0.77		0.25	-0.04

Notes:*, ** and *** denote significance at the 10%, 5% and 1% level, respectively. This table reports the estimation results of the following regression model:

$DLEV_{it+1} = \alpha + \beta IASY_{it} + \psi \mathbf{Z}_{it} + \vartheta_{it+1}$, $DLEV_{it+1} = \{DBL_{it+1}, DML_{it+1}\}$, $IASY_{it+1} = \{SPREAD_{it+1}\}$.

In this table, the first column shows each of the dependent variable determinants used in the model. Panels A and B report the regression results for the model (2) using book leverage and market leverage for the next period as the dependent variable, respectively. The first, second and third columns of each panel report the results for model (2) using OLS, system-GMM (BB) and difference-GMM (AB), respectively. Industry and year effects are controlled by adding industry and year dummies to the regression models. The robust t-statistics (presented in parentheses) are calculated using standard errors corrected for firm-level clustering. Panels A and B include the Sargan-Hansen over-identification test for the validity of instruments and the Arellano-Bond test for autocorrelation in differenced residuals for GMM estimations. The shaded rows highlight the main findings.

(0.0187) of Panel B in Table 6 was also significantly positive. Our results, thus showed that the increase in SPREAD also increased the book and market leverage deviations. Panels A and B report on the Sargan-Hansen over-identification test (with J-statistics) for testing the validity of the instruments used. In Panel A, the J-statistics in system-GMM (35.12) and difference-GMM (30.08) were not significant. In Panel B, the J-statistics in system-GMM (51.68) and difference-GMM (53.02) were not significant.

These results showed that our instruments were valid. Panels A and B report on the Arellano-Bond test for autocorrelation in differenced residuals. The AR(2) test results showed that there was no second-order autocorrelation in our GMM models.

Table 7 reports on the estimation results of model (2) using PIN as the independent variable. Panel A (Panel B) presents the estimates of model (2) by using book leverage deviation (market leverage deviation) as the dependent variable. In each panel, the first, second and third

Table 7: PIN and Leverage Deviation

Variable	Panel A Book leverage deviation			Panel B Market leverage deviation		
	DBL_{it+1} (OLS)	DBL_{it+1} (BB)	DBL_{it+1} (AB)	DML_{it+1} (OLS)	DML_{it+1} (BB)	DML_{it+1} (AB)
Intercept	0.0307* (1.91)			0.0493*** (2.98)		
DBL_{it}		0.1594*** (4.13)	0.1426*** (3.78)			
DML_{it}					0.1985*** (6.27)	0.1972*** (5.89)
PIN_{it}	0.0245*** (14.70)	0.0174*** (6.71)	0.0195*** (6.43)	0.0743*** (3.59)	0.0605** (1.98)	0.0805** (2.21)
$EBIT_{it}$	-0.0370** (-2.51)	0.0623** (2.20)	0.1167*** (2.71)	-0.1176*** (-8.12)	-0.0722** (-2.29)	-0.0903* (-1.94)
MTB_{it}	0.0022*** (3.96)	-0.0009 (-0.77)	-0.0023* (-1.74)	0.0006 (0.98)	-0.0036** (-2.46)	-0.0075*** (-4.60)
$TANG_{it}$	-0.0245** (-2.57)	0.0070 (0.37)	-0.0118 (-0.41)	-0.0268** (-2.57)	-0.0230 (-1.06)	-0.0069 (-0.24)
DEP_{it}	0.0561* (1.86)	0.0166 (0.49)	0.0489 (1.29)	0.0907*** (3.11)	0.0522 (1.15)	0.1387** (2.56)
$TAXR_{it}$	-0.1380*** (-6.93)	-0.0434 (-1.14)	-0.0305 (-0.72)	-0.0483** (-2.55)	0.0267 (0.62)	0.0542 (1.01)
$LNTA_{it}$	0.0039*** (3.95)	-0.0006 (-0.08)	-0.0362*** (-2.75)	0.0032*** (4.79)	0.0075 (0.91)	0.0138 (0.92)
LIQ_{it}	0.0097*** (4.91)	-0.0119*** (-2.88)	-0.0165*** (-2.98)	0.0033* (1.95)	0.0001 (0.02)	0.0015 (0.26)
IBL_{it}	-0.0371** (-2.18)	0.0851** (2.01)	0.0891** (2.01)			

Table 7: Continued

Variable	Panel A Book leverage deviation			Panel B Market leverage deviation		
	DBL_{it+1} (OLS)	DBL_{it+1} (BB)	DBL_{it+1} (AB)	DML_{it+1} (OLS)	DML_{it+1} (BB)	DML_{it+1} (AB)
IML_{it}				0.0229* (1.73)	0.0598* (1.65)	0.0291 (0.56)
$INFL_{it}$	-0.0265** (-1.98)	0.0142 (0.08)	-0.0639 (-0.28)	0.0673*** (3.48)	-0.0014 (-0.02)	-0.0013 (-0.05)
$GDPG_{it}$	-0.1115*** (-3.48)	-0.3244 (-0.78)	-0.7567 (-1.53)	0.1715*** (3.75)	0.0421 (0.08)	0.0367 (0.07)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
#obs	4186	4186	4186	4186	4186	4186
Adjusted R^2	18.44%			16.66%		
Sargan-Hansen (J-statistic)		35.52	30.43		52.05	53.36
Arellano-Bond test for:						
AR(1) in first differences		-8.02***	-7.75***		-8.87***	-8.73***
AR(2) in first differences		0.30	0.49		0.51	-0.01

Notes: *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. This table reports the estimation results of the following regression model:

$DLEV_{it+1} = \alpha + \beta IASY_{it} + \psi \mathbf{Z}_{it} + \vartheta_{it+1}$, $DLEV_{it+1} = \{DBL_{it+1}, DML_{it+1}\}$, $IASY_{it+1} = \{PIN_{it+1}\}$.

In this table, the first column shows each of the dependent variable determinants used in the model. Panels A and B report the regression results for the model (2) using book leverage and market leverage for the next period as the dependent variable, respectively. The first, second, and third columns of each panel report the results for model (2) using OLS, system-GMM (BB) and difference-GMM (AB), respectively. Industry and year effects are controlled by adding industry and year dummies to the regression models. The robust t-statistics (presented in parentheses) are calculated using standard errors corrected for firm-level clustering. Panels A and B include the Sargan-Hansen over-identification test for the validity of instruments and the Arellano-Bond test for autocorrelation in differenced residuals for GMM estimations. The shaded rows highlight the main findings.

columns provide the estimation results by using the OLS, difference-GMM and system-GMM estimators, respectively. Industry and year effects were controlled by adding industry and year dummies to the regression model. The robust t-statistics (presented in parentheses) were calculated by using standard errors which were corrected for firm-level clustering. H_1 predicts a positive association between PIN and leverage deviations. Consistent with this, the estimation results of model (2) in Panel A indicated that the coefficient on PIN using the OLS (0.0245), system-GMM (0.0174), and difference-GMM (0.0195) were positive and significant. The coefficients noted in PIN in the first column (0.0743), second column (0.0605) and third column (0.0805) of Panel B in Table 7 were significantly positive. These results showed that the increase in PIN increased the book and market leverage deviations. Panels A and B report the Sargan-Hansen over-identification test (with J-statistics) for the validity of instruments. In Panel A, the J-statistics in system-GMM (35.52) and difference-GMM (30.43) were not significant. In Panel B, the J-statistics in system-GMM (52.05) and difference-GMM (53.36) were also not significant. These results showed that all our instruments were valid. Panels A and B report on the Arellano-Bond test for autocorrelation in differenced residuals. The AR(2) test results indicated that there was no second-order correlation in our GMM models.

4.5 *Results of Testing H_2*

Panels A and B in Table 8, present the estimation results of model (5) which used book leverage and market leverage at the end of period $_{t+1}$ as the dependent variables. The first two columns in each panel report the estimation results of model (5) which used High-SPREAD, while the subsequent two columns show the estimation results when using High-PIN. Industry and year effects were controlled by adding industry and year dummies to the regression model.

The robust t-statistics (presented in parentheses) were calculated by using standard errors corrected for firm-level clustering. H_2 predicts that firms with higher information asymmetry have a slower leverage adjustment speed. Consistent with this, the estimation results of model (5) in the first (0.0384) and the second (0.0332) columns of panel A indicate that firms with higher SPREAD have slower book leverage adjustment speed when compared with other firms. The estimation results of model (5) in the third column (0.0338) and the fourth column (0.0419) of panel A show that firms with higher PIN have slower book

Table 8: Spread/PIN and Leverage Adjustment Speed

Variable	Panel A Book leverage				Panel B Market leverage			
	BL_{it+1} (BB)	BL_{it+1} (AB)	BL_{it+1} (BB)	BL_{it+1} (AB)	ML_{it+1} (BB)	ML_{it+1} (AB)	ML_{it+1} (BB)	ML_{it+1} (AB)
BL_{it}	0.8729*** (10.91)	0.8476*** (8.63)	0.8110*** (10.54)	0.8192*** (8.35)				
ML_{it}					0.7959*** (12.13)	0.8186*** (11.42)	0.7680*** (13.31)	0.7938*** (10.92)
$High\_SPREAD_{it}$	0.2575*** (3.56)	0.2246*** (3.24)			0.1227*** (1.12)	0.0436 (2.73)		
$High\_PIN_{it}$			0.2092*** (3.09)	0.2112*** (2.73)			0.1639*** (4.14)	0.2051*** (4.33)
$High\_SPREAD_{it} * BL_{it}$	0.0384*** (3.40)	0.0332*** (3.09)						
$High\_PIN_{it} * BL_{it}$			0.0338*** (3.09)	0.0419** (1.97)				
$High\_SPREAD_{it} * ML_{it}$					0.0787** (2.07)	0.0414** (2.36)		
$High\_PIN_{it} * ML_{it}$							0.0480*** (2.85)	0.0420** (2.12)
$EBIT_{it}$	0.2037*** (4.25)	0.3348*** (5.75)	0.1685*** (3.74)	0.4048*** (7.12)	0.0213 (0.60)	0.4281*** (9.00)	0.0746* (1.93)	0.4428*** (9.21)
MTB_{it}	-0.0156*** (-8.44)	-0.0199*** (-8.30)	-0.0125*** (-7.61)	-0.0202*** (-8.74)	0.0036*** (3.46)	0.0114*** (5.02)	0.0035*** (2.90)	0.0119*** (5.18)

Table 8: Continued

Variable	Panel A Book leverage				Panel B Market leverage			
	BL_{it+1} (BB)	BL_{it+1} (AB)	BL_{it+1} (BB)	BL_{it+1} (AB)	ML_{it+1} (BB)	ML_{it+1} (AB)	ML_{it+1} (BB)	ML_{it+1} (AB)
$TANG_{it}$	0.0570**	0.1761***	0.0764***	0.1873***	-0.0020	0.1222***	0.0033	0.1206***
	(2.36)	(4.03)	(2.92)	(4.17)	(-0.08)	(2.77)	(0.13)	(2.84)
DEP_{it}	-0.0373	-0.0458	-0.1204***	-0.1243***	-0.0007	-0.0186	-0.0109	-0.0424
	(-0.90)	(-1.10)	(-2.99)	(-2.71)	(-0.02)	(-0.37)	(-0.27)	(-0.85)
$TAXR_{it}$	-0.0659*	-0.1456***	-0.0613*	-0.1656***	-0.0357	-0.0774*	-0.0337	-0.0483
	(-1.96)	(-3.08)	(-1.77)	(-3.52)	(-0.99)	(-1.68)	(-0.88)	(-1.05)
$LNTA_{it}$	-0.0293***	-0.0826***	-0.0106	-0.0794***	0.0242***	-0.0471***	0.0135*	-0.0482***
	(-3.74)	(-5.40)	(-1.39)	(-5.06)	(3.29)	(-3.41)	(1.72)	(-3.44)
LIQ_{it}	0.0283***	0.0385***	0.0223***	0.0394***	-0.0042	0.0169***	-0.0025	0.0144***
	(4.62)	(5.76)	(3.73)	(6.18)	(-1.42)	(3.77)	(-0.73)	(3.47)
IBL_{it}	0.0145	0.0197	-0.0092	-0.0292				
	(0.34)	(0.40)	(-0.22)	(-0.55)				
IML_{it}					0.1103***	-0.2088***	0.1065***	-0.1365***
					(3.39)	(-3.96)	(2.72)	(-2.65)
$INFL_{it}$	0.1958	0.2328	-0.0410	0.1395	0.0205	0.0845	-0.3349**	-0.1527
	(1.37)	(1.19)	(-0.30)	(0.70)	(0.28)	(0.38)	(-2.26)	(-0.73)
$GDPG_{it}$	0.1580	0.0222	0.1645	0.1801	0.4238***	1.1333	-0.4687	0.5359
	(0.49)	(0.06)	(0.58)	(0.51)	(2.60)	(2.48)	(-1.50)	(1.24)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: Continued

Variable	Panel A Book leverage				Panel B Market leverage			
	BL_{it+1} (BB)	BL_{it+1} (AB)	BL_{it+1} (BB)	BL_{it+1} (AB)	ML_{it+1} (BB)	ML_{it+1} (AB)	ML_{it+1} (BB)	ML_{it+1} (AB)
#obs	4186	4186	4186	4186	4186	4186	4186	4186
Sargan-Hansen (J-statistic)	93.45	76.17	82.37	96.41	93.90	79.84	85.28	85.99
Arellano-Bond test for:								
AR(1) in first differences	-8.02***	-7.63***	-6.66***	-7.92***	-6.54***	-9.54***	-9.15***	-9.44***
AR(2) in first differences	-0.31	-0.72	0.25	0.39	-0.55	-0.92	-0.62	-0.61

Notes: *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. This table reports the estimation results of the following regression model:

$$LEV_{it+1} = \alpha + (1-\lambda)LEV_{it} + \beta High\_IASY_{it} + \theta High\_IASY_{it} * LEV_{it} + (\lambda\psi)\mathbf{Z}_{it} + \vartheta_{it+1},$$

$$LEV_{it+1} = \{BL_{it+1}), ML_{it+1}\}\ IASY_{it+1} = \{SPREAD_{it+1}, PIN_{it+1}\}.$$

In this table, the first column shows each of the dependent variable determinants used in the model. Panels A and B report the regression results for the model (3) using book leverage and market leverage for the next period as the dependent variable, respectively. Industry and year effects are controlled by adding industry and year dummies to the regression models. The robust t-statistics (presented in parentheses) are calculated using standard errors corrected for firm-level clustering. Panels include the Sargan-Hansen over-identification test for the validity of instruments. Furthermore, we include the Arellano-Bond test results. The shaded rows highlight the main findings.

leverage adjustment speed when compared with other firms. Panel B report similar results on market leverage adjustment speed while Panels A and B report the Sargan-Hansen over-identification test (with J-statistics) for the validity of the instruments. The results show that all our instruments are valid. Our results on the Arellano-Bond test also show no second-order correlation in our GMM models.

4.6 Robustness Tests

To confirm our results, we conducted two robustness checks. The first is to consider the effect of the sanctions imposed by the US, EU and the UN against Iran. To fulfill this, we re-estimated our models on severe (when all three types of sanctions exist) and non-severe (when at least one of these three types of sanctions did not exist) economic sanction periods. The second is to take note that the estimation of the target leverage is very important and definitive. We tested the sensitivity of the research results by using a different set of leverage determinants. Specifically, we used leverage determinants from Zhou et al. (2016) to calculate leverage deviations, to re-estimate models (2) and (5), and to test our hypotheses. In our robustness tests, industry and year effects were controlled by adding these as dummies to the regression models. However, to save space, we only reported the coefficient estimates (and t-statistics that were calculated by using standard errors corrected for firm-level clustering) used in testing our hypotheses.

4.6.1 Considering Severe and Non-Severe Economic Sanction Periods

Table 9 reports the hypotheses testing results on severe and non-severe economic sanction periods against Iran. Panels A and B in Table 9 illustrate the results for H_1 and H_2, respectively. In Panel A.1 (Panel A.2), the estimation results of model (2) on severe sanction period by using the OLS, BB and difference-GMM indicate that an increase in information asymmetry (proxied by SPREAD and PIN) increased book (market) leverage deviation. These results are then repeated for the non-severe sanction period. In Panels B.1 and B.2, the estimation results of model (5) on the severe and non-severe sanction periods by using system-GMM and difference-GMM indicate that firms with higher information asymmetry (proxied by SPREAD and PIN) have a slower adjustment speed. Therefore, the reported results in Panels A and B support H_1 and H_2, respectively.

Table 9: Additional Robustness Tests (Severe and Non-Severe Economic Sanction Periods)

Panel A: H_1. Information asymmetry and leverage deviation
Panel A.1: Book leverage deviation

	Non-severe sanctions periods			Severe sanctions periods		
	DBL_{it+1} (OLS)	DBL_{it+1} (BB)	DBL_{it+1} (AB)	DBL_{it+1} (OLS)	DBL_{it+1} (BB)	DBL_{it+1} (AB)
$SPREAD_{it}$	0.0506***	0.0394***	0.0355***	0.0799***	0.0445***	0.0538***
	(11.72)	(5.72)	(4.39)	(17.81)	(4.05)	(4.74)
PIN_{it}	0.0234***	0.0147***	0.0160***	0.0315***	0.0171***	0.0212***
	(11.57)	(3.08)	(4.60)	(15.32)	(5.39)	(3.92)

Panel A.2: Market leverage deviation

	Non-severe sanctions periods			Severe sanctions periods		
	DML_{it+1} (OLS)	DML_{it+1} (BB)	DML_{it+1} (AB)	DML_{it+1} (OLS)	DML_{it+1} (BB)	DML_{it+1} (AB)
$SPREAD_{it}$	0.0291***	0.0150*	0.0176*	0.0331***	0.0164**	0.0185***
	(7.24)	(1.68)	(1.84)	(7.40)	(2.49)	(2.69)
PIN_{it}	0.0833***	0.0480**	0.0496**	0.1057***	0.0467**	0.0945*
	(4.60)	(1.93)	(2.02)	(3.94)	(1.98)	(1.88)

Panel B: H_2. Information asymmetry and leverage adjustment speed
Panel B.1: Book leverage

	Non-severe sanctions periods		Severe sanctions periods	
	BL_{it+1} (BB)	BL_{it+1} (AB)	BL_{it+1} (BB)	BL_{it+1} (AB)
$High\_SPREAD_{it} * BL_{it}$	0.0156***	0.0199***	0.0781***	0.0771***
	(2.76)	(2.95)	(3.75)	(4.19)
$High\_PIN_{it} * BL_{it}$	0.0229***	0.0369***	0.0402***	0.0541**
	(3.16)	(3.25)	(2.71)	(2.09)

Panel B.2: Market leverage

	Non-severe sanctions periods		Severe sanctions periods	
	BL_{it+1} (BB)	BL_{it+1} (AB)	BL_{it+1} (BB)	BL_{it+1} (AB)
$High\_SPREAD_{it} * ML_{it}$	0.0171*	0.0188***	0.0421**	0.0514**
	(1.92)	(2.81)	(2.07)	(2.12)
$High\_PIN_{it} * ML_{it}$	0.0262*	0.0281**	0.0591***	0.0516***
	(1.83)	(2.17)	(3.10)	(3.91)

Notes: *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. Panels A and B report the estimation results of models (2) and (5), respectively in severe and non-severe economic sanctions periods. Industry and year effects are controlled by adding industry and year dummies to the regression models. The robust t-statistics (presented in parentheses) are calculated using standard errors corrected for firm-level clustering.

4.6.2 Using an Alternative Set of Leverage Determinants

Panel A and Panel B in Table 10 highlight the estimation results of models (2) and (5) by using an alternative set of leverage determinants, respectively. In Panel A.1 (Panel A.2), the estimation results of model (2) by using the OLS, system-GMM and difference-GMM indicate that an increase in information asymmetry (proxied by SPREAD and PIN) increases book (market) leverage deviation. Panels B.1 and B.2 highlight the estimation results of model (5) when using system-GMM and difference-GMM. The results show that firms with higher information asymmetry (proxied by SPREAD and PIN) have a slower adjustment speed. Therefore, our results in Panels A and B support H_1 and H_2, respectively.

5. Conclusion and Implications

The outcomes derived from this study contribute to the current literature on leverage policy with two novel findings. First, we provide evidence which shows that information asymmetry is positively associated with leverage deviation. This result is consistent with the notion that information asymmetry increases adverse selection costs and financing frictions. It also forces firms to increase debt financing. While debt financing has tax benefits, it also increases bankruptcy costs, thereby leading to higher costs of capital. As a result, more debt financing in response to an increase in information asymmetry can deviate firm's leverage from its optimal level. Second, our results indicate that firms with a higher (lower) information asymmetry have a slower (faster) adjustment speed. To confirm our analysis, we conducted some robustness checks. Our findings are robust to different proxies for leverage deviation and information asymmetry, different sample periods, an alternative set of leverage determinants and various estimation methods.

These findings have numerous practical implications for board of directors, managers, as well as practitioners and academics involved in the regulatory process. The results inform boards of directors about the importance of information transparency in achieving an optimal capital structure and subsequently in reducing the cost of capital. This is because managers' actions that lead to higher information asymmetry could produce unintended outcomes such as higher costs of capital. Therefore, managers must develop appropriate policies to disclose such information in order to reduce information asymmetry. Moreover, the findings of this study may be of interest to policymakers since

Table 10: Additional Robustness Tests (Different Set of Leverage Determinants)

Panel A: H1. Information asymmetry and leverage deviation
Panel A.1: Book leverage deviation

	DBL_{it+1} (OLS)	DBL_{it+1} (BB)	DBL_{it+1} (AB)
$SPREAD_{it}$	0.0593***	0.0462***	0.0470***
	(14.40)	(8.19)	(6.81)
PIN_{it}	0.0245***	0.0174***	0.0195***
	(14.70)	(6.71)	(6.43)

Panel A.2: Market leverage deviation

	DML_{it+1} (OLS)	DML_{it+1} (BB)	DML_{it+1} (AB)
$SPREAD_{it}$	0.0236***	0.0172**	0.0187**
	(4.92)	(2.45)	(2.31)
PIN_{it}	0.0743***	0.0605*	0.0805**
	(3.59)	(1.85)	(2.21)

Panel B: H_2. Information asymmetry and leverage adjustment speed
Panel B.1: Book leverage

	BL_{it+1} (BB)	BL_{it+1} (AB)
$High\_SPREAD_{it} * BL_{it}$	0.0384***	0.0332***
	(3.40)	(3.09)
$High\_PIN_{it} * BL_{it}$	0.0338***	0.0194**
	(3.09)	(2.56)

Panel B.2: Market leverage

	ML_{it+1} (BB)	ML_{it+1} (AB)
$High\_SPREAD_{it} * ML_{it}$	0.0199***	0.0214**
	(3.25)	(2.36)
$High\_PIN_{it} * ML_{it}$	0.0215**	0.0392***
	(2.08)	(3.94)

Note: *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. This table reports the hypotheses results using a different set of leverage determinants based on Zhou et al. (2016). Panels A and B report the estimation results of models (2) and (5), respectively. Industry and year effects are controlled by adding industry and year dummies to the regression models. The robust t-statistics (presented in parentheses) are calculated using standard errors corrected for firm-level clustering.

policymakers and accounting standard bodies need to set rules and regulations which strive to reduce information asymmetry.

Similar to most studies, the current study has several limitations. One major limitation of the study is that the employed measures of information asymmetry are based on the bid–ask spread (Venkatesh & Chiang, 1986), and the probability of informed trading (PIN) (Easley, Hvidkjaer, & O'Hara, 2002). Although these measures were widely used in past literature, they are approximate measures and may not completely reflect all of the information asymmetry among market participants. Thus, readers need to exercise caution when interpreting the findings. In addition, since the current study only used data from Iranian firms, we were not able to account for any cross-country variations that may affect the relationship between our variables.

Future studies may consider examining other important factors that may affect the relationship between information asymmetry and leverage deviation, in particular, the impact of audit quality on the relationship between the variables. Other studies may consider using proxies for information asymmetry, such as share trading volume and share return volatility.

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The Role of Key Audit Matters in Assessing Auditor Liability: Evidence from Auditor and Non-auditor Evaluators

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ABSTRACT

Manuscript type: Research paper
Research aims: This study examines the effects of key audit matter (KAM) disclosures in auditors' report and their impact on auditors' legal exposure in cases of fraud and error misstatements.
Design/Methodology/Approach: To determine the effect of KAM on auditor liability, an experiment was employed. The participants included 133 professional auditors recruited from the Big 4 audit firms and 134 MBA students.
Research findings: The KAM effect is manifested in different ways for different evaluators. Specifically, auditor participants assess higher auditor liability when the misstatement relates to error than when it is connected to fraud. KAM also appears to reduce auditor's liability in cases of fraud, but not in cases of error. In comparison, nonprofessional investor participants rated a higher auditor liability when the misstatement relates to fraud than to error. KAM also appears to have a non-significant impact on auditor liability. Taken together, the results support the view that instead of increasing legal exposure as audit practitioners fear, KAM disclosures could actually mitigate, if not maintain auditors' risk of legal exposure.

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Theoretical contribution/Originality: This study contributes to the accounting literature by broadening one aspect of KAM when used in a different audit setting – fraud and error misstatements. The conflicting evidence of the KAM effect on auditor liability in alternative audit settings warrants further investigations. The outcome derived could alter the impact of KAM disclosures on the assessment of auditor liability.
Practitioner/Policy implication: The findings of this study, especially the non-significance of KAM disclosures as evaluated by non-professional investors, inform policymakers and related parties that investors need to be educated and better informed about KAM disclosures and their objectives when assessing misstatements.
Research limitation/Implications: The design of this study does not accommodate settings where the auditors have the opportunity to communicate with their peers, a factor which could affect their judgment. This is the general limitation of the current study which may be viewed as slightly unrealistic since discussions are often encouraged among committee members while in a courtroom when making judgments.

Keywords: Auditor Evaluator, Auditor Liability, Auditor's Report, Disclosure, Key Audit Matter
JEL Classification: M40

1. Introduction

The 2008 financial crisis had increased the need for the accounting industry to reform the audit reporting model so as to enhance the value of the auditor's report for users referring to financial statements. The current pass/fail audit report has long been criticised for its low informational and communication values. Mock et al. (2013) addressed this concern by conducting a focus group study to learn about the different opinions articulated by the various stakeholders. As users demand more insights from the audits for information that goes beyond a pass/fail evaluation, audit standard setters throughout the world have proposed several changes to be made. Worldwide, organisations like the US Public Company Accounting Oversight Board (PCAOB), the Auditing Practices Board (APB) of the UK and Ireland, the European Commission (EC), and the International Auditing and Assurance Board (IAASB) have made attempts to make the auditor's report more transparent and more effective as a means of communication. Such efforts have led to the consideration of a separate section to be added to the auditor's report, "*Key Audit Matters*"[1] (hereafter referred to as KAM). This section is expected to communicate such matters which auditors perceive to be most important to the users. Specifically, the KAM is expected to address areas that the auditor feels are complex or subjective, where it is difficult to obtain and evaluate evidence, or that requires significant judgment.

Although KAM provides useful information to investors (e.g., Christensen, Glover, & Wolfe, 2014; Kachelmeier, Schmidt, & Valentine, 2014), one of the most controversial aspects of KAM is its effect on auditor liability (Gimbar, Hansen, & Ozlanski, 2016). In response to this concern, several studies (e.g., Backof, 2015; Backof, Bowlin, & Goodson, 2014; Brasel, Doxey, Grenier, & Reffett, 2016; Brown, Majors, & Peecher, 2014; Gimbar et al., 2016; Williams, 2016; Kachelmeier et al., 2014) have examined the impact of KAM on the assessment of auditors' liability. Most of the evidence tend to align with the argument that KAM reduces auditor liability. However, some studies (e.g., Gimbar et al., 2016) have reached the opposite conclusion. As auditors operate in a litigious environment, the disclosed KAM may impose an increased cost of unreasonable litigation risks on the auditors. Until now, concurrent experimental research has attempted to identify the settings in which KAM disclosures could have no effect, increase, or decrease auditors' liability for misstatements.

Prior studies had investigated KAM in the context of misstatements related to fraud. They also generally used participants with limited auditing knowledge, for example, undergraduates or jury-eligible participants. This highlights a less effective approach for assessing the value of KAM. Financial statements are developed for a purpose and these may also contain false information which has been established as fraud or error (Plumlee & Yohn, 2010). However, the result of the auditors' liability assessment may differ depending on how the financial statements were presented – whether as fraud-related or error-related misstatements. Since there is scarce information on this aspect, this also serves as a significance of the current study.

A number of recent studies have been conducted to examine how KAM affects auditor liability but the outcome derived have been inconsistent. Since this is a crucial matter, there should be more studies conducted to examine whether the findings hold for users with greater

[1] The Key Audit Matter is referred to as Critical Audit Matter (CAM) in the US Generally Accepted Accounting Principal (GAAP).

levels of financial and audit expertise (Bedard, Coram, Espahbodi, & Mock, 2016). Taking the current studies together, a review showed that there is little evidence to be drawn demonstrating how audit experts and lay evaluators interpret KAM disclosures in the same way or differently when assessing auditor liability. The question of whether the assessed auditors' liability is different for fraud-related misstatements or for error-related misstatement remains to be an issue worth exploring (Brasel et al., 2016). Based on this dearth in information, the current study thus aims to examine the impact of KAM on the assessment of auditors' liability for fraud-related misstatements and error-related misstatements.

The experiment conducted in this study does not use the jury-based system because it does not exist in Thailand. Nonetheless, as noted by Donelson, Kadous and McInnis (2014), legal action against auditors is often settled out of court, and auditors should be more concerned about public opinions which can affect their reputations. Reputational harm, especially in a low-litigation country (e.g., Thailand), is as important as legal liability because it reflects the auditor's loss of reputation (Weber, Willenborg, & Zhang, 2008). This observation is well supported by Kadous and Mercer (2012) who noted that the expected trial outcome is useful for auditors and plaintiffs when making decisions about settlements. Unlike other studies on KAM, the current study provides evidence from two different groups of participants (auditor vs. nonprofessional investors) with regards to the expected litigation risks, based on publicly available information. Therefore, rather than focusing on the judgment court's resolution of litigation, this study investigates the perception of auditors and nonprofessional investors on how KAM may lead to the initiation of litigation against auditors in fraud and error misstatement settings.

The results derived from the auditors showed that the assessed auditor liability was lower when the misstatement was related to fraud than when it was related to error. The assessed liability was even lower when KAM was presented in the misstatements related to fraud. However, results derived from the nonprofessional investors showed that the assessed auditor liability was higher for misstatements related to fraud than to error-related misstatements. KAM had no effect on the auditor's liability judgment. Given the different auditing knowledge and expertise of the auditors and nonprofessional investors, a difference was expected in the way the fraud and error-related misstatements would be assessed, including with the presence of KAM. The findings from this study should expand on current literature as they offer another perspective of looking at KAM – fraud and error misstatements. The findings should also contribute to current audit literature in three areas. First, previous disclosures of KAM on auditor liability had been inconclusive, thus this warrants a further investigation, especially one of another audit setting which could alter the impact of KAM disclosure on the assessment of auditor liability. Second, while most existing studies emphasised on the effect of different KAM contents and formats on auditor liability, very few studies had investigated its effect on liability assessment, when under different contexts of misconduct. Third, this study investigates the concerns raised in audit litigation literature by looking at auditor liability assessment from two different perspectives: auditor evaluators (representing the independent expert), and non-professional investors (representing the inexperienced evaluator).

This paper is organised as follows. Section 2 of this paper discusses the relevant literature and develops the theory and hypothesis used for this study. Section 3 discusses the methodology. Section 4 reports on the findings and Section 5 discusses the outcomes and the conclusion.

2. Literature Review and Hypotheses

2.1 Background

Concern about the boilerplate of auditor's reports and the wider communication gap that exists between financial statement users and auditors has led to changes in the auditor's reporting model (IAASB, 2015). One of the changes is the inclusion of a KAM section in the auditor's report to increase information, its relevance and its usefulness for financial statement users. Although auditors believe that KAM improves the user's understanding of the audit, they also have some concerns as to whether there is a potential increase in the litigation risk following the disclosure of KAM (Katz, 2014; PCAOB, 2011).

Performance judgment of auditors is often a difficult process because often, there are no judgment criteria for certain types of audit tasks (Peecher, Solomon, & Trotman, 2013). When assessing auditor liability, the outcome of the audit failure (i.e., the plaintiff's losses) is highly weighted by the evaluators (Charron & Lowe, 2008; Hawkins & Hastie, 1990; Jennings, Lowe, & Reckers, 1998). The law, however, states that auditors should be evaluated based on the quality of the audit they provide rather than the outcome of their audit (Peecher et al., 2013). The over reliance on outcome knowledge is a critical concern, particularly when the evaluators are lay people with little or no understanding of the actual audit process. This could lead to the misattribution of blame on the alleged auditors. Kadous (2000) had noted that jurors or lay evaluators tend to lack a clear understanding of what auditors should be held responsible for. These lay evaluators also tend to rely on irrelevant information, such as the consequence severity instead of the audit process when making decisions. With this perceived limitation of lay evaluators, Palmrose (2006) proposed that experienced auditors be used as evaluators in the case of auditor negligence. Reffett, Brewster and Ballou (2012) later mentioned that the judgment made by experienced auditors differ significantly from that made by lay evaluators in cases of alleged auditor negligence.

2.2 Distinguishing Misstatements Due to Fraud and Error

Several studies have attempted to investigate the impact of fraud and error differentials (Dechow, Ge, Larson, & Sloan, 2011; Hennes, Leone, & Miller, 2008), but very few have studied how these differences affect the level of the assessed liability. The auditing standard states that the distinct difference between misstatements due to fraud and those due to error is whether the underlying action was intentional or unintentional (IAASB, 2009). Although accounting professionals contend that detecting fraud is not their absolute responsibility, the public believes that it is (Firth, Mo, & Wong, 2005). Thus, it is argued that audit failure cannot be tolerated by investors because the audit has long been legitimised for fraud detection. As fraud-related scandals have severely damaged auditors' reputations, the audit profession and regulators have begun to issue an auditing standard that could reduce auditors' fraud detection responsibility and their litigation exposure (Cohen, Ding, Lesage, & Stolowy, 2015). Nonetheless, Trompeter, Carpenter, Desai, Jones and Riley (2013) noted that these auditors continued to be accused of assisting fraudsters. Therefore, fraud misstatements generate more negative reactions than error misstatements do (Hennes et al., 2008). Kinney (2000) also noted that fraudulent misstatements tend to have more serious implications than error misstatements despite being of the same magnitude.

2.3 Hypothesis Development

2.3.1 The Effect of Types of Misstatements on the Assessment of Auditor Liability

To develop a theoretical support for the hypothesis, counterfactual reasoning and the culpable control model (hereafter, CCM) was leveraged. Counterfactual reasoning posits how counterfactual thought enhances the evaluator's negative affective reaction to an outcome, but it does not provide a link between the affective reaction and the attribution of blame. The CCM complements this theory by supporting this direct relationship. The CCM predicts how a spontaneous evaluation or affective reaction to the harmful outcome influences the blame evaluation. Because the legal judgment of the alleged auditor's negligence is frequently biased by the evaluator's affective reaction (Kadous, 2001), the CCM offers an appropriate perspective. It takes into account the emotional factor, and it assumes that the negative reaction drives the blame judgment. When evaluators determine what the agents should have done or known, they are unable to eliminate their negative reaction from their judgment (Alicke, 2000; Alicke, Buckingham, Zell, & Davis, 2008; Alicke & Rose, 2012). This negative reaction could result in an increase in the assessment of auditor liability.

Individual differences in domain-specific knowledge are argued to be a crucial element in developing expectations (Brown & Solomon, 1991). Not only does expertise cause differences in terms of expectations, it also affects the development of a causal schema which is formed based on prior experience. It frames the way people think about plausible causes in relation to the given effect (Brown & Solomon, 1991; Kun & Weiner, 1973). The underlying mechanism of a schema is that it influences how people construct a narrative when interpreting a case, thus it also influences the individual who is making a liability assessment. Consequently, auditors and nonprofessional investors tend to develop different schema due to their different experiences and knowledge (Taylor, Crocker, & D'Agostino, 1978). If auditors were per-ceived to have more control over the cause of the misstatement, the counterfactual intensity should stipulate a strong negative affective reaction to the auditors. Given their auditing knowledge, auditors tend to understand that fraud is difficult to detect and that error is more likely to be detected. Based on this, it is predicted that auditor evaluators have lower expectations of discovering fraud than non-auditor evaluators. Moreover, the counterfactual alternative to undo fraud-related misstatement is less mutable for auditor evaluators because they know that some elements of fraud could be beyond the auditor's control. Therefore, they are expected to have a weaker negative reaction towards a case of fraud-related misstatement. In contrast, when errors occur due to, for example, weak control effectiveness, auditor evaluators are expected to perceive that these errors are more controllable and easier to detect than fraud. This pattern of thought would result in a higher counterfactual intensity, and a stronger negative affective response when evaluating error-related misstatements. Unlike auditor evaluators, nonprofessional investors, lacking the general knowledge of the audit process tend to develop a story that is expected to yield opposite results. As fraud generates a more negative market reaction than error (Hennes et al., 2008), people generally perceive that the result of fraud is more severe than that of error. This is despite the fact that both carry consequences of the same magnitude (Kinney, 2000). Thus, nonprofessional investors were expected to have a more negative feeling about fraud-related misstatements than about error-related misstatements. Based on this, the following hypotheses were formulated:

<u>Auditors</u>
H_{1a}: The effect of error-related misstatement on auditor liability is higher than that of fraud-related misstatement.

<u>Nonprofessional investors</u>
H_{1b}: The effect of fraud-related misstatement on auditor liability is higher than that of error-related misstatement.

2.3.2 The Effect of KAM on the Assessment of Auditor Liability

Despite the fact that the association between counterfactual thinking and CCM activates the identification of the cause of harmful outcomes, and the affective reactions derived in the blame judgment, the evidence of control, for example, the agent's reasonable precautionary actions taken to prevent the harmful outcome, is assumed to moderate the negative emotional response and to discount the blame judgment (Heider, 1958; Weiner, 1995; Mandel & Lehman, 1996; Alicke et al., 2008; Alicke, Rose, & Bloom, 2011; Alicke & Rose 2012). The reason is because such an evidence curtails the evaluators' ability to consider better outcome alternatives. According to the CCM, the effect of a negative affective reaction on the attribution of blame depends on how much the negative evaluation is available to the evaluators. When there is evidence of control which showed that the alleged auditors have exercised professional due care, have taken all the precautions to avoid misstatements, or that they had no intention of making the misstatements, the evaluators face a higher level of difficulty in identifying the grounds for evaluating the auditors unfavourably. As a result, the magnitude of the negative response is diminished. However, with no proof of the auditor's precautions, the evaluators have more tendency to continuously develop their counterfactual alternative of assuming that the misstatements could have been avoided if the auditors had done a better job. This narrative may trigger feelings of negativity towards the auditors, which in turn, may increase the evaluators' negative assessment of the auditor liability. It is argued that the disclosure of KAM presents an objective evidence of the audit procedure, and the auditor's intention to perform a quality audit. It forewarns the public about the matters which they found difficult to audit (Kachelmeier et al., 2014). It is also a way of showing that the auditors were taking precautions on certain issues. It further demonstrates the prevalence of professional due care being taken, and/or the lack of negligence during their auditing process (Backof et al., 2014). Therefore, KAM tends to reduce the expectation-outcome inconsistency, and the intensity of counterfactual thinking (Brasel et al., 2016).

This study predicts that KAM would reduce the effect of the auditor's underlying behaviour which might arouse the evaluator's feeling of negativity. It offers concrete evidence of the auditor's precautions, and certain standards of care being applied by the auditor during the audit process. As a consequence, the presence of KAM is expected to moderate the evaluator's negative affective reaction and auditor liability. The moderating effect of KAM on the relationship between misstatements and the assessment of auditor liability is separately hypothesised as follows:

<u>Auditor</u>

H_{2a}: The effect of fraud and error-related misstatements is lower when auditor's report includes KAM than when the auditor's report includes no KAM.

H_{3a}: The moderating effect of KAM is higher in cases of fraud-related misstatements than in cases of error-related misstatements.

<u>Nonprofessional investors</u>

H_{2b}: The effect of fraud and error-related misstatements is lower when the auditor's report includes KAM than when the auditor's report includes no KAM.

H_{3b}: The moderating effect of KAM is higher in cases of error-related misstatements than in cases of fraud-related misstatements.

3. Data and Methodology

3.1 Experimental Design

This study demonstrates how participants with and without audit expertise perceive auditors' liability for misstatements. The first experiment was conducted using professional auditors as participants, and the second experiment involved MBA students who were used as proxy for the nonprofessional investors (non-auditor participants). The two groups of participants were informed of their different roles during the experiment because the jury trial setting was not applicable in Thailand. In such cases where accusations have been made against auditors, the Thailand Federation of Accounting Professions would appoint an ethics committee to investigate and to give a verdict on whether the alleged auditors should be penalised (Code of Ethics Charter, n.d.).

To test this hypothesis, the current study employed a 2x2 (KAM x types of misstatements) between-subjects experimental design to conduct two experiments. In the first experiment, the participants would assume the role of the peer evaluator. Their job is to determine the liability of an auditor who had failed to detect the financial misstatement. In the second experiment, the participants would assume the role of an investor who held a stake in the company. Their experimental task was to evaluate the case in which an auditor had failed to detect the misstatements. The misstatements involved the overstatement of revenues with information that would be used by a third party to make investment decisions. In this experiment, the manipulation involved different types of misstatements, specifically fraud- or error-related misstatements. The second manipulation involved the inclusion or the exclusion of the KAM report in the auditor's report. Upon the arrival of the participants, each of them was randomly placed in the different conditions: 1) NO KAM – ERROR, 2) NO KAM – FRAUD, 3) KAM – ERROR, and 4) KAM – FRAUD.

3.2 Participants

The first experiment comprised professional auditors who served as proxy for the members of the ethics committee that was responsible for assessing the conduct of the auditors accused of misconduct. The total number of participants involved was 145. All were from the Big 4 audit firms. After excluding participants who had failed the manipulation check questions, 133 participants remained. A discussion of the manipulation checks is included in the results and discussion section. The use of professional auditors was deemed appropriate because they have audit experience and expertise, one of the requirements for serving as a member of an ethics committee.

For the second experiment, 160 postgraduates in the MBA programme were recruited from three large universities to serve as proxies for the nonprofessional investors or the inexperienced evaluators. After excluding participants who failed the manipulation check questions, 134 participants remained. The use of MBA students was deemed appropriate for this study's setting for at least two reasons. First, they were assumed to possess a sufficient amount of business knowledge to understand the context of the case material in this study. Second, prior research (Bornstein & Rajki, 1994) has shown that the decisions made by students do not significantly differ from those of diverse subjects in the litigation setting.

3.3 Material and Experimental Procedure

The experiment commenced by getting participants to read the pre-experiment questions which informed them about the auditor's report and their initial perception of the detection risk of misstatements related to fraud and error. The experimental materials which comprised publicly available information include: 1) the auditor's report, and 2) the news as published in the newspaper. The instrument was adapted from the experimental case used in Kachelmeier et al. (2014). The reason is because the case material used in this study was not an actual court transcript, and the assessment of the auditor liability was just an initial judgment rather than the resolution of the litigation.

The experimental case material includes three main sections which were separated into three envelopes. The first envelope contains the pre-experimental questions. The second envelope contains the general business environment, the auditor's report of the company, the published news, and the main experimental questions. The third envelope comprises the manipulation check questions, the demographic questions, and the post-experimental questions. Long-term revenue recognition was selected as the subject of the KAM stated in the auditors' report because it is the most common KAM within the UK and Thailand (Pratoomsuwan & Yolrabil, 2018). It was also frequently noted as a factor leading to high risk litigations (Bonner, Palmrose, & Young, 1998; Demirkan & Fuerman, 2014).

After reading the case in the second envelope, the auditor participants were instructed to assume the role as peer evaluators in the ethics committee. The nonprofessional investors were given the role of shareholders of the company. They were asked to record judgments regarding the likelihood of negligence, and auditor liability for misstatements. They were also told that they could revisit the case while rendering the judgment since reviewing the document is a common practice in a liability judgment. Finally, the participants were required to answer several post-experimental questions regarding counterfactual thinking and affective feelings, demographic information and manipulation check questions. The participants were instructed not to review the case material while answering the questions in the last envelope. They were compensated 500 baht in cash for their participation. The case material was pretested on the final-year undergraduate students in accounting and business (non-accounting) majors. In addition, the case material was completed and amended according to the recommendations of two manager-level professional auditors from two of the Big 4 audit firms. It was also back translated and read by faculty members from the business and accounting areas.

3.4 Independent Variable

In this study, two variables were manipulated. First is the presence and absence of KAM information. In the condition where KAM is disclosed, the participants would see the KAM section in the auditor's report which describes the long-term revenue contract and also addresses how the auditors responded to this matter. In the condition where there is NO KAM, it was mentioned that no KAM was identified. The first manipulation aims to examine the differences between the presence and absence of KAM, in terms of the professionals' level of perceived due care and precautionary actions displayed by the auditors during the audit. The second manipulation examines whether the subsequent material misstatement is related to fraud or error. The information in the news should instruct the participants on whether the financial misstatement is error- or fraud-related. In the fraud condition, participants were informed by the news article that the firm misstated its revenue due to collusive fraud by management, subordinates and customers. In the error condition, the news article reported that the misstated revenue occurred because the management had erroneously misinterpreted its long-term revenue contract. In addition, fraud and error were also defined for the participants so that their understanding of these two concepts would be on the same ground.

3.5 Dependent Variable

For both experiments, the dependent variable, interest, served as the assessment for the auditor's liability. Prior studies (Kadous, 2000; Reffett et al., 2012) had measured auditor liability in two ways: 1) the likelihood of auditor negligence, and 2) monetary damages compensating for plaintiff losses. Other studies (Grenier, Pomeroy, & Stern, 2015; Brasel et al., 2016; Brown et al., 2014, Backof et al., 2014; Kachelmeier et al., 2014) have measured auditor liability only by the negligence judgment. In this study, however, both the likelihood of negligence and auditor liability were utilised as the dependent variable. The auditor liability measurement was intended to confirm the strength of the evaluators' response on the negligence level. The first question asks the participants to rate the extent to which the auditors were likely to be negligent, based on an 11-point scale. The second question asks the participants to indicate how liable the auditors should be for the third-party losses, based on an 11-point scale. A brief description of the management and the auditor's responsibility was given to the participants as a guideline for their liability judgments.

Because these two questions were highly correlated, as they pertain to the same general construct, the composite score was computed to reduce these two questions into one overall auditor liability variable. For the auditor participants, the untabulated results showed that the correlation between the likelihood of auditor negligence and liability for plaintiff losses was 0.82 and significant at the 99 per cent confidence level. For the nonprofessional investors, the correlation between these two variables was 0.83 and significant at the 99 per cent level. Therefore, the dependent variable in this study should measure the overall liability for negligence referred to as "auditor liability". The reduction of two into one dependent variable was calculated by computing the composite score through the unit weight approach. Literature suggests that when the original variables are continuous, the unit weight can be used in two ways: by averaging the (unstandardised) raw scores across variables, or by averaging the standardised scores. The latter approach involves converting all component variables into "z-scores" before applying the unit weight to prevent the composite from being dominated by a component score with large variances (Bobko, Roth, & Buster, 2007). However, after performing the test using z-score values as the dependent variable, the results were similar to those having the original composite score as the dependent variable. Therefore, to enhance the interpretation, the original composite score was used in the study.

4. Results and Discussion

4.1 Participants

The auditor evaluator group comprised 133 professional auditors who were recruited from the Big 4 firms. They represent evaluators with the auditing knowledge and expertise. The average audit experience for these auditor participants was five years, with a maximum of 22 years and a minimum of 0.5 years. The average age of the participants was 28 years old. The nonprofessional investor group comprised 134 participants recruited from the MBA programme of three universities. The average age of the participants was 27 years old.

Results from the post experimental questions showed that all the participants had taken at least two accounting courses during their studies. At the time of the experiment, approximately 63 per cent of the participants had previously invested in debt or equity securities, and more than 90 per cent planned to do so in the future. This condition suggests that they were reasonable proxies and already had basic business knowledge that would enable them to understand the case material.

To confirm that these two groups of participants have different perceptions of fraud and error misstatements in terms of the detection risk, the pre-experimental question asked them to indicate whether fraud, in comparison to error, was more or less difficult to identify in an audit. The result of the pre-experimental questions derived from the auditor participants showed that approximately 92 per cent of them believed that fraud was more difficult to detect than error. This was in contrast to the 61 per cent of nonprofessional investors who believed that error was more difficult to detect than fraud.

4.2 Manipulation Check

To ensure the salience of the experiment, three manipulation check questions were included in the post-experiment survey: 1) "What role were you assuming?", 2) "The material misstatement was caused by…", and 3) "Does the auditor's report contain KAM?"

The outcome showed that 91 per cent (133/145) of the auditor participants could correctly identify the cause of the material misstatements, the presence of KAM or both. Twelve participants who were unsuccessful in the second and third manipulation check questions were eliminated from the full sample. The 133 questionnaires included in the analysis consist of eight participants who failed the misstatement, but passed the KAM manipulation, nine participants who passed the misstatements but failed the KAM manipulation, and 116 participants who passed both manipulations. All the participants were able to correctly identify their role in the experiment. To verify that the responses made by the participants who failed one of the three manipulation check questions were not systematically different from those who passed the manipulation checks, the analysis was re-performed to include the responses from those 17 questionnaires. When included, the experimental results showed a slightly stronger statistical significance than when they were excluded.

A total of 84 per cent (134/160) of the nonprofessional investors could correctly indicate the cause of the material misstatement or the presence of KAM correctly. About sixteen per cent (26 participants) failed both questions. They were excluded from the analysis. Nine participants either answered the misstatement or the KAM question correctly, eight participants failed to answer the KAM manipulation check questions correctly, and one participant could not answer the misstatement manipulation question correctly. During the reperforming of the analysis, the nine participants in the sample were added again, and results remained the same. Consequently, only those who failed both manipulation check questions were excluded so as to keep the result conservative. The last manipulation check question which concerns the assumed roles of the participants, all the MBA students answered it correctly.

4.3 Hypotheses Tests

The statistics presented in the planned contrast result is shown in Panel C of Table 1. The outcome supports the prediction of H_{1a} which states that the auditor evaluators perceived the error-related misstatement (mean = 6.46) to be more severe than the fraud-related misstatement (mean = 5.06). This resulted in a higher assessment of the auditor liability (p < 0.001). For H_{1b}, Panel C of Table 2 shows that the nonprofessional investors assigned higher assessment of the auditor liability when the misstatement was related to fraud (mean = 7.13) than when it was related to error (mean = 6.25) (p < 0.001). These results thus supported the predictions of H_{1a} and H_{1b}.

Table 1: Professional Auditors' Decision Regarding Auditor Liability

Panel A: Mean (Standard Deviation) of Auditor Liability

	KAM	NO KAM	Total
ERROR	6.32 (1.53) n = 34	6.61 (1.51) n = 33	6.46 (1.52) n = 67
FRAUD	4.35 (2.53) n = 33	5.80 (1.78) n = 33	5.06 (2.29) n = 66
Total	5.35 (2.29) n = 67	6.20 (1.69) n = 66	5.77 (2.06) n = 133

Panel B: ANOVA Results

Source of Variation	df	F	p-value
Misstatement	1	18.09	< 0.001
KAM	1	7.07	0.005
Misstatement * KAM	1	3.22	0.038

Panel C: Planned Contrast

Hypotheses	Contrast	t	p-value
H_{1a}	Error > Fraud	4.24	< 0.001
H_{2a}	Error/KAM<Error/NO KAM	-0.76	0.225
H_{2a}	Fraud/KAM<Fraud/NO KAM	-2.70	0.005

Note: KAM is the treatment manipulated at two levels: presence of KAM (KAM) and the absence of KAM (NO KAM). Misstatement is the treatment manipulated at two levels: error and fraud. P-value is at one-tailed.

H_{2a} and H_{2b} predict the interaction between the types of misstatements and the presence of KAM. It is expected that the presence of KAM in the auditor's report would lower the assessment of auditor liability in both the error- and the fraud-related misstatements. To test this hypothesis, a two-way ANOVA was performed to examine the interaction of the misstatements and the KAM variables on auditor liability. It was observed that for the auditor participants, the interaction term in the ANOVA result in Panel B of Table 1 was significant (p = 0.038). However, when tested in a separate error- and fraud-related case, the result projected in Panel C of Table 1 showed that the presence of KAM in the report lowered the auditor liability in the case of the fraud-related misstatement (p = 0.005). The lower auditor liability rate could be the result of a combination of two factors: 1) the auditor's perception of how difficult it is to detect fraud, and 2) KAM as evidence demonstrates the auditor's precautions taken during the audit. Therefore, failure to detect fraud resulted in less blame being attributed to the auditor when KAM is present than when it is absent. However, in the case of error-related misstatements, results suggest that the presence of KAM in the report did not cause the evaluators to view the auditors as being less liable for error-related misstatements when compared to those with no KAM (p = 0.225). Therefore, H_{2a} was partially supported. A possible explanation for the non-significant result is that auditors generally view misstatements caused by errors as more common and frequent in comparison to misstatements caused by fraud. In this regard, the errors should have been detected during the audit. To the auditors, a misstatement due to error might be essentially so salient that they disregard the additional information from KAM in the auditor's report. As a result, having KAM in the auditor's report yielded no significant difference in the assessed liability even when the material misstatement caused by an error was subsequently uncovered.

For the nonprofessional investors, H_{2b} predicts that auditor liability would be lower for both fraud and error-related misstatements when KAM is present than when it is absent. When misstatements occur, it is possible that investors interpreted the KAM as a forewarning of the limitations in auditing a difficult area (Kachelmeier et al., 2014). Therefore, KAM could reduce auditor liability. However, the interaction term with the ANOVA in Panel C of Table 2 suggests that the nonprofessional investor (non-auditor) participants did not rate the auditor liability differently, whether with or without KAM in the auditor's report (p = 0.363).

Table 2: Nonprofessional Investors' Decision on Auditor Liability

Panel A: Mean (Standard Deviation) of Auditor Liability

	KAM	NO KAM	Total
ERROR	6.31 (1.15) n = 32	6.19 (1.32) n = 34	6.25 (1.23) n = 66
FRAUD	7.01 (1.16) n = 34	7.24 (1.84) n = 34	7.13 (1.53) n = 68
Total	6.67 (1.19) n = 66	6.71 (1.68) n = 68	6.69 (1.46) n = 134

Panel B: ANOVA Results

Source of Variation	df	F	p-value
Misstatement	1	12.97	< 0.001
KAM	1	0.04	0.419
Misstatement * KAM	1	0.49	0.241

Panel C: Planned Contrast

Hypotheses	Contrast	t	p-value
H_{1b}	Error < Fraud	-3.62	< 0.001
H_{2b}	Error/KAM < Error/NO KAM	0.39	0.363
H_{2b}	Fraud/KAM < Fraud/NO KAM	-0.59	0.279

Note: KAM is the treatment manipulated at two levels: presence of KAM (KAM) and absence of KAM (NO KAM). Misstatement is the treatment manipulated at two levels: error and fraud. P-value is at one-tailed.

From the manipulation check results noted in the experiment, it appears that the participants were aware of the KAM disclosure. However, this awareness did not significantly reduced or lowered the auditor liability. The non-significant result noted for KAM when evaluators assessed the auditor liability may be because the non-professional investors' decisions were essentially affected by the outcome information. This caused them to overlook more relevant information about the audit procedure (i.e., KAM) during the liability evaluation. Although evaluators were expected to make judgments about the quality of audits at the time of misconduct, research indicates that judges and jurors cannot disregard the outcome information in liability judgments (Charron & Lowe, 2008; Hawkins & Hastie, 1990).

Consequently, the outcome information (i.e., misstatement due to fraud versus error) may have caused the nonprofessional investors to be severely influenced. This occurrence appears to be more prevalent when they were less familiar with the assigned tasks (i.e., liability judgment) (Christensen et al., 2014). As a result, they disregarded the information in KAM. Nonprofessional investors also appeared to be reluctant to recognise the audit information in the KAM section, possibly because KAM is a new standard that was implemented for the first time in Thailand, particularly at the time this experiment was conducted. Due to this, the nonprofessional investors may have not fully understood KAM disclosures, thus it was not incorporated into their judgment.

H_{3a} and H_{3b} attempt to examine the sensitivity of the interaction with KAM in both the error- and fraud-related misstatements. H_{3a} predicts that for auditor participants, the evaluator should be more sensitive to KAM in fraud-related cases than in error-related cases. In particular, the presence of KAM should be more impactful in fraud cases. In addition to the ANOVA test, this hypothesis was tested using contrast coding because Buckless and Ravenscroft (1990) had proposed that the interaction result from the ANOVA test may not indicate the functional form of the particular hypothesised relationship. To better test the hypothesis where the *a priori* functional form of the relationship is specified, a more effective technique, called contrast coding, was used to test the form of ordinal interaction. This is depicted in Figure 1 which demonstrates that the KAM presentation is more sensitive in the case of the fraud-related misstatement than in the error-related misstatement. Result showed a very minor shift in the graph for the error-related case. This highlighted that KAM was not sensitive enough to affect the evaluator's judgment of auditor liability, specifically in error-related cases. The result was further examined by contrast coding in order to test the interaction between the different types of misstatements and KAM. The contrast weights assigned were as follows: 3, -1, 2, and -4.[2] The 3 and 2 codes represent the assessment of auditor liability in the error-related misstatement, with the absence and presence of KAM, respectively. This indicates that presence of KAM in the error-related case could slightly lower the assessed liability, as compared to the

[2] The contrast code was assigned based on a contrast code in which the code for error-related misstatement did not vary much between the absence and the presence of KAM. For the robustness of the result, a contrast code of 2, -1, 2, and -4 was also tested. The results remained significant ($p < 0.001$).

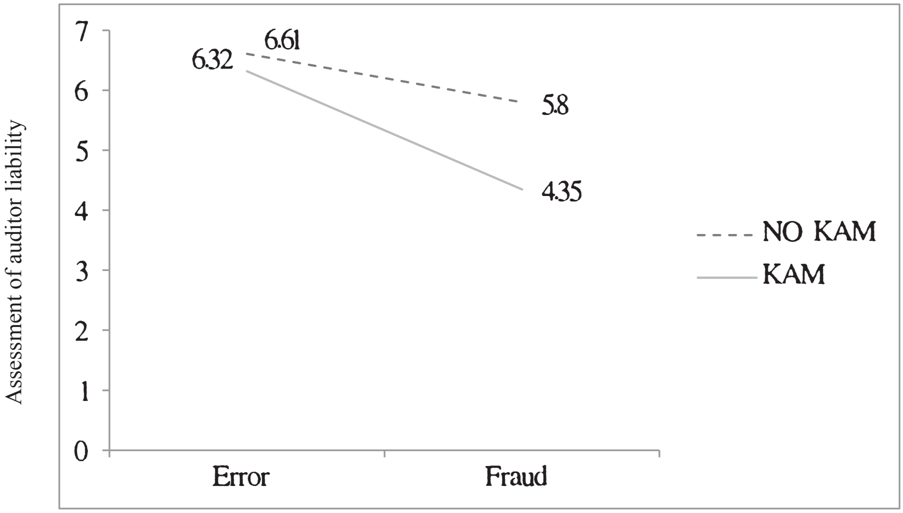

Figure 1: Effect of Misstatement Type and the Presence of KAM on Auditor Liability (Professional Auditors)

Note: Misstatement is a type of undetected misstatement manipulated at two levels – fraud and error. The auditor liability is a composite score of the likelihood of negligence and the liability for third-party losses using the unit weight (average) method. KAM is the disclosure of KAM in the auditor's report manipulated at two levels – presence of KAM and absence of KAM.

absence of KAM. The -1 and -4 codes represent the liability assessment in fraud-related misstatements in the absence and presence of KAM, respectively. The codes indicate that the liability for fraud misstatement with KAM was lower than that for misstatement without KAM. The overall contrast test was also significant (t-value = 4.57, $p < 0.001$).

H_{3b} predicts that nonprofessional investors are more sensitive to the presence of KAM in the case of error-related misstatements in comparison to fraud-related misstatements. The ANOVA result which measured the moderating role of KAM on the effect of the relationship between the misstatement and auditor liability indicated no statistical significance ($p = 0.241$). This suggests that the nonprofessional investors were not sensitive to the presence of KAM in terms of change to the liability judgment in both the fraud-related and error-related misstatements. In this regard, hypothesis H_{3b} was not supported. Figure 2 clearly depicts a pattern that was inconsistent with the hypothesised interaction effect of misstatement types and the presence of KAM. There seemed to be no statistical evidence to indicate that KAM prompted

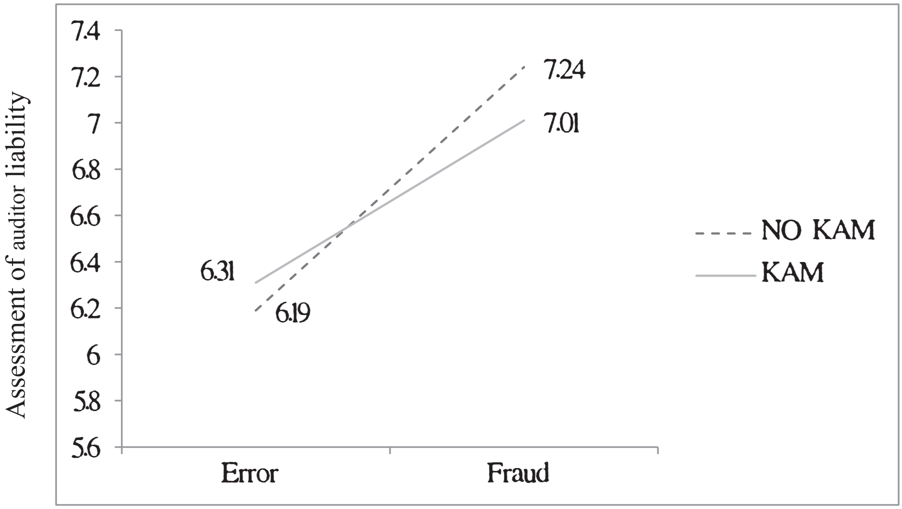

Figure 2: Effect of Misstatement Type and the Presence of KAM on Auditor Liability (Nonprofessional Investors)

Note: Misstatement is a type of undetected misstatement manipulated at two levels – fraud and error. The auditor liability is a composite score of the likelihood of negligence and the liability for third-party losses using the unit weight (average) method. KAM is disclosure of KAM in the auditor's report manipulated at two levels – presence of KAM and absence of KAM.

counterfactual thinking in the nonprofessional investors with regards to the audit procedure, prior to the material misstatement.

4.4 Robustness Test

Judgments of performance are generally determined based on experience and ability. However, the effect of experience on audit judgment can be varied. Several prior studies found no experience effect in their studies (Ashton & Brown, 1980; Hamilton & Wright, 1982). To avoid the possibility of a confounding effect in which audit experience also influenced the liability judgment, the experience variable was included in the analysis to test whether the results were robust when controlling for the participant's audit experience. It was found that after controlling for audit experience, the ANCOVA result (untabulated) showed that audit experience had no significant impact on the assessment of auditor liability (F = 1.68, p = 0.09, one-tailed), and the interaction term remained significant (F = 3.53, p = 0.031, one-tailed). Not only was audit experience added as a covariate, other demographic data of the participants, such as gender, education and age were also considered so as to ensure that they do not significantly vary across experimental conditions, as proposed by Grenier, Reffett, Simon and Warne (2018). The study by Lowe and Pany (1993) found that demographic information had no relationship to the decision in liability cases but Lowe, Reckers and Whitecotton (2002) noted that some demographics affected liability decisions. In the context of the current study, only gender and age were used as potential covariates because all the participants tended to have similar educational backgrounds. Prior studies in auditor liability judgment had generally discussed age and gender as the demographic data that could affect information processing (Chung & Monroe, 2001; Gimbar et al., 2016; Lowe et al., 2002). The ANCOVA was conducted again with the age and gender variables added into the model. Among the auditor participants, it was found that age and gender did not affect the liability judgment (p = 0.349 and 0.218, one-tailed, respectively) but the interactive effect between misstatement types and KAM remained significant (p = 0.05, one-tailed). Overall, these results suggest that the observed effect on liability judgment was caused by the auditors' evaluation of the misstatement type and KAM, and not by their demographic differences.

In the nonprofessional investors group, age, gender and educational background was added as covariates in experiment two since Grenier et al. (2018) had suggested that educational background served as a demographic factor that could affect liability judgment. Since the MBA students tend to be graduates of different educational backgrounds, this variable was thus categorised as dichotomous, with a value of 1 if they had a business background, and a value of 0, if otherwise. After repeating the analysis with all the covariates, the results were not significantly different.

5. Conclusion and Implications

In this study, the model and hypotheses were developed from the counterfactual reasoning, the culpable control model, and the decision affect theory so as to inform the debate regarding the impact of KAM disclosures on the assessments of auditor liability. The results generated from the current study aimed to provide a better understanding of KAM disclosure. It also attempted to test the hypotheses about how professional auditors and non-auditor evaluators assessed auditor liability, given the fraud-related and the error-related material misstatement setting. Two experiments were conducted whereby the participants acted as members of the ethics committee in experiment one, and as investors who were also shareholders in the failing firm in experiment two. They were given situations to decide whether an auditor who failed to detect material error or fraud was negligent, and therefore liable for the losses. The results derived from experiment one were essentially consistent with the predictions. When the material misstatement was caused by fraud, the auditor evaluators were likely to assess lower on auditor liability than when the misstatement was caused by error. However, KAM disclosure lowered auditor liability only when the misstatement was related to fraud. In addition, the auditor participants appeared to be more sensitive to the presence of KAM disclosure when given a fraud-related misstatement than when given an error-related misstatement.

In experiment two, the results partially supported the predictions. In contrast to the findings of experiment one where fraud triggered a lower assessment of auditor liability, results from experiment two generated an opposing conclusion. For the main effect of misstatement types, the finding was consistent with the prediction, which suggested that the assessed auditor liability would be higher in fraud-related material misstatement than in error-related material misstatement. Without the relevant auditing knowledge, the nonprofessional investors generally had a high expectation of auditors and their ability to detect fraud. As a result, the nonprofessional investors had a more severe assessment of the auditors' liability than the professional auditors, in the case of fraud. However, for the interaction role of KAM disclosure on the liability assessment, there is no statistically significant evidence to support the hypothesis which states that KAM moderated the effect of the financial misstatement on the assessment of auditor liability. The non-significant role of KAM may be attributed to the fact that nonprofessional investors do not fully understand the relevance of KAM disclosures. Therefore, this information was not incorporated into their judgments.

In terms of the theoretical implications, substantial research has been conducted with the objective of examining the consequence of KAM disclosures on various stakeholders. Nonetheless, many of the findings had depicted mixed results. This therefore warranted that further investigations be conducted so as to bring more clarity to the topic. The effect of KAM disclosure on auditor liability had also been examined among different stakeholders, for example, investors, financial analysts and jurors, but the role of the "auditor" has not been included in previous studies. In particular, cases of investigations involving "fraud and error misstatements" had not been investigated before. Thus, this study fills the research gap and contributes to the previous literature by demonstrating the following.

First, this research has emphasised on the outcome in the context of Thailand which has a legal system that uniquely allows audit experts to make liability judgments. This paper has examined the impact of KAM disclosure on the assessment made by the auditors within the auditing profession. The findings of this study therefore adds to the current literature by extending a finding that involved an Asian context. The outcome also shows that when misstatements are evaluated by an auditor, KAM disclosure can only reduce liability in cases of fraud, but not for errors.

Second, this study is among the first few to have examined the impact of auditor liability based on two different types of misstatements: fraud and error. The new findings suggest that different types of misstatements contribute to the differences in auditor liability judgments, especially when evaluated by evaluators with different levels of auditing knowledge.

Overall, the results revealed an interesting facet which emphasised that the level of auditing knowledge and the expectations of the evaluators contribute to the differences in the weight of the importance of information when making liability judgments. Although it is obvious that the two groups of evaluators would yield different results, this paper provides the "empirical evidence" to prove that auditor and non-auditor evaluators do have different liability judgments. Our study correspond with Bedard et al. (2016), who had addressed the impact of KAM on auditors' liability by using participants with higher levels of financial and auditing knowledge. Our study is also consistent with Brasel et al.'s (2016) work which showed that auditor liability may differ in cases of fraud-related and error-related misstatements. In particular, the results from this study demonstrate that auditing knowledge is one of the crucial factors attributing to the differences in liability judgments, in cases of KAM disclosure and the different types of misstatements.

For the managerial implications, our work can significantly benefit auditors, the auditing profession and standard setters. First, this study helps to alleviate the key concerns of auditors as to whether KAM practices would affect liabilities that potentially occur after undetected misstatements. Our findings also particularly provide better insights in cases of error, showing that KAM disclosures would not help lower auditors' liability. Therefore, auditors should be aware that KAM disclosures have attention directing impacts on the assessment of auditor liability. Auditors should also carefully decide on how many and, in particular, what matters are being disclosed as KAM in the auditors' report.

As noted by Peecher et al. (2013), the current process of liability judgment primarily depends on the audit outcome rather than the audit judgmental process, especially during a fraud investigation. The findings of this study has documented that the use of audit experts as evaluators for liability judgments helps to reduce the evaluator's overreliance on the outcome. With KAM disclosures, auditor evaluators incorporated the KAM information while making a liability judgment. The non-significance of KAM disclosures as evaluated by the nonprofessional investors should inform policy makers and other related parties that investors need to be educated, better informed about KAM disclosures and its objectives.

Despite its contributions, this study is not without limitations. First, the experiments in this study were not simultaneously performed. The two groups of participants were independently analysed in the two experiments. This is due to the different roles assumed by the participants in each group. As is noted, the auditor evaluators and the nonprofessional investors were asked to evaluate the auditor liability based on different assumed roles in a context that was deemed realistic for Thailand. Second, the design of this study did not accommodate the setting where the auditors had the opportunity to communicate with their peers, an outcome which could affect their judgment. This is the general limitation of the experiment, which could be considered as somewhat unrealistic since discussions among committee members are encouraged in a courtroom when making judgments. Third, a typical issue associated with experimental research is the use of students as proxies to assess auditor liability. It is deduced that their deliberation process may be different from that of actual judges. However, several previous studies have used undergraduate students to represent jury eligible individuals (Kadous & Mercer, 2012; Peecher & Piercey, 2008, Reffett, 2010; Backof et al., 2014). The study from Bornstein (1999) particularly noted that verdicts provided by student participants did not differ significantly from verdicts provided by more diverse groups of jury eligible adults. Thus, consistent with recent litigation research, undergraduate students' decisions on auditors' liability should be valid. Finally, the results from this study do not imply any possible effects of multiple KAM disclosures in the same auditor's report. Future research could examine whether auditors would have legal incentives to disclose more, as opposed to fewer, KAM. If multiple KAM disclosures were issued, the question of whether this would undermine the intent of the proposed standard by diluting the impact of more KAM disclosures remains under-researched.

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Impact of Warning Messages on the Reliance Level on Decision Aids under the Framing Effect

Dovi Septiari* and Goedono

ABSTRACT

Manuscript type: Research paper
Research aims: This study empirically examines the role of warning messages on the reliance level on decision aids. We examine whether the offer of warning messages can lower the effect of framing so that it can influence the reliance level on decision aids.
Design/Methodology/Approach: This study employs a 2 x 3 experimental design involving 65 undergraduates and 13 Accounting Profession Program professionals as samples. The dependent variable is the decision aid reliance which deploys a scenario that previously belonged to Gomaa, Hunton, Vaassen and Carree (2011). The framing effect is then manipulated as: (1) positive framing, and (2) negative framing while the warning messages are manipulated as (1) no warning, (2) weak warning, and (3) strong warning.
Research findings: This study shows that the warning messages reduce the framing effect on decision aids. In particular, the findings show that in an audit context, both the weak and strong warning messages are successful in decreasing the framing effect bias on decision aids. These results suggest that warning messages can assist auditors in getting the best decisions in an audit process.
Theoretical contribution/Originality: To the best of our knowledge, previous studies had only examined the debiasing effect of framing

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within a business context. In contrast, this study may be the first of its kind to test this debiasing technique within the auditing context.
Practitioner/Policy implication: Warning messages can function as one of the best tools for auditors to produce the best decisions within an auditing process. Managers in public accountant firms can use the warning messages as a way to maintain their auditors or to employ the audit decision aids carefully.
Research limitation/Implications: This study only measures the reliance level, and not the overreliance level because using a specific measure of overreliance can produce different results.

Keywords: Decision Aid Reliance, Framing Effect, Warning Message, Audit Task Decision
JEL Classification: M42

1. Introduction

Among the many factors that can influence the reliance level on a decision aid, the reliability of the decision aid is one of the most important. Brown and Jones (1998), and Gomaa et al. (2011) suggested that the more reliable the decision aid is, the more the user would agree to use it. However, the choice of method for presenting the reliability information of the decision aid to users can potentially create a bias. A variety of designs in performing decision aids reliability can cause different reliance levels (Cheng & Wu, 2010; Cheng, Wu, & Lin, 2014; Lacson, Wiegmann, & Madhavan, 2005). For example, presenting the same situation in either a positive or a negative frame would lead to different decisions.

Informing the decision aids reliability with different accuracy can also cause various associations in the users' memory. This can finally result in different decisions (Levin & Gaeth, 1988). The more reliable the accuracy is, the more association and positive sense users can get. Besides the accuracy of the reliability, different ways of informing or framing can also create different decisions. The framing model is used extensively in the context of decision judging and making (Levin & Gaeth, 1988).

Several studies have examined the effect of framing on decision aids. Septiari and Goedono (2019) had shown that an auditor's final decision is influenced by how the decision aids reliability was presented (positive or negative). Cheng et al. (2014) confirmed that framing could influence the user's decision. Cheng and Wu (2010) explored the framing phenomena in an online shopping context and found that the way information was framed had an effect on the individual's judgment and decision. Huerta, Glandon and Petrides (2012) also examined the framing effect of two aid systems: automated and manual. They verified that the framing effect was type-dependent.

The framing effect was caused by the information encoded in the memory (Levin & Gaeth, 1988), and also by the individual's lack of attention on the available information (Smith & Levin, 1996). Both these factors are the potentials for creating a decision bias. Encoding effects emerge from the way information is delivered. This encoding effect then increases when the individual ignores the related information. It is thus essential to have more studies explore the debiasing techniques so that such a problem can be resolved. It is also necessary to examine the methods that could engage people to pay more attention to all the information that could impact on their decision.

In this regard, warning messages can be helpful in response to this problem. The warning messages would strengthen the individuals' attention, thereby making them decide carefully. Warning messages had been used to reduce cognitive biases, such as like hindsight bias (Hasher, Attig, & Alba, 1981; Reimers & Butler, 1992), anchoring bias (Block & Harper, 1991), and outcome effect (Clarkson, Emby, & Watt, 2002). In a study of online shopping, Cheng et al. (2014) suggested that warning messages can be effective for reducing decision aids bias. They found that the magnitude of the framing effect was attenuated and eliminated in such warning conditions.

The purpose of this study is to examine the role of warning messages on the reliance level on decision aids in an audit task context. To achieve this purpose, we conducted a 2 x 3 between-subject experimental design, which involved 65 undergraduates and 13 Accounting Profession Program individuals as samples. The first independent variable used in this study is framing which can be manipulated as positive framing or negative framing. The second independent variable used in this study is warning messages which were manipulated as no warning, weak warning and strong warning. The results showed that the warning messages reduced the framing effect on decision aids. In particular, the findings showed that in an audit context, both the weak and strong warning messages were successful in decreasing the framing effect bias on decision aids. These results suggest that warning messages can assist the auditors in getting the best decisions during an audit process.

This study has three contributions. First, it contributes to the development of framing and the warning theory. The prospect theory states that the framing bias occurs because individuals have a lack of attention on the information given. The bias may be reduced by giving them the instruction which can make them rethink their decision. However, the use of the warning theory in previous studies had also noted that the framing effect debiasing technique also bore some inconsistent results. For example, Cheng and Wu (2010) tested the framing effect on the Internet buyers' attitudes and their purchase intentions. They revealed that a strong warning message was more effective than a weak one. Clarkson et al. (2002) found that a simple instruction or warning about the potentially biased effect of the outcome information was also less effective. Other studies (e.g., Almashat, Ayotte, Edelstein, & Margrett, 2008; Cheng & Wu, 2010; Cheng et al., 2014) which examined the framing effect's debiasing technique in the business context had also failed to prove the usefulness of the framing debiasing technique. As a result, the current study proposed that different tasks and different strength levels of the warning messages may have led to this inconsistency. According to Zhen and Yu (2016), different task contexts may modulate an individual's framing effect. This study examines the debiasing effect of warning in the auditing task context. By testing a context that is different from the previous studies, we suggest that weak and strong warning messages may together be effective for the framing effect of the debiasing technique. This study placed participants in a scenario where they must perform immediate decisions based on whether they depend or do not depend on the provided recommendation of the decision aids. This scenario would create a situation which resembled the real audit task. The participants would assume the role of an accountant who needs to make a professional judgment and decision. The findings derived from this study would give a new perspective to the warning theory when used in the audit context. Warning messages can effectively reduce the bias among framing. The findings obtained from this study have also indicated that there are different effects of warning on the relationship between framing and decision aids reliance. In the audit task scenario, both the weak and strong warnings are helpful as a framing debiasing technique.

Unlike previous studies which generally use a 7-point Likert scale to measure participants' perception of reliance, the current study uses a slightly different approach. In this regard, it adapts Gomaa et al.'s (2011) reliance measuring instrument to measure the behaviour of the participants in their decision-making. We tested the hypotheses through an experimental method. The results of our study are consistent with previous studies – when there were no warning messages, participants with the positive framing had a higher level of decision aids reliance than participants with negative framing. The giving of a warning message seemed to reduce the effect of framing on the audit decision aids. Another important finding of the current study is that in the audit and the behaviour context, either the weak or the strong warning message was equally effective in reducing the framing effect bias. This outcome was different from a study of heuristic bias, which had stated that only warning messages with a stronger level could reduce the effect of framing.

Finally, this study also contributes to the practical environment, as the findings are beneficial to the practical field of auditing. Auditors are often required to make better decisions during the audit process, yet they are frequently faced with the occurrence of heuristics bias in their work. In this regard, the audit leader can use a warning message to assist the auditors in producing the best decision.

This paper is organised as follows: Section 2 outlines the literature review and the study's hypotheses. Section 3 discusses the methodology employed. Section 4 explains the data analysis and Section 5 explains the discussion of the findings. Section 6 concludes this article and provides suggestions for future research.

2. Literature Review and Hypotheses

2.1 Decision Aids Reliance

Decision aids which are currently present in the form of computerised systems, such as expert systems, neural networks and decision support systems (Eining, Jones, & Loebbecke, 1997; Hampton, 2005; Swinney, 1999; Van Dongen & Van Maanen, 2013) have emerged in various manuals, such as algorithms, procedures and standard formats (Alon & Dwyer, 2010; Brown & Jones, 1998; Eining et al., 1997). Decision aids are desirable when they have a good track record to map the correct or highly correct decision domain (Mascha & Smedley, 2007). Reliance on decision aids can operationalise into the user's agreement with decision aids' recommendations (Hampton, 2005). The more the individuals agree with the decision aids' recommendation, the more they will rely on this aid. Some previous researchers (Ashton, 1990; Brown & Jones, 1998) have suggested that the increase in decision making based on decision aids is a sign of the reliance increasing.

Users must be aware that the aid's recommendations are merely inputs for more appropriate decisions. In a reasonable level of reliance, the information generated by the decision aids would assist users in making the right choice. Conversely, when the users become over-reliant, the decision aids would ruin their judgment. Over-reliance occurs when users prefer to depend on a decision aids system rather than use human analysis (Swinney, 1999). This means that the auditors would trust the reliance more than their own judgment. Nonetheless, the aids tool may not be robust for all domains when the decisions are applied. Further, a decision aid may also be wrong if it is without any adequate knowledge (Mascha & Smedley, 2007). In this regard, we need to know the factors that cause reliance (Swinney, 1999).

Brown and Jones (1998) classified the factors that caused decision aids reliance into four: (1) characteristics of the decision aids, (2) characteristics of the decision-makers, (3) characteristics of the decision tasks, and (4) factors that affect the evaluation of the decision strategy. Ashton (1990), Eining et al. (1997), Gomaa et al. (2011), Kaplan (2001), and Lowe, Reckers, & Whitecotton (2002) had examined some of these characteristics of decision aids, and they found aids reliability as one of the crucial factors of reliance.

Nevertheless, studies examining the reliability of the aids can also be inconsistent (Dzindolet, Peterson, Pomranky, Pierce, & Beck, 2003; Dzindolet, Pierce, Beck, & Dawe, 2002). Lacson et al. (2005) stated two possible reasons why aids reliability research had become inconsistent. First, it may be due to the accuracy or errors of the decision aids reliability performance. Secondly, it could be due to the framing of any information about the reliability (framing effect). Many studies of information reliability were positively inclined, and thus far, there has been no research on the negative outcomes (Dzindolet et al., 2002; Lacson et al., 2005). In relation, Tversky and Kahneman (1981) proposed that the differences in presentation format or framing could influence people's decision.

Due to the above reasons, it is essential to examine reliability from the negative perspective. Lowe et al. (2002) used the framing theory (Tversky & Kahneman, 1981) in their study. They noted that individuals tend to pay more attention to negative information in comparison to positive information. Kuvaas and Selart (2004) asserted that negative presentations stimulate more effortful and thorough information processing than positive ones. In this regard, it is expected that people would be more careful in deciding how to rely on decision aids when the aids reliabilities are presented in the negative frame rather than in the positive frame. In the case of auditors, little potential information about the unreliability audit tools could change their judgment. This is because auditors encounter higher pressure and risks; they also do more complex tasks, hence these make them more cautious when making a decision.

2.2 Prospect Theory, Framing Effect of Decision Aid Reliability and Warning Messages

The framing effect when explained through the prospect theory states that people make decisions based on the potential final losses and gain values, and that people evaluate losses and gains by using a particular heuristics (Kahneman & Tversky, 1979). This theory suggests that in a favourable situation, the individual tend to choose a profitable option. The individual will also tend to choose the decision that has a small amount of losses (to minimise losses).

The framing phenomenon is also observed in the context of auditing. Boritz (1997) suggested that the framing effect is an important variable which potentially impedes audit judgment accuracy. When the auditors evaluate the aid recommendations in their audit work, they would assess the reliability of those aids first. The more reliable the aids are, the better these would be trusted. Therefore, if that reliability information was delivered negatively, it would look less trustworthy, thereby causing unfavourable perceptions. This situation also applies vice versa. Septiari and Goedono (2019) confirmed that the framing effect could influence decision aids reliance within the audit context. They found that positive framing caused a higher degree of following the audit aids as compared to negative framing.

There are three types of effect from framing: attribute framing, goal framing and the framing of risky choices (Levin, Schneider, & Gaeth, 1998). The first type, the framing attribute, is a single attribute of a particular object which is framed either positively or negatively. The second type, the goal framing, is a persuasive message which emphasises on positive consequences (negative) of doing (not doing) an action. The last, framing of risky choice, occurs when the frame captures any risk possibility of aids decision. This study, however, focuses on the attribute framing, due to the necessity to explain the framing of decision aids reliability as a framing attribute.

Hsee and Zhang (2010) in the general evaluability theory (GET) had proposed the consideration of three features when dealing with the evaluability of any attributes – nature, knowledge and presentation. The last characteristic, in particular, can cause cognitive bias, known as the framing effect. The framing effect of attributes occurs when the object attribute (such as framing includes probabilistic data) is manipulated (Lacson et al., 2005). Attribute framing refers to the single attribute of a specific object being positively or negatively framed. This occurs when the positively described item is higher than the negatively described item (Levin, Gaeth, Schreiber, & Lauriola, 2002). It is possible to define attribute framing in a situation whereby a single attribute of a given context is the subject of the framing manipulation (e.g., describing ground beef as ''80% lean'' or ''20% fat") (Freling, Vincent, & Henard, 2014). The information of decision aids reliability is one single attribute which can be framed through that theory. Alewine, Allport and Shen (2016) noted that attribute framing also occurs in the accounting information system area while Septiari and Goedono (2019) endorsed that attribute framing exists in decision aids reliability.

There are various types of evaluations in reliability framing because decision aids represent choices between approving and rejecting the decision aids recommendations. These evaluations may include favourability ratings (levels ranging from not at all acceptable up to the level of entirely acceptable) (Levin et al., 1998). Attribute framing can explain how an object describes positive looks more effectively than those negatively depicted (Levin et al., 1998).

Septiari and Goedono (2019) also found evidence indicating that framing effects are vital in audit decision aids. Informing the auditors about the decision aids reliability in different ways could lead to different levels of tendency in following the aids recommendations. Cheng and Wu (2010) and Cheng et al. (2014) had examined the effects of framing on information technology reliability. Their study focused on buyers' intention to buy online. They found that there was a correlation of framing effects to reliance. When participants received positive framing, their trust for decision aids was high. In contrast, when participants received reliability information that was framed negatively, their decision aids reliance tended to be low, even zero.

The results of previous studies by Cheng & Wu (2010), Cheng et al. (2014) and Septiari & Goedono (2019) had raised the need to study more about the debiasing techniques of the framing effect on decision aids. Some research had suggested warning messages as an effective debiasing technique of cognitive biases like hindsight bias (Hasher et al., 1981; Reimers & Butler, 1992), anchoring bias (Block & Harper, 1991), and outcome effects (Clarkson et al., 2002). This input is similar to Cheng and Wu (2010) whose study indicated that warning messages can be used as a debiasing technique. They had found this technique to be successful in reducing the framing effect. However, Cheng and Wu (2010) had limited the effectiveness of the debiasing technique to online shopping with a strong warning treatment. As a result, it is necessary to re-examine these studies in the context of auditing by including all the warning conditions (no warning and weak warning).

2.3 Hypotheses Development

In the prospect theory, people make decisions based on the potential final losses and gains value; they also evaluate these losses and gains by using a particular heuristics (Kahneman & Tversky, 1979). People tend to choose any profitable option when they are placed in the favourable condition, and they tend to take any alternative that has a small amount of losses (to minimise losses) if they are placed in the unfavourable situation.

The framing effect occurs because individuals are less concerned with information (Smith & Levin, 1996) and with encoding the information in memory (Levin & Gaeth, 1988). Because of that, individuals become bias, thereby choosing the decision which is most profitable or less detrimental for them. To debias this effect, we need to call the individual's attention in a certain way so as to make them concerned about all the information that could help them in their decision-making. According to Clarkson et al. (2002), warning messages are the best tool for this purpose because this debiasing technique would make the individuals rethink or revisit the decision process.

Previous researchers have confirmed the role of warning messages in reducing cognitive biases. Block and Harper (1991) attempted to reduce the anchoring bias with a salient warning. They argued that when participants received the warning before making final estimates, the effect of anchoring and adjustments reduced although not completely. Hasher et al. (1981) and Reimers and Butler (1992) also examined the results of warning messages in reducing hindsight bias effect. They proposed that warnings reduced the effects of hindsight bias, but they do not eliminate them completely. Clarkson et al. (2002) examined the debiasing outcomes' effect in the auditing domain (the law's judgment for negligent auditors) with instructions or warnings. Their results showed that simple instructions or warnings of the bias potential effect were effective, but weak. The study by Cheng and Wu (2010) of online shopping showed that warnings had a significant interactive effect on framing. Their result suggested that the warning messages were associated with the framing effects.

The warning message that was received by an individual can be strong or weak. Strong warnings about the potential biasing effects would make the individual more aware of the bias than weak instruction (Clarkson et al., 2002). In the prospect theory, individuals make a bias in their decision because they were not aware that the condition which they faced was the same, but framed differently. Even though the information was framed in the gains or losses, these individuals were influenced by the framing of gains and losses, without realising that the information was the same. In this regard, such individuals need to be reminded with warnings about this bias so that they can rethink their decisions. The stronger the warning is in reminding them, the better it will attract their attention.

In Cheng and Wu (2010), the influence of the warning message on the participants' framing attitude was only mitigated, not eliminated. The result of their study was similar to Clarkson et al. (2002) who had shown that strong debiasing instructions revealed better performance than weak ones when mitigating the outcome effects. Cheng and Wu (2010) argued that the strength of the warning arguments, and the nature of the judgmental bias were possible causes for these findings. Therefore, in this study, we extended this issue by changing the judgemental context to the auditing task context. This was achieved by revising the methodology so that both the weak and strong warning messages would be effective in reducing the framing effect. The decision in the audit process contained more risks and is of high pressure hence, auditors would consider each information that is related to their decision.

In this study, we divided the warning messages into three types: no warning, weak warning and strong warning. In the condition where there was no warning, individuals did not receive any warning. They were completely under the framing bias. In this situation, the positive presentation of decision aids reliability led to more decision aids reliance than those in the negative presentation. In the condition where there was weak warning, the participants received information about the possibility of framing effect presence. This information may make people recall the prior information that is related to their decision. The last is the strong warning which gives participants the information that they were clearly under the framing bias. Therefore, this information would lead them directly to rethinking or revisiting their decisions, thereby reducing the framing bias and helping them make better decisions. We argue that warning messages would moderate the influence of the framing effect on decision aids reliance. For participants with no warning, receiving a positive framing message would result in more reliance on decision aids than their counterparts receiving a negative framing message. For participants with a warning, a positive or negative framing message would result in a similar reliance on decision aids. Based on this, the hypotheses formulated for this study are as follows:

H_{1a}: The participants who received a weak warning, a positive or negative framing message results in a similar reliance on decision aids.

H_{1b}: The participants who received a strong warning, a positive or negative framing message results in a similar reliance on decision aids.

3. Data and Methodology

3.1 Experiment Design

A 2 x 3 between-subject laboratory experiment was designed to investigate the correlation between the variables in this study. Two treatments of decision aids reliability were applied: 1) positive framing with 80% accurate aids information and negative framing with 20% inaccurate aids information, and 2) treatments encompass three types of warning messages (no warning message, weak warning message and strong warning message). The design of this experiment is illustrated in Table 1.

Table 1: Matrix of Experiment

Framing	Warning Message		
	No	Weak	Strong
Positive	Cell 1	Cell 2	Cell 3
Negative	Cell 4	Cell 5	Cell 6

3.2 Procedures and Experiment Scenario

The experiment scenario in this study was adopted from Gomaa et al. (2011) and Cheng and Wu (2010). The participants completed the experiment within 45 minutes. Participants were asked to play the role as auditors where their CPA firms had been engaged to audit the financial statements of the Amalgamated Manufacturing Incorporated (AMI) Company for the current year. They were asked to read a case of the AMI, which is a high-tech equipment company. The participants were informed that the legal department has indicated to them that the risk of their CPA firm being sued as a result of this engagement is very high should the financial statements be materially misstated. Specifically, their legal department has evaluated the likelihood of their company being sued at 95%. If their firm was sued, the likelihood of the plaintiffs winning the suit is 90%. If the suit was successful, the fine and penalties imposed on their firm would be extremely high (we provided such information to make the participants more serious when finishing their task[1]). We also provided the company's key ratio of the current year and previous year, the financial position summary, and the income statement summary for the current year. In the reading, participants were told that the management has estimated the difference of the receivable write-off per 31/12 was at Rp600,000. The audit committee and the directors' board agreed on the estimation, but they were reluctant to revise their estimation. On the other hand, the participants who were given a receivable in five years, and the write-off histories were told to assume the role of the auditor of a public accounting firm. They were to review the history of the accounts receivable; hence it was expected that they would come to their estimations. Participants were also required to propose a year-end adjustment (if any) to the estimates provided by the management for Rp600,000.

The case material was designed in such a way that it would bring the participants to a certain amount of the allowance, which was Rp700,000. Participants were told to offer their initial estimation of

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[1] We pilot tested the experiment several times and we discussed the results with several academicians and accounting professionals. We did not find in our pilot test the information about "Your legal department has evaluated the likelihood of being sued at 95% … the fine and penalties imposed on your firm would be extremely high" to be a problem. However, to make sure this information did not disturb our result, we conducted a new experiment again without this information. There were 30 students with the same criteria in our pilot-test experiment before participating in the actual experiment. We compared the results using the t-test and found no differences. We also ran the data to test the framing effect and the effect of no warning, weak warning and strong warning on the relationship between framing and decision aids reliance. The results were consistent with our previous results. Therefore, we suggest that the problems did not matter.

allowance for the uncollectible accounts, which should be set at 31/12, and to propose a year-end adjustment. After that, the participants were directed to read about the decision aids assistance provided by their accounting firms. This aids decision used historical information as well as the company's accounts receivable in the current economic condition to predict the allowance for the uncollectible accounts receivable. The aids tool has been frequently used by the firm, and has proven to be very helpful. The aids recommended the allowance of Rp750,000, giving the correct estimates for bad debts in every X of 10 cases. For positive framing conditions, the participants were informed that decision aids were correct 8 times out of 10 cases (80% accurate), and for a negative one, they were told that decision aids were not correct 2 times out of 10 cases (20% inaccurate). After reading this information, the participants were allowed to change their initial estimates, and to propose a year-end adjustment, if desired. They were made fully aware that they do not have to change their initial estimates, and they do not have to propose adjustments. Otherwise, they could change their estimates and adjustments in every direction and magnitude. However, it has also been emphasised that the estimation accuracy is very important because it concerns the reputation of the firm and any possible risks faced by the firm.

For participants who received a warning message, there was a warning message before they made the final decision to estimate the allowance for the receivables and final adjustments. For those getting a weak warning, the instruction was given as follows:

> *Warning! The information described in different ways can affect your judgment and lead to biased decisions. So please take note of the decision bias and make sure to avoid unintended effect in terms of the information conveyed, before you determine your final estimate.*

For participants who received a strong warning, the instruction was given as follows:

> *Warning! Information about the reliability of the decision aids is presented in a way that is positive (or negative), and it may affect your choice of the grant. Therefore, please note that the reliability of information can help you or affect your final estimate.*

As for the participants with no warning, no additional instruction of warning of potential biases was given.

3.3 Variable Measurement

The dependent variable in this study is the level of reliance on decision aids. This variable is measured by looking at the extent to which participants change their initial predictions to the suggestion of tool making (Gomaa et al., 2011). The formula for calculation is as follows (participants' answers will be in the range of (0.00 to 1.00):

$$\text{Reliance} = \text{Final adjustment} - \text{Initial adjustment}/((\text{Decision aid recommendation} - \text{Management estimation}) - \text{Initial Adjustment}) \qquad (1)$$

The example for this equation is illustrated as follows. Participants are given an initial adjustment at Rp700.000 and a final adjustment of Rp750.000. Meanwhile, we know in the material experiment that decision aids' recommendation is 750.000 and management estimations is 600.000. Therefore, the reliance level can be calculated as follows: (750.000–700.000)/ ((750.000–600.000) –700.000) = 1.00. The results show that participants completely follow the decision aids reliance. In other words, they have full reliance. Most of the answers are close to 1.00, i.e. more participants relied on decision aids; and if their answers are closer to 0, let's say 0.02, it means they don't rely much on decision aids.

The independent variables contain two treatments – framing effects and warning messages. The framing effect of the decision aids reliability is presented in two ways: positively and negatively framed. Participants who received the warning messages would also receive additional instructions on the warning of the possibility of bias.

3.4 Participants

A total of 78 subjects participated in this experiment. The participants comprised 65 undergraduates (80.77%) and 13 individuals from the Accounting Profession program (19.23%), both were from the Gadjah Mada University, Indonesia. The average age of the participants was 21.21 years old. RÖnnlund, Karlsson, Laggnäs, Larsson and Lindström (2005) had implied that age has no impact on the framing effect. The participants consisted of 29 males (37.18%) and 49 females (62.82%). In this study, we used an independent sample t-test to compare gender and academic background. The results showed no significant difference between males (n=29, SD=0.23) and females (n=49, SD=0.22), ($p>0.05$) and between undergraduates (n=65, SD=0.23) and accounting professionals ($n=13$, $SD=0.20$), ($p>0.05$). Although a majority of the participants were females, the framing effect was not likely to vary in terms of gender (Bateman, Fraedrich, & Iyer, 2002). Participants who were involved in this experiment had also completed and passed a financial accounting subject. This selection criterion was used to ensure that the students have enough comprehension to do the tasks of the receivables for the main experiment. Due to this criterion, we can assume that all participants have the same understanding level as a professional accountant if such tasks were given, and the decision that they would make may be similar to the decision of accountants.

Participants were given several questions and statements as a manipulation check. The first to third statements showed whether the participants understood the tasks. On average, the participants felt that the experimental task was quite difficult ($\bar{Y}=5.27$), but they were motivated enough to follow this experiment ($\bar{Y}=5.38$). The fourth and fifth statements asked the participants about the reliability of decision aids. The participants had given their answers according to their treatment conditions. Statement six inquired about the reliability of decision aids, in which the participants answered that they would get the appropriate treatment. Statements seven, eight and nine showed that participants had understood the management's estimates, decision aids' recommendations, and the difference between management's estimates and the decision aids' recommendations. Statement ten asked the participants how strong was the warning that they felt. In this study, we used the 7-point Likert-scale to measure, and a cut-off point of 3.5 was used to show the differences between weak and strong warnings. Participants under the strong warning manipulation had scored up to 3.5.

The result showed that the average mean in the weak warning was ($\bar{Y}=3.48$), and the average mean in the strong warning was ($\bar{Y}=6.23$). We also used the median as a cut-off point between the weak and strong warning messages. Cheng and Wu (2010) had used this approach to ensure the measurement's validity and reliability. Besides this, we also used the manipulation check to ensure that the participants had received the weak or strong warning messages. The number of participants who had taken this experiment earlier was 104 students. However, after the manipulation check, only 78 participants were found to have passed and qualified for data analysis. We also did the independent t-test to compare participants who had passed the manipulation check with those who did not. The results showed that no difference was found ($p>0.05$).

4. Results and Discussion

4.1 Descriptive Statistics

Table 2 shows the number of participants (n), the mean ($\bar{Y}$), and standard deviations (SD) for each group. The table shows the number of participants in each group: 14 (cell 1), 13 (cell 2), 13 (cell 3), 14 (cell 4), 12 (cell 5) and 12 (cell 6). It can be seen that at the no warning condition column, the mean of the participants who had positive framing was 0.42 (SD=0.19), which was higher than that of the participants who had negative warning, 0.13 (SD=0.18). In the weak warning condition, the mean of the participants who had positive framing was 0.19 (SD=0.24), which was higher than that of the participants who had negative warning, 0.17 (SD=0.23). Finally, the strong warning condition showed that the mean of the participants who had positive framing was 0.20 (SD=0.20), which was higher than that of the participants who had negative warning, 0.15 (SD=0.19). Table 2 also shows that the mean difference between positive and negative framing from the no warning message to the weak warning message until the strong warning message is reduced. The results indicated that the participants may have to consider the warning message before making their decisions.

Table 2: Descriptive Statistics

Framing	Warning messages		
	No	Weak	Strong
Positive	n=14 $\bar{Y}$=0.42 σ_Y=0.19	n=13 $\bar{Y}$=0.19 σ_Y=0.24	n=13 $\bar{Y}$=0.20 σ_Y=0.20
Negative	n=14 $\bar{Y}$=0.13 σ_Y=0.18	n=12 $\bar{Y}$=0.17 σ_Y=0.23	n=12 $\bar{Y}$=0.15 σ_Y=0.19

4.2 Test of Hypotheses

We tested our hypotheses with the analysis of variance (ANOVA) by using planned comparison through contrast analysis. The control group is compared with the experimental group. In Table 3, Panel A shows the ANOVA results of the between subject's effect. The analysis indicates a difference between the two framing conditions (positive and negative).

Table 3: ANOVA and Contrast Analysis

Panel A

Independent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	0.773[a]	5	0.155	3.730	0.005*
Intercept	3.453	1	3.453	83.265	0.000*
Framing	0.260	1	0.260	6.275	0.015*
Warning message	0.176	2	0.088	2.119	0.128
Framing * Warning message	0.307	2	0.154	3.703	0.029*
Error	2.986	72	0.041		
Total	7.322	78			
Corrected Total	3.759	77			

Panel B

Contrast	Value of contrast	SE	df	Sig.
Framing positive + No warning vs. Framing negative + No warning	0.2893	0.077	72	0.000*
Framing positive + Weak warning and Framing positive + Strong warning vs. Framing negative + Weak warning and Framing negative + Strong warning	0.0286	0.058	72	0.617
Framing positive + Weak warning vs. Framing negative + Weak warning	0.0129	0.082	72	0.875
Framing positive + Strong warning vs. Framing negative + Strong warning	0.0450	0.082	72	0.582

Notes: [a] R Squared = .206 (Adjusted R Squared = 0 .151).
* Significant at the 0.05 level (one-tailed).

The ANOVA results in panel A of Table 3 shows that the main effect of the framing on decision aids reliance is significant ($p<0.05$). This indicates that there is a framing effect on the way decision aids reliability is presented. In the same table, it can also be seen that there is an interaction effect between framing and warning ($p<0.05$).

The research hypothesis tested the effects of the interaction between warning message and framing effect on decision aids reliance. Warning messages were expected to be the debiasing framing effect. Before we tested the main hypotheses, the effect of framing in the no warning message condition (cell 1 vs. cell 4) was performed. This was meant to ensure that the framing effect would occur. Participants in the positive framing condition (cell 1) were found to have a higher level of reliance than participants in the negative framing condition (cell 4). The contrast results shown in Panel B of Table 3 showed the mean distance of the two groups (0.2893), thereby confirming the statistically significant difference ($p<0.05$). Thus the hypothesis was supported, which is that framing effect occurs in our experiment.

Our hypothesis states that the effect of framing on decision aids reliance is reduced by a warning message. Positive framing causes high levels of reliance, to the extent of causing overreliance. In contrast, negative framing would cause participants to have a very low level of reliance, or even no reliance. However, giving a warning message should probably influence the effect of the reliance. The results of the contrast test shown in Panel B of Table 3 showed the mean distance of the two groups, positive framing and warning message (cell 2 cell 3), and negative framing and warning message (cell 5 cell 6) is (0.0286). These were not statistically significant ($p>0.05$). The results showed that warning messages may affect auditors' decisions. The framing effect would be reduced when warning messages occurred, thus the hypothesis in this study was supported.

To see deeper into the relation between warning message and framing effect on decision aids, we developed hypotheses H_{1a} and H_{1b}. In both hypotheses, we tested the effect of the weak and strong warning messages separately. The results showed the mean distance of the two groups, one which was given the positive framing and weak warning (cell 2), and one which was given the negative framing and weak warning (cell 4), to be 0.0129. This difference was not statistically significant ($p>0.05$), hence the results supported H_{1a} – that weak warning reduces the framing effect on decision aids. The result was the same for the two groups, one getting the positive framing and strong warning (cell 3), and one getting the negative framing and strong warning (cell 6), whereby the mean distance was 0.0450. It was also not statistically significant ($p>0.05$). This result confirms H_{1b}, which states that strong warning reduces the framing effect on decision aids. Our findings revealed that weak and strong warning messages both reduced the framing effect on decision aids reliance.

4.3 Discussion and Implications

The purpose of this study was to test the role of warning messages in reducing the framing effect on decision aids reliance. Based on the purpose, hypotheses were formulated to test the interaction effects, and the simple effects of the debiasing techniques to reduce or eliminate the framing effect bias on decision aids reliance.

The framing theory states that the way information is framed, positively or negatively, can cause the individual to take a different decision. The framing theory is supported by the prospect theory, which states that in a favourable situation, the individual tends to choose the more profitable option. Otherwise, under unfavourable situations, the individual tends to choose the decision that has a small amount of losses (to minimise losses). In this way, the information showing the decision-making, which can be gains or losses, would produce the difference in decisions, including the information, which contains no difference. The results of this study showed that decision aids reliability that is presented negatively causes lower reliance than positive reliability. This supports the findings of Lowe et al. (2002) who also followed the theory of framing (Tversky & Kahneman, 1981).

The framing effect produces a heuristics bias. According to the prospect theory, this bias occurred because individuals did not carefully process all the information that exists. To reduce this bias, we suggest using the warning debiasing technique. In the warning theory, giving individuals some instructions would make them rethink their decisions which they had made before. Our finding supports that the warning messages were effective for reducing the framing effects on decision aids bias in the audit context. The analysis also showed that the average difference between the participants who were given positive framing with participants who were given negative framing had reduced when they were given instructions or warning messages. These results were consistent with previous studies discussing the use of warning messages in terms of bias, including Block and Harper (1991), Cheng and Wu (2010), Clarkson et al. (2002) and Reimers and Butler (1992).

Nevertheless, previous studies had also uncovered some inconsistent results about weak warning and strong warning. Cheng and Wu (2010), and Clarkson et al. (2002) found that strong warning was effective and weak warning was less effective as a debiasing technique. According to Zhen and Yu (2016), individuals' framing effect would differ in different task contexts. In this study, our argument is built on this theory, that both weak and strong warning messages would effectively reduce the framing on decision aids in the audit context. Most of the past studies, such as Almashat et al. (2008), Cheng and Wu (2010) and Clarkson et al. (2002) had tested the debiasing technique in the context of business but the current study focused on the auditing context. The audit environment is stricter than other industries; hence, we expected that both warnings would be effective as debiasing techniques for this domain. Our finding confirmed that either the weak or the strong warning messages would be equally effective in reducing the framing bias. In fact, the framing effect could even be eliminated by just giving a warning message. The test results of this study also showed that the mean distance between the positive framing condition and the negative framing condition was not significantly different, after being given a warning message. This effect had occurred for two models of the warning messages – weak and strong warning messages. In Table 3, Panel B shows the contrasting results. It indicates that both the weak and strong warning messages can effectively eliminate the framing effects on decision aids, especially in the audit context. These results confirmed our previous expectations, that is, auditors would be more careful, and they would really consider all the information when making decisions as compared to those individuals examined in the business areas. Auditors in the audit process also coped with different judgmental bias unlike the business area, online shopping and other contexts. Cheng and Wu (2010) suggested that the nature of judgmental bias would influence the effect of warning messages on cognitive bias, especially framing bias. The judgment on audit decision needs higher efforts, and can be very complicated. The decision that the auditors have made would have a broader impact on other decision makers, and this condition gives high pressure to the auditors.

5. Conclusion and Implications

Several conclusions can be drawn from this study. First, in the absence of a warning message, positive framing would cause a higher reliance on decision aids than negative framing. This argument is consistent with the prospect theory and previous research done by Cheng and Wu (2010) and Cheng et al. (2014). Second, the finding is consistent with previous research, which noted that the use of warning messages could reduce cognitive biases. The use of the warning messages can also reduce or even eliminate bias as a result of the framing effect. One important finding noted in the context of audit task is that both the weak and strong warning messages can effectively work as a debiasing technique. The reason is because in this study, the participants were faced with real audit decisions. They could also feel that the instructions given were important information to consider. Additionally, the participants who were asked to make a decision in the audit domain may have perceived greater risks as compared to others in a different domain.

The results of this study have several implications. First, the results confirmed the interaction effects occurring between the framing effect and the warning message. Second, the results confirmed some previous studies looking at the use of techniques for debiasing warning messages (warning message), in terms of bias. The important finding of this study is that both the weak and strong warnings can reduce the framing effect in the audit task context. Previous studies only found that strong warning was effective. These results can serve as an input or a reminder that the bias dependence may occur in the use of decision aids. The warning message can be used as the best tool to assist auditors in producing the best decision while they are using aids reliance. Decision aids is only one of the inputs of decision-making, which can help the decision-makers. There are still many other inputs that can be used to help auditors to decide on the right decision.

Second, the results can serve as a reminder to managers, especially those in public accountant firms. The result can be broadly used to help them in many audit problems and judgements. They must understand that the aids tool can assist them in making a biased decision. Giving the warning messages to the decision aids users or placing the warning messages in the aids systems may help the auditors to reach their good judgment. The warning messages could enable the auditors to think twice before making a decision. The warning messages would attract the auditors' attention to other information, thereby leading to better decisions.

However, there are some limitations in the study. First, this study was conducted by laboratory experiments with students acting as the participants. Hence, it has to be handled with caution when looking at generalisations. Second, the study did not use a specific measure of overreliance. This is a weakness since overreliance cannot be differentiated with reliance. It is hoped that future research can verify the result of the current study by doing a more extensive laboratory or field experiment by involving auditors who are using reliance aids as participants. This can strengthen the external validity of the research. Third, future research should compare some of the areas (example: business, audit, online marketing and other) so as to capture the differences in the different domains. Finally, it is hoped that future research can find a specific measure for overreliance since in the current study we had adopted and modified the reliance measure which did not distinguish between overreliance and reliance measures. Thus, future research can strive to develop a benchmark which can measure the normative degree of reliance and overreliance.

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Appendix

Case Material
Part 1

Amalgamated Manufacturing, Incorporated

Amalgamated Manufacturing, Incorporated (AMI) is a manufacturing corporation that is involved in the production and selling of high tech equipment. Your CPA firm is engaged to audit the financial statements of the company for the current year, 2016.

Your legal department has indicated to you that the risk of your CPA firm being sued as a result of this engagement is very high should the financial statements be materially misstated. Specifically, your legal department has evaluated the likelihood of being sued at 95%. If your firm is sued, the likelihood of the plaintiffs winning the suit is 90%. If the suit is successful, the fine and penalties imposed on your firm would be extremely high.

AMI's key ratio for the current and preceding years are as follows:

Ratio	Preceding Year	Current Year
Current ratio	2.19	1.69
Quick ratio	1.07	0.72
Cash ratio	0.35	0.24
Operating cash flow ratio	0.74	0.30
Debt-to-equity ratio	0.45	0.71

AMI's Summary Balance Sheet and Summary Income Statement are as follows:

Amalgamated Manufacturing, Incorporated Summary Income Statement For the year ended December 31st 2016	
Sales	Rp32,993,606
Less cost of goods sold	19,736,302
Gross margin	13,257,304
Less operating expenses:	
Selling and administrative expenses	39,927,017
Income from operations	9,330,023
Other revenues and expenses	830,287
Net income	Rp 8,500,000

Amalgamated Manufacturing, Incorporated Summary Balance sheet As of December 31st 2016		
ASSETS		
Cash, cash equivalents, and investments		
In marketable debt securities		Rp 7,525,300
Account receivable, gross	15,500,000	
Less: Allowance for uncollectible accounts	(600,000)	14,900,000
Materials inventory		14,355,250
Finished goods inventory		16,050,330
Property, plant and equipment, net		119,954,370
Intangible assets, net		4,504,005
Other assets, net		4,159,951
Total assets		Rp181,449,206
LIABILITIES AND OWNERS' EQUITY		
Liabilities:		
Accounts payable		Rp 31,146,250
Long-term liabilities		44,192,310
Total liabilities		75,338,560
Stockholders' equity		106,110,646
Total liabilities and stockholders' equity		Rp181,449,206

Management estimates the allowance for uncollectible accounts to be Rp600.000, which is calculated as follows:

	Age of Accounts Receivable Schedule for 2016				
	0-30 days	31-60 days	61-90 days	Over 90 days	Total
Account Receivable	10,000,000	3,000,000	2,000,000	500,000	15,500,000
Est. Rp of Uncollectible	50,000	150,000	200,000	200,000	600,000
Est. Percent uncollectible	0.5%	5%	10%	40%	3.9%

Management and the audit committee of the board of directors at AMI believe that the amount of Rp600.000 fairly represents the expected amount of uncollectible accounts as of December 31st, 2016.

Both management and the audit committee are reluctant to change the allowance amount.

You have gathered the following information pertaining to AMI's accounts receivable and actual write-offs for the preceding five years:

	Age of Accounts Receivable Schedule for 2012				
	0-30 days	31-60 days	61-90 days	Over 90 days	Total
Account Receivable	9,032,258	2,709,677	1,806,452	451,613	14,000,000
Actual Write-off	64,000	96,000	128,000	160,000	448,000
Percent	0.7%	3.5%	7.1%	35.4%	3.2%

	Age of Accounts Receivable Schedule for 2013				
	0-30 days	31-60 days	61-90 days	Over 90 days	Total
Account Receivable	9,354,839	2,806,452	1,870,968	467,742	14,500,000
Actual Write-off	71,714	107,571	143,429	179,286	502,000
Percent	0.8%	3.8%	7.7%	38.3%	3.5%

	Age of Accounts Receivable Schedule for 2014				
	0-30 days	31-60 days	61-90 days	Over 90 days	Total
Account Receivable	9,612,903	2,883,871	1,922,581	480,645	14,900,000
Actual Write-off	79,000	118,500	158,000	197,500	553,000
Percent	0.8%	4.1%	8.2%	41.1%	3.7%

	Age of Accounts Receivable Schedule for 2015				
	0-30 days	31-60 days	61-90 days	Over 90 days	Total
Account Receivable	9,741,935	2,922,581	1,948,387	487,097	15,100,000
Actual Write-off	85,429	128,143	170,857	213,571	598,000
Percent	0.9%	4.4%	8.8%	43.8%	4.0%

Age of Accounts Receivable Schedule for 2016					
	0-30 days	31-60 days	61-90 days	Over 90 days	Total
Account Receivable	9,870,968	2,961,290	1,974,194	493,548	15,300,000
Actual Write-off	92,429	138,643	184,857	231,071	647,000
Percent	0.9%	4.7%	9.4%	46.8%	4.2%

1. What is your estimate of the allowance for uncollectible accounts as of December 31st, 2016? December 2016?
2. How much confidence do you have in your estimate of the allowance for uncollectible accounts?
   (1=Very Low Confidence, 5=Moderate Confidence, 9=Very High Confidence)
3. What is the difference between your estimate and management's estimate of the allowance for uncollectible accounts?
4. How much of the difference (above), if any, would you recommend to management as an adjustment to the financial statements?

Part II

For Positive Framing

Your firm has provided you with a computerised decision aid to assist you during the audit of AMI. The output of the decision aid is intended to be advisory only, as the ultimate decision regarding the estimate of the allowance for uncollectible accounts is your judgment call.

In addition to analysing AMI's historical financial records, the decision aid incorporates current economic condition in its estimate of uncollectible accounts. In the past, the decision aid has been correct 8 out of every 10 times, yielding an 80% reliability score.

The decision aid has just estimated AMI's allowance for uncollectible accounts as of December 31st, 2016 at Rp800.000.

At this point, please answer the following question: you may go back and review AMI's case materials.

If you wish to stick with your initial response, please answer the following questions the same way you did on the previous page. Else, you may answer the following questions differently than you did earlier.

1. What is your current estimate of the allowance for uncollectible accounts as of December 31st, 2016?
2. How much confidence do you have in your current estimate of the allowance for uncollectible accounts?
   (1=Very Low Confidence, 5=Moderate Confidence, 9=Very High Confidence)
3. What is the difference between your current estimate and management's initial estimate of the allowance for uncollectible accounts?
4. How much of the difference (above), if any, would you recommend to management as an adjustment to the financial statements?

For Negative Framing

Your firm has provided you with a computerised decision aid to assist you during the audit of AMI. The output of the decision aid is intended to be advisory only, as the ultimate decision regarding the estimate of the allowance for uncollectible accounts is your judgment call.

In addition to analysing AMI's historical financial records, the decision aid incorporates current economic condition in its estimate of uncollectible accounts. In the past, the decision aid has been incorrect 2 out of every 10 times, yielding a 20% in-reliability score.

The decision aid has just estimated AMI's allowance for uncollectible accounts as of December 31st, 2016 at Rp800.000. At this point, please answer the following question: you may go back and review AMI's case materials. If you wish to stick with your initial response, please answer the following questions the same way you did on the previous page. Else you may answer the following questions differently than you did earlier.

1. What is your current estimate of the allowance for uncollectible accounts as of December 31st, 2016?

2. How much confidence do you have in your current estimate of the allowance for uncollectible accounts?
   (1=Very Low Confidence, 5=Moderate Confidence, 9=Very High Confidence)
3. What is the difference between your current estimate and management's initial estimate of the allowance for uncollectible accounts?
4. How much of the difference (above), if any, would you recommend to management as an adjustment to the financial statements?

Warning Message Manipulations

For participants who received a warning message, there was a warning message before they made final decision to estimate the allowance for receivables and final adjustments. For those getting a weak warning, the instruction is given as follows:

> *Warning! The information described in different ways can affect your judgment and lead to biased decisions. So please take note of the decision bias and make sure to avoid unintended effect in terms of the information conveyed, before you determine your final estimate.*

Then for the participants who got a strong warning, the instruction is given as follows:

> *Warning! Information about the reliability of the decision aid presented in a way that is positive (or negative) may affect your choice of the grant. Therefore, please note that the reliability of information can help you read affect your final estimate.*

As for the participants with no warning, no additional instruction of warning of potential biases was received by them.

Post Task

1. Have you completed and passed a financial accounting subject?
2. Gender?
3. Age?

Manipulations Check

1. Did you understand the task? (Yes/No)
2. How difficult this task for you?
   (1= Less difficult, 5=Moderately difficult, 9=Very difficult)
3. Do you feel be motivated to follow this experiment?
   (1=Less motivated, 5=Moderately motivated, 9=Very motivated)
4. How reliable was the decision aid?
5. I feel the decision aid is:
   (1= Not very reliable, 5=Moderately reliable, 9=Very reliable)
6. Point 6 inquires about the reliability of decision aids which the participants answered that they got the appropriate treatment.
7. What is the Rupiah amount of the allowance for uncollectible account initially estimated by AMI's management?
8. What is the Rupiah amount of the allowance for uncollectible account indicated by the decision aid?
9. What is the difference between management's estimate of the allowance for uncollectible accounts and the amount indicated by the decision aid?
10. How strong is the warning that did you feel?
    (1= Not very strong, 5=Moderately strong, 9=Very strong)

Ownership Structure and Earnings Quality Pre- and Post-IFRS: Does Investor Protection Matter?

Saleh Abd Alhadi*, Rosmila Senik, Jalila Johari and Hairul Suhaimi Nahar

ABSTRACT

Manuscript type: Research paper
Research aims: This study examines whether managerial and institutional ownership is associated with higher earnings quality (EQ) after the implementation of International Financial Reporting Standards (IFRS), in comparison to the pre-IFRS period. It also examines the moderating effect of investor protection (INPT) on the link between ownership structure and EQ.
Design/Methodology/Approach: This study uses a dynamic panel data modelling on a sample of 2090 firm-year observations, from 2007–2016, in Malaysia. This study applies the generalized method of moments (GMM) to deal with the econometric problems.
Research findings: The results indicate that managerial ownership is essential for improving EQ before and after IFRS adoption. No

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significant improvement is noted for institutional shareholders. The results provide evidence showing that managerial ownership is more efficient in monitoring earnings management in a healthy INPT environment.
Theoretical contribution/Originality: The findings highlight the complementary influence of firm- and country-level governance mechanisms in improving firm's EQ. The results suggest that the agency theory and the institutional theory could be used together in emerging economies. This is because even good CG cannot improve the monitoring performance in countries with weak institutional settings.
Practitioner/Policy implication: The results highlight the significance of accounting standards and law enforcement for enhancing the monitoring role of ownership structure in improving EQ.
Research limitation/Implications: This study investigates the impact of ownership structure on EQ. Further research should seek to understand other CG variables used in other countries with other EQ proxies such as real earnings management.

Keywords: Earnings Quality, GMM, IFRS, Investor Protection, Malaysia, Ownership
JEL Classification: G30, G31

1. Introduction

Earnings Quality (EQ) is a critical issue that has emerged after a series of global financial crises and accounting scandals in big companies. According to the literature, several types of contractual agreements and financial decisions depend on the quality of corporate earnings. These include executive compensation contracts, future growth possibilities, firms' operational performance, and other business and political decisions (Kamarudin & Wan Ismail, 2014). Additionally, high-quality profits ensure investors' confidence, market efficiency and economic growth (Atieh & Hussain, 2012).

Nevertheless, earnings might not be an informative source if it is a result of earnings management. Corporate managers may manipulate earnings at shareholders' expense for personal benefits, such as bonuses and self-reputation (Amran & Ahmad, 2013). Such manipulations lead to an unclear view of the company's financial performance and economic decisions, thereby affecting the EQ. Kamarudin and Wan Ismail (2014) defined EQ as "the information with a low occurrence of earnings management manipulations" (p. 227).[1] This was further elaborated by Haga, Ittonen, Tronnes and Wong (2018), that when managers manage earnings for an opportunistic purpose, accounting profits are no longer perceived as a measure of the firm's financial performance. Since such earnings management affect the reputation of firms, there is a need to enhance the monitoring mechanisms and the accounting standards.

Implementing the IFRS has a possibility of improving comparability, transparency and the quality of financial reporting (García, Alejandro, Sáenz, & Sánchez, 2017). It could also lead to a lower cost in financing (Persakis & Iatridis, 2017) and the smooth flow of foreign capital (Joshi, Yapa, & Kraal, 2016). The IFRS adoption may also improve firm-level monitoring mechanisms in different environments (Nurul Houqe, van Zijl, Dunstan, & Karim, 2012). Therefore, adopting such standards is seen as a treatment for opportunistic earning practices; it encourages interactions between emerging nations with developed markets.[2]

The international accounting standards was introduced as an incentive for developing a sound corporate governance (CG). This mechanism helps to curtail the opportunistic behaviours of managers at the expense of stakeholders. The weakness of the CG is, however, among the leading causes of severe earnings manipulations, hence crises and collapses of large firms worldwide (Cohen, Dey, & Lys, 2008). Such downfalls of organisations have caused investors and regulators to call for better CG mechanisms, which can be made up of internal and external sources, to protect shareholders' interest (Mollah, Al Farooque, & Karim, 2012). Internal mechanisms (i.e. ownership) (Jensen & Meckling, 1976) and external governance mechanisms (i.e. institutional environment) (Hasan, Kobeissi, & Song, 2014) can help to monitor and mitigate the opportunistic behaviours of corporate managers, specific agency problem, as well as improve firm's EQ. Based on this, considerable efforts have been undertaken worldwide to develop CG by initiating several amendments and improvements, including the Malaysian Code on Corporate Governance (MCCG)[3] and the US Sarbanes–Oxley Act.

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[1] There are several definitions of EQ, but we cited this one for our study purpose.
[2] Several countries have formally adopted IFRS worldwide. For a full list of IFRS adoption by country, please visit http://www.iasplus.com/country/useias.htm
[3] Malaysian ruling has issued several versions since the 1997/1998 Asian financial crisis to improve governance monitoring system (i.e. MCCG, 2000, 2007, 2012 and 2016).

The ownership structure is one of such mechanisms of the CG that was initiated to enhance firm's EQ and to monitor corporate managers, hence protect the business (Alzoubi, 2016). The purpose of managing corporate profits may differ between emerging nations and developed countries. In the case of Malaysia, big listed firms have concentrated ownerships. These ownership-concentrated companies permit the management to isolate the minority shareholders. In developed countries, however, corporate managers contribute to the manipulation of earnings (Doukakis, 2014). Therefore, country-level INPT laws are more significant in the case of high ownership concentrations because it may reduce firm's agency problems or the impact of expropriation (Hasan et al., 2014).

Prior literature has generally ignored the role of the institutional environment such as the INPT and the legal system, both of which can improve the effectiveness of the CG mechanisms (Filatotchev & Jackson, 2013). A few studies (e.g. Dayanandan, Donker, Ivanof, & Karahan, 2016; Nurul Houqe et al., 2012) have provided evidence highlighting the significant moderating role of INPT in improving EQ. This was contradictory to Zhong, Chourou and Ni (2017) who mentioned that the direct and indirect impact of INPT on EQ is still unclear. Based on our review, it appears that few studies have concentrated on investigating the moderating effect of INPT on the link between ownership structure and EQ, based on the pre- and post-IFRS adoption. Literature dealing with CG in the Malaysian context also seemed to have overlooked this aspect of firm- and country-level relationship.

Malaysia appears to be a suitable country to explore how this relationship operates. Malaysia has thus far, developed quick reforms for upgrading the CG pillars as a means to improve financial reporting. In particular, it is unclear if this association was motivated by the mandatory adoption of the IFRS among the listed firms in 2012 (Chan, 2012). Comparatively, as one of the fastest developing economies, Malaysia had taken steps to enhance INPT requirements (Randhawa, 2011). It has also been visionary in its future with the ambition of moving from being a developing country to a developed nation. Nonetheless, studies show that there is evidence of earnings management practices among Malaysian firms (Fan & Wong, 2002; Wan-Hussin, 2009). Hence, it seeks to enhance some developing country-related features on market efficiency, law enforcement and information quality (Young, Peng, Ahlstrom, Bruton, & Jiang, 2008).

This study aims to examine the moderating effect of both the IFRS adoption and the INPT on the association between ownership structure and EQ. Specifically, the objectives of this study are to: (i) investigate the relationship between ownership structure and EQ, (ii) examine whether ownership attributes are more efficient in monitoring accrual earning manipulations post-IFRS in comparison to the pre-period, and (iii) investigate the moderating effect of INPT on the relationship between ownership structure and EQ. The outcome derived from this study is vital for academicians and regulators so that issues related to the impact of IFRS adoption and INPT on EQ can be further understood.

The results of this study showed that managerial ownership can significantly decrease accrual earnings management. Therefore, managerial ownership is vital for improving firm's profit quality at the pre- and post-IFRS period. The results also demonstrated that managerial ownership was more efficient in monitoring earnings management in active INPT environment. No significant improvements were found for the institutional mechanism, however.

This study adds to the knowledge and practice in several ways. First, this paper fills the EQ literature gap by investigating the interactive impact of INPT on the relationship of managerial ownership and institutional ownership with EQ, pre- and post IFRS adoption. Therefore, it differs from prior studies which examined institutional ownership–EQ (Zhong et al., 2017) and ownership concentration–performance relationships (Altaf & Shah 2018; Filatotchev & Jackson 2013), moderated by the INPT. Second, most previous literature tended to examine the ownership–EQ relationship using static models, whereas the current study re-examines the link using a dynamic perspective. Third, this study provides essential recommendations to policymakers, investors and CG structure in Malaysian firms, thereby contributing to the improvement of future policies.

The remainder of this paper is organised as follows: Section 2 outlines the related literature and develops the research hypotheses. Section 3 describes the data collection and methodology. Section 4 presents the results and robustness tests and Section 5 concludes the paper.

2. Literature Review and Hypotheses

2.1 Managerial Ownership, IFRS Adoption and EQ

The agency theory suggests that directors holding voting shares can increase their monitoring efficiency whilst reducing agency problems. Past studies (Jensen & Meckling, 1976; Samaha & Khlif, 2016) had mentioned that managerial investors tend to improve financial activities for several reasons. First, they are motivated to raise corporate earnings so as to obtain benefits, as hypothesised by the "convergence of interests". Second, managerial investors have more ability to monitor firm performance, and also help to align their interests with other shareholders (Ali, Salleh, & Hassan, 2008; Jensen & Meckling, 1976). Third, auditors can significantly reduce the risk levels of earnings management when there is a high percentage of managerial ownership (Alzoubi, 2016). It was also noted by Tran (2014) that managerial ownership was negatively associated with the cost of financing, but it enhanced corporate investments (Mykhayliv & Zauner, 2017), and it encouraged companies to have long-term growth (Nakabayashi, 2019). It appears that when directors were also shareholders, markets tend to react more favourably (Qian, Sun, & Yu, 2018).

Further to the above, executive ownership is also noted to be a significant feature in reducing discretionary accruals (DAC) and for improving EQ (Di Meo, Lara, & Surroca, 2017). This was noted in Alzoubi (2016) who used ordinary least squares (OLS), and generalised least squares (GLS) to examine the relationship between managerial ownership and managers' discretionary practices. A total of 62 firms in Jordan recruited in 2013 were examined and results revealed that managerial investors significantly improved financial reporting quality.

In contrast, Shayan-Nia, Sinnadurai, Mohd-Sanusi and Hermawan (2017) detected some discrepancies. They argued that administrative investors led to higher opportunistic behaviours, thereby lowering financial reporting quality (entrenchment effect). Several drawbacks of managerial ownership concentration were henceforth recorded. First, it was observed that as administrative investors were closely associated with the financial reporting process, they were more likely to hide some relevant information deliberately (Shayan-Nia et al., 2017). Second, administrative investors were more inclined to use their power to review issues of significance depending on their interests (Sepasi, Kazempour, & Mansourlakoraj, 2016). Finally, Francis, Schipper and Vincent (2005) proposed that managerial owners can also exert their authority on accounting policies, consistent with their interests. Based on this view, prior studies (Gonzalez & Garcia-Meca, 2014) had also stated that higher managerial ownership negatively affected the monitoring capability, thereby decreasing the EQ and firm value.

In this regard, the IFRS may be adopted. Prior literature had stated that IFRS adoption can do several things: 1) mitigate earnings management practices (Bilal, Chen, & Komal, 2018), 2) protect minority shareholders (Hong, 2013), and 3) increase firm financial performance (Kouaib & Jarboui, 2017). The IFRS is an important mechanism that helps firms to improve the monitoring ability of their audit committees (Bilal et al., 2018; Bryce, Ali, & Mather, 2015). Chen and Rezaee (2012) found that board of directors who were active helped their companies to align with the IFRS and, thereby providing high-quality earnings. Doukakis (2014) also noted that the IFRS helped investors and leaders to evaluate and analyse their firms' corporate profits, accounting rules and financial reporting. According to Christensen, Lee, Walker and Zeng (2015), corporate managers who have incentives to adopt the IFRS tend to apply strict accounting policies. Given its significance, the IFRS is thus expected to improve the monitoring effectiveness of managerial ownership in firms.

Overall, there is a substantial body of literature which had examined the managerial–EQ relationship in static modelling. However, there is little information from past studies highlighting the same relationship from a dynamic perspective. Addressing this gap, the current study thus aims to look at the managerial ownership–EQ association from two perspectives: the EQ pre- and post-IFRS adoption stages. It is argued that corporate management has the power to affect earnings management. Since corporate management is endowed with monitoring skills and it is also closely related to the financial reporting process, it can easily detect the opportunistic behaviours of the managers. Based on the associated theories (i.e. agency theory) and the findings of prior studies, the following hypotheses were formulated:

H_1: There is a positive relationship between managerial ownership and EQ.

H_2: Managerial ownership is more proficient in increasing EQ post-IFRS adoption.

2.2 *Institutional Ownership, IFRS Adoption, and EQ*

The active monitoring hypothesis suggests that institutional ownership has a better constraining role in monitoring earnings management activities. Firms often have institutional stakeholders from many categories such as: insurance companies, banks, pension funds, investment and financial institutions. Several reasons support the significance of this mechanism. First, holding large voting shares makes these institutions efficient financial intermediaries and information collectors (Hadani, Goranova, & Khan, 2011). Second, these institutions seek information about companies with sound CG and less entrenched management before making investments (Ruiz-Mallorqui & Santana-Martin, 2009). Third, they apply fair accounting policies and controlling devices to monitor any opportunistic behaviours among the management so as protect their interests (Zhong et al., 2017). Fourth, institutional owners also tend to make more observations of corporate manipulations when there are unconsidered agency problems causing high agency costs, in comparison to minority shareholders (Hadani et al., 2011).

Previous literature (Nagata & Nguyen, 2017) has suggested that institutional investors tend to encourage firms to adopt better disclosures and to increase corporate monitoring systems (Zhong et al., 2017). They also help to discourage accruals manipulations (Zhong et al., 2017). Prior studies (Hessayri & Saihi 2018; Kouaib & Jarboui 2017) had observed that local and foreign institutional stakeholders profoundly invest in companies that adopt the IFRS. The considerably low information costs under international standards also motivated foreign investors to increase investments (Hamberg, Mavruk, & Sjögren, 2013). The accounting rules laid by the IFRS offer high-quality financial reporting with high levels of comparability and transparency (García et al., 2017). In this way, substantial institutional owners can be the catalyst in minimising opportunistic earnings practices upon the adoption of the IFRS.

However, both the investment horizon and private benefits hypotheses suggest that institutional owners can harm firm financial performance (Muniandy, Tanewski, & Johl, 2016). Literature proposed several reasons for this view. First, institutional owners prefer to vote "with their feet", rather than to control or substitute inefficient managers if they were not satisfied with the corporate results (Lemma, Negash, Mlilo, & Lulseged, 2018). Second, institutional investors focus on short-term effects, hence, they may conspire with managers thereby ignoring the need to monitor the managers (Muniandy et al., 2016). This can lead to a laidback attitude towards improving the CG whilst also decreasing profits at the same time (Liu, Saidi, & Bazaz, 2014; Shayan-Nia et al., 2017). Third, a hidden takeover purpose of institutional ownership could lead to an advantage but at the cost of the minority shareholders (Young et al., 2008). It was also noted by Al-Fayoumi, Abuzayed and Alexander (2010) that institutional owners could force corporate managers to disclose higher profits by misusing the accounting rules. These strategies, therefore, could cause managers to increase earnings management practices and weaken the financial performance simultaneously.

Based on the above, it can be said that even though the above studies seemed to highlight the monitoring abilities of the institutional investors over corporate managers, these early documentations had mostly used static regression methods. In contrast, there has been little literature which investigated institutional ownership from a dynamic perspective. Moreover, previous research done in the Malaysian context had also disregarded the significance of the IFRS, i.e. the MFRS 10, in enhancing the monitoring role of institutional ownership. The current study thus aims to contribute to existing literature by studying the documented association of the pre- and post-IFRS adoption by using dynamic modelling. Based on the agency theory, the active monitoring theory and prior studies that had been discussed thus far, the following hypotheses were thus formulated:

H_3: There is a positive relationship between institutional ownership and EQ.
H_4: Institutional ownership is more significant in improving EQ post-IFRS period.

2.3 The Role of Investor Protection

Following Shleifer and Vishny (1997) and La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998), a number of empirical studies had also investigated the impact of institutional environment on financial reporting quality. Ball, Kothari and Robin (2000) suggested that corporate earnings were more timely in common law countries than in civil law nations. Leuz, Nanda and Wysocki (2003) examined the level of earnings management across countries. They found a reverse relationship between the level of INPT and earnings management. Nurul Houqe et al. (2012) examined the impact of IFRS adoption and INPT on the quality of earnings in 46 countries. They found results which were similar to Dayanandan et al. (2016). Both had reported that the EQ increased in countries which applied the mandatory IFRS and strict INPT system.

More precisely, Altaf and Shah (2018) and Bao and Lewellyn (2017) tested the moderating effect of INPT on the relationship between concentrated ownership and EQ. They revealed that the degree of INPT was positively related to the strength of the documented association. Zhong et al. (2017) noted that the relationship between institutional ownership and EQ was economically significant in countries with an intense regime of the INPT. The relationship also decreased the cost of financing among companies (Gupta, Krishnamurti, & Tourani-Rad, 2018). Others like Hasan et al. (2014) and Wang and Shailer (2015) disclosed that countries tended to substitute a weak CG system and law enforcement by a reliable system of INPT that in turn improved firm performance.

Evidently, countries with high concentrated ownership also tend to expropriate minority shareholders in comparison to countries with dispersed ownership (Mehrani, Moradi, & Eskandar, 2016). In this regard, the country-level factor, i.e. the INPT, becomes crucial when ownership is intensely concentrated. This occurs due to the INPT role in reducing agency costs or the entrenchment effect (Hasan et al., 2014) and in improving monitoring mechanisms (Ben Naceur, Ghazouani, & Omran, 2007). Foreign investors tend to avoid countries with corruption, weak INPT, and a lack of law enforcement (Fan, Wei, & Xu, 2011). In such states, managers may apply the accounting rules of their personal choice for personal benefits rather than for economic decisions (Sannchez-Ballesta & Garcia-Meca, 2007). As a result, this could lead to investing and financing difficulties (Fan et al. 2011; Shleifer & Vishny, 1997).

Overall, it can be said that the level of EQ was not exclusively driven by firm-level mechanisms, but was also influenced by the institutional environment such as the level of INPT. This study argues that the strength of the INPT can affect the association between ownership structure and EQ. It can affect both the incentive and the ability of the managerial and institutional ownership in monitoring corporate managers. Prior literature (Hartzell & Starks, 2003) had argued that monitoring by outside investors (i.e. institutional owners) was costly due to the potential liquidity expenses (Noe, 2002). It also led to the free rider problem arising from such monitoring expenditures (Grossman & Hart, 1980). Further, the costs of collecting information about firms and managers was also higher in countries with weak INPT as compared to companies located in countries with an active INPT environment (Zhong et al., 2017).

Countries with weak INPT tend to have corporate managers who can manipulate earnings. Without severe lawful penalties, these countries also see a reduction of owners who play a role in monitoring and disciplining tasks. These arguments suggest that there is a strong positive association between ownership attributes and EQ, particularly in countries with a strong INPT. Prior studies had focused on the moderating effect of INPT on the link between ownership concentration and firm performance (i.e. Altaf & Shah 2018), and institutional ownership and EQ (i.e. Zhong et al., 2017). In comparison, the current study aims to expand on current literature by examining the moderating effect of INPT on the relationship between managerial ownership, institutional ownership and firm's EQ in the context of Malaysia. Given the above discussions, our testable hypotheses were formulated as:

H_5: The relationship between managerial ownership and EQ is significantly moderated by strong INPT.

H_6: The relationship between institutional ownership and EQ is significantly moderated by active INPT environment.

3. Data and Methodology

3.1 Sample Selection

The samples for this study comprised companies that were listed on Bursa Malaysia with available information on ownership structure and financial variables, for the period of 2007 to 2016.[4] The samples used comprised companies reporting under the national accounting standards, before the mandatory use of the IFRS, and the period after using the IFRS. Financial firms were excluded due to their unique features and different regularity regimes, in comparison to non-financial companies. This study also excluded firms with incomplete CG data and observations as well as companies that changed the financial year end during the data collection period. Further exclusions include companies with a fiscal year end other than 31st December.[5] Based on the above criteria, the final sample of the Malaysian companies comprised a total of 209 listed firms (2090 firm-year observations) involving six industries: consumer products, industrial products, trading and services, properties, energy and technology.

3.2 Variables of the Study

3.2.1 Dependent Variable

This study used EQ as a dependent variable. It was measured by accrual-based earnings management, which is consistent with previous literature (Chi, Liao, & Chen, 2016).

[4] The total number of companies in Bursa Malaysia during the sampled time is 806 listed firms.

[5] We have chosen firms with similar fiscal year-end, i.e., 31 December, to ensure the data gathered is consistent across the year.

3.2.1.1 Accrual-based Earnings Management

This study uses the model proposed by Kothari, Leone and Wasley (2005) to estimate discretionary accruals (DAC). There are several reasons for selecting this model. First, when compared to the Jones' (1991) model, the Kothari approach includes an intercept which helps to maintain all the three individual explanatory variables. Second, Kothari et al. (2005) had argued that the approach used by Dechow, Sloan and Sweeney (1995) generated massive estimated earnings manipulations whenever a firm achieved growth in the stated period. Third, the rate of return on assets (ROA) was included in the Kothari model to avoid biased estimators inherited in Jones and modified Jones estimates and to control for variations in accruals resulting from changes in business terms (Kothari et al., 2005).

Additionally, the absolute value of the DAC was applied in the current study.[6] According to Doukakis (2014), the absolute value was the best measure of accrual reversals due to the absence of a specific directional prediction. Three steps were used to compute this value:

First, the following model was estimated:

$$TACC_{it}/TS_{it-1} = \alpha_0 + \beta_1[1/TS_{it-1}] + \beta_2[(\Delta S_{it} - \Delta REC_{it})/TS_{it-1}] + \beta_3[PPE_{it}/TS_{it-1}] + \beta_4 ROA_{it} + \mu_{it} \quad (1)$$

Second, the coefficients calculated from Eq. (1) were applied to determine the non-discretionary accruals (NDAC). Third, abnormal accruals (DAC) were defined as:

$$DAC_{it} = TACC_{it}/TS_{it-1} - NDAC_{it} \quad (2)$$

where $TACC_{it}$: total accruals; TS_{it-1}: lagged total assets; ΔS: change in sales; ΔREC: change in net receivables; PPE: property, plant, and equipment; and μ_{it}: error term.

3.2.2 Firm-level Independent Variables

The independent variables of interest in this study comprised: managerial ownership and institutional ownership. They controlled most of the shares in Bursa Malaysia and so influenced its economy. The measures taken for such variables are illustrated in the appendix.

[6] The absolute value was chosen because it can quickly capture the accrual manipulations following the event (Cohen et al., 2008).

3.2.3 Country-level Moderating Variable

The INPT is proxied by the INPT index that was established by the Doing Business Project (DBP),[7] which ranked countries based on the strength of disclosures so as to protect minority shareholders. The INPT index measures the transparency of the transactions, the liability of the corporate directors for self-dealing and the ability of the shareholders in suing administrators for misbehaviours. Following Altaf and Shah (2018), the INPT is used as a term to refer to the average of the following indices – the extent of disclosure, the degree of director liability, shareholder suits and strength of minority INPT. These proxies have a score from zero to ten and a greater measure indicates a higher protection for investors.

3.2.4 Control Variables

To reduce the potential bias that may arise because of omitted variables, other firm characteristics were controlled by including firm size, growth, financial leverage, profitability and Big4. Previous studies (Alzoubi, 2016; Doukakis, 2014) had implied that EQ levels were influenced by such factors.

3.3 Model Specification

The following regression model was employed to explore the moderating effect of the INPT on the relationship between ownership attributes, and EQ indicators pre- and post-IFRS adoption.

$$\begin{aligned} DAC_{it} = {} & \beta_0 + \beta_1 DAC_{it-1} + \beta_2 MANOW_{it} + \beta_3 INSTOW_{it} + \\ & \beta_4 (MANOW * IFRS)_{it} + \beta_5 (INSTOW * IFRS)_{it} + \\ & \beta_6 (MANOW * INPT)_{it} + \beta_7 (INSTOW * INPT)_{it} + \\ & \beta_8 LnSIZE_{it} + \beta_9 GRWTH_{it} + \beta_{10} LEVE_{it} + \beta_{11} ROA_{it} + \\ & \beta_{12} BIG4_{it} + \lambda_i + \varepsilon_{it} \end{aligned} \tag{3}$$

where subscripts i and t denote firm and year, MANOW: managerial ownership, INSTOW: institutional ownership, IFRS: a dummy variable, INPT: investor protection, LnSIZE: firm size, GRWTH: firm growth rate,

[7] We obtained these reports from the website of Doing Business Project, World Bank. Reports for years (2007-2016).

LEVE: firm leverage, ROA: Profitability, BIG4: audit quality, λ_i: firm-specific effect, ε_{it}: the composite error term.

3.4 Dynamic Panel GMM

The GMM method considers the effect of past financial performance on the present events (Wintoki, Linck, & Netter, 2012). Arellano and Bover (1995) and Blundell and Bond (1998) developed the system GMM (SGMM) to increase the effectiveness of first difference GMM (DGMM). SGMM contains two equations, namely level and first difference, which apply instrumentation to reduce the correlation between the explanatory variables and the error terms. More importantly, the GMM approach includes necessary improvements (i.e. instrumentation) in dealing with several econometric problems, hence it improved the efficiency of parameter estimates dramatically. This encompassed heteroscedasticity, autocorrelation and endogeneity problems (Wintoki et al., 2012). Based on this, the current study uses three diagnostic tests, namely the Hansen, AR(2), and the difference-in-Hansen (DIH) tests to determine the validity and reliability of the study.

First, the Hansen test of over-identifying restrictions was applied to assess the overall validity of the instruments, which should not be correlated with the disturbance. Failure to reject the null hypothesis would imply that the instruments were valid and the model was correctly specified. Second, the AR(2) was used to examine the presence of the second-order serial correlation. The null hypothesis of this test should be supported. Third, the DIH was used to investigate the validity of the extra moment's conditions on the SGMM. Failure to reject the null hypothesis would support the predicted model.

4. Results and Discussion

4.1 Descriptive Statistics

Table 1 shows the summary of the descriptive statistics and the IFRS adoption periods which have been partitioned for all the Malaysian samples. The summary includes all the variables involved in the regression models. For the ten-year period, the mean value of the DAC was noted to be 6.5% while the minimum (maximum) value was observed as 0.000 (55.3) (Ferentinou & Anagnostopoulou, 2016). The maximum amount refers to the existence of the earnings management

Table 1: Descriptive Statistics

Variables	2007-2016				Pre-IFRS (2007-2011)		Post-IFRS (2012-2016)		Mean Diff. Paired t-test
	Mean	S.D	Min.	Max.	Mean	S.D	Mean	S.D	
Continuous Variables									
Discretionary accruals (DAC) (%)	0.065	0.065	0.000	0.553	0.069	0.068	0.061	0.062	-0.008 (-3.267)***
Managerial ownership (MANOW)	0.110	0.151	0	0.925	0.114	0.156	0.106	0.146	-0.008 (-1.815)*
Institutional ownership (INSTOW)	0.576	0.231	0	0.983	0.574	0.237	0.579	0.225	0.005 (0.764)
Firm size (LnSIZE)	5.026	0.624	1.114	8.699	4.984	0.606	5.069	0.638	0.085 (5.616)***
Firm growth (GRWTH)	0.061	0.257	-0.689	1.7	0.114	0.221	0.06	0.20	-0.094 (-11.90)***
Firm leverage (LEVE)	0.377	0.185	0.007	0.913	0.386	0.187	0.368	0.182	-0.019 (-3.21)***
Profitability (ROA)	0.07	0.11	-0.642	0.944	0.078	0.104	0.063	0.115	-0.014 (-3.345)***
Dichotomous Variables									
BIG4	49.20%				51.85%		46.40%		-0.054 (-3.836)***

in Malaysian companies. The sub-period analysis shows that the pre-IFRS mean of DAC (0.069) was higher than the post-IFRS period (0.061). This showed that there was a higher EQ after the IFRS period (Doukakis, 2014). Therefore, the statistics suggest that the IFRS has a significant effect on the accrual-based earnings management.

As for the independent variables, the summary showed that managerial ownership ranged from 0.000 to 92.5%, with a mean value of 11% across the ten-year period. This proportion is noted to be higher than the 6% mean which was reported by Shayan-Nia et al. (2017). Based on the paired t-test, the post-IFRS mean was observed to be significantly lower, with an average of 10.6% in comparison to the pre-IFRS period (11.4%). The statistics also showed that institutional ownership was highest among the Malaysian companies. It ranged from zero to 98% with a mean of 57.6%. This average remained the same during the sub-periods. It was, however, higher than Shayan-Nia et al. (2017) who reported a mean of only 32%. This is most probably due to the way Shayan-Nia et al. (2017) combined financially distressed firms.

4.2 Correlation Matrix

Table 2 reports the pair-wise Pearson correlation parameters among the variables, along with the t-statistic values. The table also reveals no multicollinearity among the independent variables (VIF). The table also shows that the correlation estimates between MANOW, IFRS and DAC were significant. This means that such variables were related to the earnings management levels.

4.3 Static versus Dynamic Models

In the dynamic models, it was observed that the economic intuition which corresponded to the algebra was "history matters". This means that the dependent variable (Y_{it}) was influenced not only by the current value of the independent variable (X_{it}), but also by the lagged value of the dependent variable (Y_{it-1}). Consequently, the GMM as a dynamic model considered the effect of past earnings management on present events.

Table 3 provides the empirical evidence outlining the appropriate regression between static and dynamic methods. The static method comprised several models, namely pooled OLS (POLS), fixed effect (FE), and random effect (RE). Likewise, the dynamic approach was also made

Table 2: Pairwise Pearson Correlation Parameters

	VIF	DAC	MANOW	INSTOW	IFRS	SIZE	GRWTH	LEVE	ROA	BIG4
DAC_{it}	–	1								
$MANOW_{it}$	3.25	-0.05*	1							
$INSTOW_{it}$	1.63	0.02	-0.6*	1						
IFRS	1.02	-0.06*	-0.02	0.001	1					
$SIZE_{it}$	1.33	-0.01	-0.32*	0.49*	0.06*	1				
$GRWTH_{it}$	1.00	0.13*	-0.02	0.05*	-0.25*	0.10*	1			
$LEVE_{it}$	1.74	0.13*	-0.06*	0.06*	-0.07*	0.24*	0.09*	1		
ROA_{it}	1.69	-0.02	-0.09*	0.16*	-0.06*	0.13*	0.22*	-0.06*	1	
BIG4	1.22	-0.02	-0.17*	0.34*	-0.05*	0.34*	0.02	0.03	0.12*	1

Note: *Denotes significance at 5 per cent level.

Table 3: Static versus Dynamic Panel-Data Estimations, Dependent Variable: DAC

	(Model 1) POLS	(Model 2) FE	(Model 3) SGMM
DAC_{t-1}	0.032 (1.67)*	-0.112 (-5.07)***	-0.003 (-3.8)***
$MANOW_{it}$	0.001 (0.01)	-0.13 (-0.95)	-0.292 (-7.1)***
$INSTOW_{it}$	0.099 (2.82)***	0.232 (2.67)***	0.369 (22.6)***
$IFRS_{t}$	0.004 (0.31)	0.124 (0.83)	0.003 (1.76)*
INPT	0.000 (0.01)	-0.005 (-0.33)	-0.002 (-1.02)
$SIZE_{it}$	-0.024 (-2.09)**	-0.037 (-0.68)	-0.08 (-12.9)***
$GRWTH_{it}$	0.074 (4.36)***	0.063 (3.46)***	0.042 (6.87)***
$LEVE_{it}$	0.003 (10.41)***	0.002 (6.88)***	0.000 (6.64)***
ROA_{it}	0.136 (7.63)***	0.111 (6.13)***	-0.095 (-26.2)***
BIG4	-0.012 (-0.87)	-0.003 (-0.07)	-0.017 (-2.3)**
Constant	0.122 (0.81)	0.126 (0.42)	0.332 (7.61)***
Firm-fixed effects	Yes	Yes	Yes
Time-fixed effects	No	No	No
R^2	8%	11%	
F-statistic	14.64***	18.53***	
Hausman test		135.16***	
Modified Wald test		1200***	
DWH test			68.46***
No. of instruments			125
No. of groups			209
Number of obs.			1873
AR(2)–p value			0.608
Hansen test			0.115
DIH test			0.517

Notes: Numbers in parentheses are t-statistics. ***, **, * indicate 1%, 5%, and 10% significant levels, respectively.

up of several models such as the GMM approach. Here, the FE model is used when the period being examined exceeds 30 years. This implies that the FE model was more appropriate than the GMM approach since the latter was of a short panel (Roodman, 2006). Short panel data suffer from panel bias or endogeneity problems which can be solved by using instrumental variables (IV), DGMM or SGMM regression methods. According to Brei, Gambacorta and von Peter (2013), the GMM approach does not suffer from invalid instrumentations and second-order serial correlations. Antonakis, Bendahan, Jacquart and Lalive (2014) maintained that instrumental variables require outside instruments which are difficult to be determined whereas the DGMM and SGMM models provided internal tools that were easier to be computed.

Table 3 shows the results. It suggests that the POLS was upward bias (0.032), whereas the FE suffered from a downward bias (-0.112). The SGMM, however, has a coefficient that was moderate and located between the POLS and the FE (-0.003). This outcome suggests that the results of the SGMM were more accurate than the static models. To differentiate and select the best static model, we used both the Breusch-Pagan LM test and the Hausman test. The significant result attained from the Breusch-Pagan LM test led to the null hypothesis being rejected, but it recommended using the RE model.[8] The second step was to use the Hausman test to detect the differentiation between the FE and the RE. As shown in Table 3, the Hausman test result was significant (>5%), suggesting that the null hypothesis[9] was rejected, hence the FE was the best model to be used. Table 3 also illustrates that modified Wald and Durbin-Wu-Hausman (DWH) tests were significant (>5%), thereby suggesting that the FE method suffered from heteroskedasticity and endogeneity problems. In this regard, the findings of this study suggest that static models were inefficient, and that the GMM model was the best.

4.4 Multiple Regression Analysis

As shown in Table 4, the results of the specification tests of the AR(2), Hansen and DIH tests were insignificant. This means that the empirical models were appropriately specified (see section 3.4).

Table 4 presents the empirical results for the DAC models by applying two-step SGMM. The first model included direct relationships while the second and third models included moderations. The most economically significant impact obtained for the Malaysian sample noted that firm's EQ has a trend, over time, through which the lagged accrual earnings management was found to significantly influence the current earnings management. Such results confirmed the use of the dynamic models, thereby justifying the GMM application.

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[8] H_0: POLS is better than RE (Breusch-Pagan LM test).
[9] H_0: RE is better than FE (Hausman test).

Table 4: Ownership Structure, IFRS, Investor Protection, and EQ (DAC), SGMM

	Model 1	(Interaction, IFRS) Model 2	(Interaction, INPT) Model 3
DAC_{t-1}	-0.003 (-3.8)***	0.142 (24.08)***	-0.41 (-39)***
$MANOW_{it}$	-0.292 (-7.1)***	-0.015 (-0.89)	0.717 (4.78)***
$INSTOW_{it}$	0.369 (22.6)***	0.11 (8.49)***	0.09 (1.78)*
$IFRS_t$	0.003 (1.76)*		0.001(0.21)
INPT	-0.002 (-1.02)	0.002 (1.20)	
$SIZE_{it}$	-0.08 (-12.9)***	-0.004 (-0.69)	-0.085 (11.6)***
$GRWTH_{it}$	0.042 (6.87)***	0.075 (12.8)***	0.064 (8.29)***
$LEVE_{it}$	0.000 (6.64)***	0.002 (6)***	0.002 (7.24)***
ROA_{it}	-0.095 (-26.2)***	0.065 (1.93)*	0.114 (3.65)***
BIG4	-0.017 (-2.3)**	-0.127 (-9.98)***	-0.014 (-1.07)
MANOW∗IFRS		-0.022 (-1.72)*	
INSTOW∗IFRS		-0.002 (-0.63)	
MANOW∗INPT			-0.085 (-4.74)***
INSTOW∗INPT			0.002 (0.43)
Constant	0.387 (8.5)***	0.055 (1.65)*	0.45 (12.07)***
Firm-fixed effects	Yes	Yes	Yes
Time-fixed effects	No	No	No
Diagnostic tests			
No. of instruments	122	111	90
No. of groups	209	209	209
Number of obs.	1873	1873	1873
AR(2)–p value	0.508	0.260	0.210
Hansen test	0.112	0.261	0.105
DIH test	0.542	0.595	0.115

Note: ***, **, * indicate 1%, 5% and 10% significant levels, respectively.

4.4.1 The Effects of Ownership Structure on EQ

The first objective of this study was to examine the impact of managerial and institutional ownership on DAC (H_1 & H_3). The results in Model (1) showed that managerial ownership significantly and negatively affected firms' DAC (H_1). Specifically, the coefficient for managerial ownership was negative (-0.276) and significant at the 1% level. This means that the presence of managerial ownership leads to lower DAC, thus high-quality earnings. This finding is consistent with the general attitude noted in past literature (Ali et al., 2008; Di Meo et al., 2017). Therefore, H_1 was supported.

However, institutional investors urged corporate managers to manipulate earnings (H_3). Result showed that this had a positive and significant impact on firm's DAC at the 1% level. This implies that institutional shareholders concentrated on corporate profits and ignored CG improvement. This outcome is theoretically consistent with the investment horizon and private benefits hypotheses which argued that institutional shareholders weaken firms' financial performance since they focussed on short-term investments (Muniandy et al., 2016). Two causes may justify this result. First, institutional investors have short-run investment strategies which prevented them from enhancing the CG systems and the accounting standards (Lemma et al., 2018). Second, although they are substantial shareholders in firms, they did not engage in observance activities which is not consistent with the MFRS 10. Based on this accounting standard, the monitoring power of concentrated ownership suggests that institutional investors should control and exercise their influence over firm's business, and not just having their voting power. The finding of this study has been verified by Al-Fayoumi et al. (2010) and Shayan-Nia et al. (2017). In this regard, policymakers and CG structures in firms need to focus on the long-run investments from institutions. This can strengthen their engagement with firms on the monitoring activities, such as improving the CG regime. Therefore, H_3 was not supported.

4.4.2 The Moderating Effect of IFRS Adoption

The second objective of this study was to examine the interactive impact of the IFRS adoption on the link between ownership structure and the DAC (H_2 & H_4). As shown in Table 4, the association between managerial ownership and DAC was significant, following the post-IFRS period (Model 2). Here, the coefficient shifted downwards, from -0.015 to -0.037 (i.e., -0.015 + [-0.022]) at a 10% significant level (H_2). This outcome is consistent with the theoretical attitude and the expectations of this study.

The finding derived has implications for the IFRS improvement, i.e. on the monitoring role of managerial ownership. This means that managerial shareholders are essential for enhancing corporate investments (Mykhayliv & Zauner, 2017), and for offsetting market inefficiency (Nakabayashi, 2019). The finding of this study is in tandem with Bilal et al. (2018) and Bryce et al. (2015) who showed the link between the audit committee and EQ with the IFRS adoption. This result is also consistent with the Agency theory which suggests that shareholders incurred monitoring expenses, i.e. adopting high-quality accounting standards so as to reduce agency costs and opportunistic corporate behaviours (Samaha & Khlif, 2016). Thus, it serves as evidence for policymakers that a moderate level of managerial ownership, after IFRS adoption, is essential for ensuring high-quality earnings, investment and market efficiency. In this regard, H_2 is supported.

The result generated from this study also showed that the monitoring role of institutional ownership had improved slightly; the relationship between *INST*IFRS* and DAC was negative but not significant. This outcome implies that the IFRS alone cannot improve the monitoring ability of institutional shareholders since they focussed on short-run investments. They did not engage in the monitoring activities among their investees (MFRS 10). The outcome generated thus far is consistent with Liu et al. (2014) but it contradicts Bao and Lewellyn (2017). Regulatory agencies and CG structure in companies should focus on and deal with long-term stability institutional ownership. This would help the firms to: 1) concentrate on monitoring and reviewing their business activities, 2) increase and protect investments, and 3) improve the firm's EQ and market efficiency. This outcome was not up to our prediction, hence H_4 was not supported.

4.4.3 The Moderating Effect of Investor Protection

The third objective of this study is to investigate the moderating effect of the INPT on the association between ownership structure and EQ (H_5 & H_6). The findings in Model (3) suggested that the INPT in Malaysia improved the MANOW-DAC relationship (H_5). Specifically, the conditional effect of the *MAN*INPT* on DAC was positive (0.717) while its interaction effect was adverse, with a coefficient value of -0.085 at the 1% level. Therefore, the interaction had decreased the coefficient from 0.717 to 0.632 (i.e. 0.717 + [-0.085]). This implied that the INPT had strengthened the association and increased the firm's EQ. This outcome is consistent with previous literature (Altaf & Shah 2018), and also our expectations.

The findings derived from the current study also showed that an increased proportion of managerial ownership decreased the accruals earning management activities, thereby enhancing the level of EQ in countries with high INPT levels. The result of this study is thus in line with the institutional theory. It is also consistent with the observations of Gupta et al. (2018) who focussed on the cost of capital, and Altaf and Shah (2018) who examined firm's performance with the INPT factor. Therefore, the fifth hypothesis (H_5) is supported.

In contrast, the *INST*INPT-DAC* relationship was noted to be positive and insignificant (H_6). This finding implied that the INPT weakened this relationship, thereby decreasing the EQ. This means that a high amount of institutional ownership decreased the level of EQ in a high INPT environment.

One possible justification for this occurrence may be Malaysia's weak law enforcement policy.[10] It appears that a strong law enforcement policy is essential for maintaining the earnings management behaviours and for improving the monitoring quality of the CG structure (Liu et al., 2014). Another reason is that the institutional shareholders do not engage in monitoring activities. In this regard, the result generated by the current study is in accordance with Al-Fayoumi et al. (2010), but it contradicted Bao and Lewellyn (2017), Gupta et al. (2018), and Altaf and Shah (2018). It seems clear that policymakers need to enhance the legal environment since the external CG mechanisms are vital for improving the internal monitoring abilities and the quality of financial reporting. Therefore, H_6 was not supported.

The new government of Malaysia (post-GE14) has the enthusiasm to implement a package stimulus for its economic reforms. They include the following. 1) Policies to reform the institutional weaknesses which had resulted in widespread corruption and financial scandals. Such reforms need to include contributions from executive bodies (i.e. government administrations). These reforms should also aim at enhancing the role and autonomy of the Parliament as well as the quality of the law-making process. 2) Judiciary reforms which are primarily aimed at removing the influence of the executive bodies (politicians) in the selection of judges and on the decision of judges. 3) Rule-of-Law/ Enforcement Reforms which focussed on enhancing the autonomy of enforcement agencies by reducing the influence of elected politicians (control of ministries). There are also a significant number of proposals which gave more independence to the Malaysian Anti-Corruption Commission (MACC) (Promise 14, Pillar 2). These include changing the legal status of the MACC, from being a government agency to being a

[10] https://www.acga-asia.org/cgwatch-detail.php?id=362

commission under the Federal Constitution. It should report directly to the Parliament. Another is the legal reform which should encourage all corruptions to be reported and current law need to be revised, for instance, the Whistleblower Protection Act, the Witness Protection Act and the Official Secrets Act. If these reforms are exercised, they could be expected to benefit and improve law enforcement, INPT, hence corporate investments and market stability.

Additionally, the results illustrated that accrual earnings management was negative and significantly related to firm size, Big4 and profitability. In contrast, it was positively associated with firm growth and financial leverage at the 1% level (Doukakis, 2014).

4.5 Robustness Test

This study had applied several robustness tests. Following past literature, this study applied the methodology of using the dynamic panel data which comprised the two-step DGMM (Chi et al., 2016). It also used another proxy for accrual-based earnings management, namely, the signed value of the DAC (SDAC) (Doukakis, 2014). All the mentioned tests were conducted with the three models explained. The results remain broadly consistent. Tables 5 and 6 show the results of the robustness tests.

Table 5: Ownership Structure, IFRS, Investor Protection and EQ (DAC), DGMM

	Model 1	(Interaction, IFRS) Model 2	(Interaction, INPT) Model 3
DAC_{t-1}	-0.261 (-56.1)***	0.104 (10.61)***	-0.156 (-7.91)***
$MANOW_{it}$	-0.18 (-2.45)**	0.013 (0.09)	0.592 (1.71)*
$INSTOW_{it}$	0.157 (4.57)***	0.291 (4.44)***	-0.049 (-0.35)
$IFRS_t$	-0.009 (-2.11)**		0.003 (0.56)
INPT	-0.001 (-0.38)	-0.002 (-0.45)	
$SIZE_{it}$	0.086 (3.46)***	0.154 (2.64) ***	-0.085 (-2.02) **
$GRWTH_{it}$	0.052 (4.62)***	0.042 (3.74) ***	0.063 (4.17) ***
$LEVE_{it}$	0.002 (15.77)***	0.000 (0.72)	-0.000 (-0.46)
ROA_{it}	0.11 (5.25)***	-0.201 (-2.51)**	0.145 (1.79) *
BIG4	0.045 (2.02)**	0.023 (0.57)	-0.002 (-0.04)
MANOW*IFRS		-0.058 (-2.02)**	
INSTOW*IFRS		-0.008 (-0.94)	
MANOW*INPT			-0.056 (-1.92)*
INSTOW*INPT			-0.01 (-1.24)

Table 5: Continued

	Model 1	(Interaction, IFRS) Model 2	(Interaction, INPT) Model 3
Firm-fixed effects	Yes	Yes	Yes
Time-fixed effects	No	No	No
Diagnostic tests			
No. of instruments	76	74	38
No. of groups	209	209	209
Number of obs.	1664	1664	1664
AR(2)–p value	0.205	0.262	0.193
Hansen test	0.123	0.752	0.299

Note: ***, **, * indicate 1%, 5%, and 10% significant levels, respectively.

Table 6: Ownership Structure, IFRS, Investor Protection and EQ (SDAC), SGMM

	Model 1	(Interaction, IFRS) Model 2	(Interaction, INPT) Model 3
$SDAC_{t-1}$	0.035(25.8)***	0.137 (14.32)***	-0.274 (-19.04)***
$MANOW_{it}$	-0.109 (-2.04)**	0.023 (1.21)	0.276 (1.56)
$INSTOW_{it}$	0.155 (3.11)***	0.094 (4.82)***	0.040 (0.74)
$IFRS_t$	0.001 (0.14)		0.018 (6.31)***
INPT	-0.015 (-3.61)***	0.006 (2.21)**	
$SIZE_{it}$	0.092 (8.58)***	0.022 (2.72)***	-0.013 (-1.61)
$GRWTH_{it}$	0.093 (6.67)***	0.104 (11.26)***	0.106 (13.16)***
$LEVE_{it}$	0.017 (94)***	0.003 (6.30)***	0.003 (7.24)***
ROA_{it}	0.822 (105)***	0.444 (9.16)***	0.457 (10.56)***
BIG4	-0.068 (-4.71)***	-0.179 (-10.7)***	-0.043 (-2.62)***
MANOW*IFRS		-0.007 (-0.42)	
INSTOW*IFRS		0.012 (2.49)**	
MANOW*INPT			-0.022 (-1.07)
INSTOW*INPT			0.005 (0.84)
Constant	-0.491 (-6.14)***	-0.184 (-4.03)***	-0.028 (-0.75)
Firm-fixed effects	Yes	Yes	Yes
Time-fixed effects	No	No	No
Diagnostic tests			
No. of instruments	94	102	90
No. of groups	209	209	209
Number of obs.	1873	1873	1873
AR(2)–p value	0.068	0.202	0.218
Hansen test	0.525	0.178	0.097
DIH test	0.405	0.522	0.147

Note: ***, **, * indicate 1%, 5%, and 10% significant levels, respectively.

4.6 Additional Tests

This study has computed additional tests comprising the variance inflation factors (VIF) for the regression model. Here, family ownership was added and measured as the percentage of shares held by family members and their relatives (Chau & Gray, 2010).

Table 7: Variance Inflation Factors

Variable	VIF	Tolerance
$MANOW_{it}$	3.08	0.325
$FAMOW_{it}$	2.80	0.357
$LEVE_{it}$	1.75	0.572
ROA_{it}	1.69	0.592
$INSTOW_{it}$	1.54	0.649
$SIZE_{it}$	1.40	0.713
$BIG4_{it}$	1.19	0.839
$IFRS_{it}$	1.02	0.981
$GRWTH_{it}$	1.00	0.996
Mean	1.72	

Table 7 presents the VIF and tolerance values of each independent variable. It is observed that all the factors are within the acceptable limits. According to Gujarati (2003), a VIF value of less than the threshold value of ten (10) indicates no multicollinearity problem. As seen in Table 7, the maximum amount of the VIF is almost three, and the mean value of the VIF is 1.72. Therefore, multicollinearity is not present, and both the managerial and family ownership is not correlated.

5. Conclusion and Implications

The current study contributes to the EQ literature by examining the moderating effect of both the IFRS adoption and the INPT on the relationship between ownership structure and EQ for the period of 2007-2016 in Malaysia. Unlike most prior studies which had used the static framework, this paper retests the ownership–EQ relationship by using a dynamic framework. Given the robustness of the empirical evidence to alternative estimation approaches, this study provided the following results. First, the univariate consequence showed that EQ significantly improved following the IFRS adoption since the accrual manipulations decreased significantly. This result showed that the IFRS is vital, even in developing countries. Such countries that consider implementing the IFRS can use the outcome of this study as a guide for contributing to their regulators. Second, managerial ownership significantly decreased accrual earnings management while institutional ownership increased it. This showed that managerial ownership is vital for improving firm's profit quality pre-IFRS period. Third, after the IFRS, managerial ownership became more efficient in enhancing EQ whereas no significant improvements were found for the institutional mechanism. Finally, the results provided evidence showing that administrative property was more efficient in monitoring earnings management in a robust INPT environment. This study, thus supports the recommendation that the monitoring effectiveness of ownership structure can be dependent on the quality of the laws and the accounting standards enforcement.

The findings of this research has shown the complementary influences of the firm- and country-level governance mechanism in improving firm's EQ. The results thus implied that the agency theory and the institutional theory should work together to reinforce and improve the understanding of the governance phenomena in emerging economies. This is because even good CG cannot improve the monitoring performance in countries with a weak external governance mechanism like law enforcement and INPT. The weakness of a country's institutional setting is one of the common features in emerging countries, and this, invariably, affects the quality of earnings, market efficiency, and the whole economy.

The findings generated from this study offer some implications for policymakers and practitioners. First, politicians and the regulatory agencies need to realise that focusing on accounting standards alone would not wholly enhance the firm's EQ. Both the accounting and law enforcement are vital for limiting corporate misbehaviours. Regulators are also encouraged to ensure that high INPT levels prevail as it contributes to the governing of firms, disciplining of managers, and protecting of minority investors. Second, the results provide empirical evidence which showed that managerial ownership is an essential monitoring factor for improving EQ. Politicians and regulators should place greater emphasis on such a monitoring mechanism as it helps to protect domestic and foreign investors, as well as the country's economy. Third, Bursa Malaysia regulators and the CG structure in firms need to adhere to the accounting standards, i.e. MFRS 10, which states that institutional investors should engage in the monitoring and business activities and not just own voting shares. Finally, the findings may be useful for foreign investors since the understanding of the firm's ownership structure may enhance their abilities in making judgements about investment decisions.

This study provides essential implications for researchers. First, academicians should focus more on the external governance factors, e.g. law enforcement in emerging countries as they are vital for improving firm's financial performance and the country's entire economy. Second, scholars have the opportunity to apply more external and internal governance mechanisms in both emerging and developed countries so as to improve firm performance and investments. Third, results of this study provide academicians with the additional knowledge that firms with managerial ownership performed better financially in comparison to other corporate shareholders, thus literature is expanded.

Further implications for corporate management are as follows: First, the results could be beneficial for corporate managers and boards in making suitable choices based on the CG characteristics which include the audit committee's effectiveness. This factor can enhance firm's financial performance. Second, corporate managers should strengthen firm's internal auditing and follow up with external auditors so as to address any weaknesses noted in the external governance mechanisms, for instance, law enforcement. Third, this study had identified the strengths and weaknesses of the institutional factors, namely, ownership structures, standard compliance and legal protection. Fourth, corporate managers should note that the proper level of ownership structure may improve the firm's EQ. It has been suggested that the DAC offered channels which regulators could use to determine the appropriate percentage of ownership.

As is noted in most research, there are some limitations to be addressed in the current study. First, this study was only interested in investigating the impact of ownership structure on EQ. This means that more research needs to explore how other CG variables may impact EQ after control has been set for potential endogeneity problems. Several measurements could be undertaken in terms of the dependent variables, for example, real earnings management can be used. Additionally, this study used data taken from only one developing country, Malaysia. Therefore, more research needs to be conducted by focussing on data taken from other developing countries for comparison purposes. With regards to methodology, future studies should consider testing the non-linear relationship to reach the optimal level of ownership structure that ensures low levels of earnings management, hence, minority shareholders confidence.

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Appendix

Variables	Acronym	Description
Total accruals	TACC	The difference between net income and cash flow from operation
Discretionary accruals	DAC	The difference between total accruals and non-discretionary accruals (absolute value)
Managerial ownership	MANOW	Proportion of shares obtained by executive directors and non-independent non-executive directors
Institutional ownership	INSTOW	Proportion of shares held by institutional investors that own more than 5% to the total number of shares issued
Investor protection	INPT	It is an index developed by the DBP (World Bank)
IFRS	IFRS	Dummy variable that equals 1 if the year is post-IFRS adoption, 0 otherwise
Big Four auditing	BIG4	Dummy variable that equals 1 if a firm is audited by one of the Big4 auditing businesses and zero if otherwise
Firm Growth	GRWTH	The change in total assets scaled by lagged total assets
Firm Leverage	LEVE	Total debt over total assets
Profitability	ROA	Net income before tax over the average total assets
Firm size	Ln(SIZE)	The natural logarithm of total assets

Shariah Disclosure and the Performance of Islamic Financial Institutions

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ABSTRACT

Manuscript type: Research paper
Research aims: This study aims to shed light on the relationship between Shariah disclosure and the performance (social performance and firm value) of listed Islamic financial institutions in the Gulf Cooperation Council (GCC) countries.
Design/Methodology/Approach: A checklist based on Islamic standard setters that is based on previous disclosure studies is developed to gauge the level of Shariah disclosures. Data are gathered from the annual reports of the Islamic financial institutions (IFIs) in the GCC for the year ending 2017.
Research findings: The findings show a negative and significant relationship between Shariah disclosure and social performance; they also show a positive and insignificant relationship with Tobin's Q. This outcome could be attributed to the corporate social responsibility (CSR) activities which create financial burdens for the IFIs. With high levels of disclosure, there is a trade-off between the two.
Theoretical contribution/Originality: This paper contributes to literature by developing a new disclosure index based on the Shariah perspective in relation to CSR engagement of the IFIs. The findings are noteworthy to the IFIs since CSR practices need to be entrenched into the working practices. They are also expected to generate positive contributions to the social good of the Islamic society, thereby fulfilling justice and equality in lieu of the Islamic concepts.
Practitioner/Policy implication: From a more practical perspective, this study is useful to regulators and policy makers who wish to

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incorporate CSR into their Shariah-compliant policies. Based on the findings, it is vital that CSR standards be implemented as a mandatory policy for the IFIs. Doing so would enhance their social performance, thus enhancing a higher level of Shariah disclosures.
Research limitation/Implications: The findings are limited to the context of Shariah disclosure and the GCC listed firms. The sources of data used for this study are also confined to the annual reports and the websites of the IFIs. In this regard, the outcome may not be applicable to all markets.

Keywords: GCC Countries, Islamic Financial Institutions, Shariah Disclosure, Shariah Governance, Shariah Supervisory Board, Social Performance
JEL Classification: G280, G380, M140, Z120

1. Introduction

The concept of social responsibility (SR) and its practices has a vast history in the Muslim world. In the Holy Quran, it was stated: "Surely the believers are none but brothers unto one another, so set things right between your brothers, and have fear of Allah that you may be shown mercy" (49:10). This was also enforced by the Prophet's (peace be upon him) *hadith* (quote): "The believers' example in the matter of their mutual love, relationship and compassion with one another is of the state of the body that when a part of it is afflicted, the whole of it is afflicted with fever and restlessness" (Sahih Bukhari, n.d.). This quote basically means that the Muslim community cannot thrive as a unit without justice, love and compassion among its believers. The concept of *zakat* (religious tax), *Sadaqat* (alms), and interest-free loans are well-known in this regard (Mir, Hassan, & Hassan, 2016).

From a Shariah governance framework perspective, there is a persistent ethical issue in relation to the communication of financial information, whereby the public has the right to know about the impact of the business operations on their welfare (Baydoun & Willet, 1997). There is no place for conservatism of disclosure in Islam. Generally, this demand for the disclosure of financial information stems from information asymmetry, and agency conflicts between managers and outside investors (Healy & Palepu, 2001). All of these are part of the general corporate governance structure of firms.

Against this backdrop, this study aims to explain whether Shariah disclosure (SD) has any significant influence on the actions and decisions of the Islamic financial institutions' corporate social responsibility (CSR) activities, and their market value. In this regard, the Shariah governance framework is decentralised in the Gulf Cooperation Council (GCC) countries (Hamza, 2013). The GCC countries have already started taking vast steps in enhancing, maintaining and supporting the social responsibility (SR) activities. For example, they have launched initiatives to develop the intellectual capital as a means to boost the labour market need of skilled workers. This was done in partnership with various economic sectors by offering scholarships, sponsoring students, encouraging entrepreneurs, launching SR awards and encouraging other types of donations and charity activities (Aldosari & Atkins, 2015).

It would, therefore, be interesting to investigate whether the decentralised nature of the GCC countries' Shariah governance framework influences the disclosure practices of the IFIs and what effects the Shariah disclosure (SD) have on their performance. Another reason for conducting this study is that despite the relative uniqueness of the GCC region, and the voluntary nature of its Shariah governance framework, very few empirical studies have examined the code's effectiveness in improving social performances. Most studies tend to focus on CSR disclosure rather than the level of CSR activities conducted by the IFIs (Farook, Kabir Hassan, & Lanis, 2011; Raman & Bukair, 2013; Bukair & Rahman, 2015). As a result, this paper aims to expand on the existing disclosure index proposed by Wallace (1988) and Al-Sartawi (2016) by adapting Islamic elements into the framework so as to accommodate the current global environment. This is done in accordance with the Islamic principles of the Shariah as recommended by the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI), and Bank Negara Malaysia (BNM) standards of Shariah. This comprehensive index will exclusively embrace the Shariah disclosure dimensions. This index will consequently act as a structural support for future integrated reporting frameworks and make a new contribution to the area of Islamic finance and disclosure.

According to Schacht (1964), the Shariah (Islamic Law) is the epitome of Islamic thoughts, the most typical manifestation of the Islamic way of life, the core and kernel of Islam itself. Therefore, different from conventional financial institutions, the IFIs have the responsibility to ensure that their management, operations, activities and instruments are in compliance with Shariah principles which can be accomplished by establishing a proper Shariah governance framework (Hamza, 2013). The Shariah supervisory board (SSB) is one of the internal governance mechanisms which monitors the Islamic banks' activities in accordance with Shariah laws specifically, its implementations and compliance (Hamza, 2013).

Islam takes the concept of disclosure a step further, where disclosure is fundamentally rooted in the notion that human beings are trustees who are responsible for all of God's creations, and that they would be held accountable for their actions (Maali, Casson, & Napier, 2006). Therefore, through voluntary disclosures, firms can discharge their accountability to investors, shareholders and other stakeholders (Ousama & Fatima, 2010). Similarly, Collett and Hrasky (2005) argued that the capacity of codes to achieve good governance depends on the extent to which companies are willing to engage in effective voluntary disclosure and compliance.

This paper contributes to literature through the significance of its implications for the IFIs, not only those in the GCC, but also those in other international investment communities. From a more practical perspective, this study serves the needs of regulators and policy makers in setting new Shariah-compliant policies for corporate social responsibility. Based on the findings of this study, it is recommended that regulatory bodies in the GCC begin instituting strategies that would encourage CSR activities among firms so as to attract investors and enhance performance. This study will also be significant to shareholders, for it also raises concerns regarding the role of governmental and non-governmental bodies in the GCC countries, and how these would contribute to the SR activities which would enable the organisations concerned to fulfil their economic vision of 2030. In addition, the management may be able to understand the importance of SR activities, thereby learning to develop better SR plans. Doing so would increase the partnership between the various organisations and the community at large. Finally, this study also raises concerns regarding the minimalist or decentralised model currently being applied by the GCC countries, where the similarities and differences among the countries, based on their regulatory environments, can be compared.

The rest of this paper is structured as follows. Section 2 provides a review of relevant literature and the hypothesis development. Section 3 provides the model developed in this study. Section 4 presents the results and analysis and Section 5 concludes.

2. Literature Review and Hypotheses

2.1 Theoretical Background

Corporate governance is one of the major components used to evaluate a firm's performance, for instance, its financial stability, particularly in the banking industry throughout the world (Hassan, Rizwan, & Sohail, 2017). Nonetheless, the philosophical foundation of corporate governance in Islam requires an additional layer of governance for the purpose of Shariah compliance. With this aspiration, corporate governance in the IFIs would require a set of institutional arrangement to oversee the Shariah compliance aspects of their businesses and operations. The lack of a specific model of corporate governance as noted in Islamic literature has thus led to the introduction of the Shariah governance system which complements the existing corporate governance framework in IFIs. In this regard, a Shariah governance system is particularly exclusive and unique to the corporate governance framework in the IFIs, unlike their conventional counterparts (Dusuki & Bouheraoua, 2011).

Honggowati, Rahmawati, Aryani and Probohudono (2017) claimed that the conceptual framework of the agency theory can serve as the fundamental mechanism for assessing the disclosure practices conducted by firms, so as to develop an organisational culture that reduces the agency problems. As the agency theory has its roots in information economics with an assumption about the principle-agent relationship, the agency theory makes it easier to monitor a firm's performance. Al-Sartawi (2016) has provided empirical evidence showing that disclosure has a significant ability in reducing information asymmetry, i.e., a firm's management is motivated to disclose more information voluntarily so as to convince the stakeholders that it is behaving optimally on stakeholders' behalf, thereby reducing agency costs.

The full disclosure concept in Islamic accounting is a result of the social accountability concept where the community has the right to know about the effect of the companies' activities and operations on their society (Baydoun & Willett, 1997). However, it has been argued (Baydoun & Willet, 1997; Maali et al., 2006) that this does not mean disclosing information to the last detail. Only the information required by users is disclosed for the purpose of assisting the users in making the economic and religious decisions and also in assisting the management to fulfil its accountability.

Khan (2016) stated that the FASB had identified two dimensions of financial disclosure: content and presentation of information on a firm's website. Since the aim of the current study is to measure the level of disclosure from the Islamic finance point of view, it would also be investigating a third and new dimension, the Shariah dimension. In this regard, the current study will describe the Shariah dimension as information pertaining to Shariah compliance as noted in the annual reports of the IFIs. Hasan (2010) noted that the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI) standard number one which is a dimension followed by the GCC countries, except Saudi Arabia, demands that the IFIs disclose a Shariah report that encompasses an opinion on the bank's operations with regards to Shariah compliance, in addition to other multiple Shariah issues.

The argument presented in this paper centres around the hypothesis that Shariah disclosure contributes to the CSR activities, i.e., social performance and firm value of the Islamic financial institutions in the GCC. This paper examines whether the commitment of the IFIs in making voluntary Shariah disclosure can explain the observable differences noted in the social performance and firm value of the IFIs.

2.2 Islamic Finance in the GCC

"Islamic finance has been expanding throughout the world mainly due to an increase in the Islamic population and the economic development of Islamic nations. Islamic finance is gaining attention from western financial circles because of its development as a source of additional revenue. Another reason is its unique concepts backed by actual transactions which offer an alternative to the western financial system" (Mizushima, 2014, p. 60).

The term 'Islamic finance' is often used interchangeably with 'interest-free' financing. It is perceived as an alternative to conventional or western financial institutions; it has attracted the attention of many researchers and investors in the last decade (Cevik & Charap, 2011). An IFI can be defined as a financial institution that follows the Shariah law (Islamic law) in all of its operational aspects (Alharbi, 2015). However, the most distinguishing feature of the IFIs is that interest (*riba*) is prohibited. Another distinguishing feature of Islamic finance is risk sharing, where the IFIs operate using profit and loss provision schemes.

Islamic finance had been practiced throughout the centuries in the periphery of Islam, without any institutionalisation until the 1970s (Asutay, 2010). The first modern Islamic financial institution, as acknowledged by many researchers, was the Mit Ghamr Savings Bank which was established in Egypt in 1963 (Chong & Liu, 2009). Following the first Islamic international bank, the Islamic Development Bank (IDB) was established in 1974 in Jeddah in a convention held by the finance ministers of all Islamic countries (Alharbi, 2015). Hence, no one can deny that the core of the Islamic finance industry is the Gulf Cooperation Council (GCC) countries. As one of the countries, the Kingdom of Saudi Arabia prides itself on following Shariah laws and principles in every aspect of life including its economic activities (Wilson, 2009). In his study, Wilson (2009) had claimed that modern Islamic finance had originated with the founding of the Dubai Islamic Bank, which was established in 1975 in the United Arab Emirates (UAE). As a result of that, the GCC countries were selected as the context of this study.

According to Olson and Zoubi (2008), the IFIs in the GCC need to have 'in-house Shariah committees' so as to ensure their compliance with the principles of Shariah. The GCC countries, with the exception of Saudi Arabia, follow a minimalist model which allows only for a slight intervention by the regulatory authorities. This approach favours the markets in establishing their own governance and disclosure systems. While Bahrain, the UAE, Oman and Qatar have adopted the AAOIFI standards, Saudi Arabia is still on the passive path. This means that the governance system within Saudi IFIs is based on voluntary actions, and not on legal requirements (Hasan, 2010). Due to these discrepancies in the regulatory environments of the GCC countries, this study anticipates that the level of the CSR activities would differ among the countries.

2.3 Shariah Disclosure and Social Performance

Based on the concept of social justice, Islamic business organisations are forbidden from performing any action that involves any type of exploitation, or that leads to unfairness or damage to a society and the environment (Raman & Bukair, 2013). Islam provides more ethical and obligatory behaviours for the different business stakeholders (Mir et al., 2016). In contrast to western theories, the Islamic view of the CSR takes a rather holistic approach. Islam offers an intergalactic spiritual view, derived from the teachings of the Holy Quran and the Sunnah. This view provides a better alternative philosophical framework for man's interaction with nature as well as his fellowmen (Dusuki, 2008). For a business to be considered ethical, it has to balance between pursuing profits and fulfilling social responsibilities. In this sense, morals and standards may vary according to culture and region. In the Middle

East and North Africa (MENA) region, the CG practices have not yet reached a saturated level; they are still being challenged by both external and internal factors (ElGammal, El-Kassar, & Canaan Messarra, 2018). The CSR is an attempt to soften the corporation's image by presenting it as humane, benevolent and socially responsible. In response to the changing paradigms, there have been different CSR practices being included on the agendas of many corporations, as a measure to adopt value-based governance that meets the interests of primary and secondary stakeholders (Perrini, Russo, Tencati, & Vurro, 2011).

The central idea of the social contract theory is how to relate a corporation to society. According to this theory, business must act in a responsible manner not only because it is in its commercial interest to do so, but also because it is part of how society implicitly expects businesses to operate. This notion is reminiscent of the Islamic requirement, that is, accountability should first and foremost, be to God (Allah). It has been explicitly mentioned that firms make true, fair, timely and transparent disclosure of financial facts and information not only to shareholders, but also to other stakeholders (Sarker, 2012), thereby maintaining the social relationship between firms and their stakeholders.

Freeman (1984) claimed that the board of directors should be considered as spokespersons for the broader participants in the social and political process, and also as builders of coalitions among the external stakeholders. Against this backdrop, it can be argued that the Shariah Supervisory Boards (SSBs) can act as spokespersons for the CSR, and other social agendas. The SSB is an independent authority that is not under the umbrella of other authorities. It has no fear of the upper level management (Board of Directors and Shareholders), and the Investors of the Bank (Hassan et al., 2017). The SSBs can strive to enhance the concept of justice, equality and transparency in the Islamic society. These concepts help to improve the social and financial performance of Islamic Banks. Based on the above, the hypothesis is formulated as:

H_1: There is a relationship between Shariah disclosure (SD) and the social performance of the Islamic financial institutions listed in the GCC stock exchanges.

2.4 Shariah Disclosure and Firm Value

According to Ismail, Hassan and Alhabshi (2016), disclosure that assures compliance with the Shariah increases the confidence of stakeholders, and also contribute to the financial stability and performance of the IFIs.

Studies (e.g. Basuony & Mohamed, 2014) have supported the notion that the timely disclosure of financial information enhances firm performance by increasing transparency, and reducing information asymmetry. Such monitoring costs are associated with the agency problem. As such, financial disclosure which as a form of voluntary disclosure is an essential component of a good corporate governance framework, and the key proxy of earning quality and high performance (Mutiva, Ahmed, & Muiruri-Ndirangu, 2015).

Prior studies (Hamrouni, Slimani, & Charrada, 2015) have used many variables to measure firm performance, yet there is an element of debate in finance research on how firm performance should be assessed. For the purpose of this study, Mutiva et al.'s (2015, p. 172) definition of performance measures is accepted as "… an apparatus used by organisations to manage progress towards achieving preset goals, and in the process, identifies the key indicators of organisational performance and customer satisfaction". Other studies (Lishenga & Mbaka, 2015; Aksu & Kosedag, 2005) which examined the effect of voluntary disclosure on performance used different measures of performance including stock price (Haggard, Martin, & Pereira, 2008), return on equity (Achoki & Shukla, 2016), and Tobin's Q. While Haggard et al. (2008) found that improved disclosure reduce stock price co-movement, Aksu and Kosedag (2005), and Achoki and Shukla (2016) reported a positive relationship between disclosure and general performance. In contrast, Matengo (2008) observed no relationship between disclosure and performance.

According to Hamrouni et al. (2015), profitability ratios which are accounting-based measures of performance is not enough, as noted in the criticisms of Benston (1985). Therefore, since market values depend on investor confidence, market evaluation assessed through Tobin's Q could be presented as an alternative measure to the accounting-based measures. Tobin's Q is computed as the ratio of the market value of the firm's outstanding debt and equity divided by the book value of assets (Himmelberg, Hubbard, & Palia, 1999). A prior study by Lishenga and Mbaka (2015) had also used Tobin's Q to examine the relationship between corporate disclosure, and performance. They reported a positive and significant association between the two variables.

Focussing on the performance based on a firm's valuation perspective, the hypothesis was thus formulated as:

H_2: There is a relationship between Shariah disclosure (SD) and the market value of the Islamic financial institutions listed in the GCC stock exchanges.

Based on the empirical and theoretical literature, this study anticipates that the IFIs, with high levels of Shariah governance would have a higher level of social performance than the IFIs with low levels of governance. To test this stipulation, this study deployed the corporate social responsibility measures of performance as the dependent variable.

3. Data and Methodology

To address the research questions, data on performance indicators were collected from the entire population of all the listed Islamic financial institutions (IFIs) listed in the GCC stock exchanges for the year 2018. The IFIs were then classified into Islamic banks (48) and Islamic insurance companies (46). Data were gathered from the financial statements, annual reports and sustainability reports of the IFIs.

As Shariah disclosure (SD) is a fluctuating variable, it should be measured at a certain point in time. Thus, the data were collected for one prior year that is from 2017. Due to the source and nature of the data collected, an attempt was also made to protect the data on the websites from any updates or changes during the time of the study. To do this, data which include all the annual reports, policies, sitemaps, hyperlinks and images were downloaded, and then saved in advance. Since the current study also considered the lagging effects of disclosure on performance, data regarding the performance measures (social performance and Tobin's Q) were collected for the year ending 2018. Accordingly, this study will examine the influence of 2017's level of SD on 2018's performance, thereby accounting for the lag effect.

As an abstract concept, disclosure, whether online or paper-based, cannot be measured in an accurate or precise way. Therefore, the literature continually debates on what is the most appropriate way to measure disclosure. Abed, Al-Najjar & Roberts (2016) stated that the content analysis method, which is used to measure disclosures, falls into two categories: textual content analysis, and disclosure indices, where the indices measure the availability of specific items. Despite the subjectivity involved in the development of disclosure indices, many prominent studies found these indices to be valuable research instruments (Wallace, 1988, Al-Sartawi, 2016). These studies include those related to the disclosure of financial information online. The current study, therefore, uses the content analysis approach to measure disclosure. For this, a checklist was adapted from previous disclosure studies (Wallace, 1988; Al-Sartawi, 2016). New elements were then adjusted into the checklist so as to gauge the level of the Shariah disclosure. This is based on the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI), and Bank Negara Malaysia's (BNM) standards of the Shariah Supervisory Boards (SSBs).

The availability of the annual reports is very important for this study. The reason is because many users in developed and developing countries view annual reports as the most important, most frequent and the major source of information, among all other sources of financial information (Botosan, 1997). It should also be noted, that no IFIs were excluded in this study since the entire population listed in the stock exchanges of the GCC countries were included as subjects since all the annual reports of the IFIs were available. In the current study, the total amount of donations and charities disclosed in the financial reports were used to express the social performance (SP). These social performances exclude obligatory taxes such as *zakat*, and unlawful gains and profits due to the different regulatory environments in which the IFIs operate. The main reason for excluding *zakat* is that in the GCC, most IFIs compute *zakat* in accordance with their Articles of Association. Moreover, it is the shareholders' responsibility to pay the *zakat* on their respective shares in the IFI's capital and distributed cash dividends. Any company that did not report any information about the donations and charities was also excluded from the study sample.

The developed checklist (see Appendix 1 for index) was then used to measure the level of the Shariah disclosure of the GCC IFIs. The maximum score of the Shariah disclosure was 24 items, hence the Shariah disclosure index was based on a binary. In other words, if an IFI reported an item which was included in the checklist, it received a score of 1, and if the IFI did not report an item, a score of 0 was allocated. Accordingly, the index for each bank was calculated by dividing the total earned scores of the bank by the total maximum possible score appropriate for the bank. The formula below shows the calculation for the Shariah disclosure index:

$$SD = \sum_{i=1} \frac{di}{n}$$

where *di* refers to disclosed item equals '1' if the IFI meets the checklist item and '0' otherwise; *n* refers to equals maximum score each IFI can obtain.

To test the hypotheses, the following regression models were developed using Shariah disclosure as an independent variable and profitability ratios as the dependent variables. A review of the literature showed that several firm characteristics influenced performance, hence, they were considered as control variables. These include IFI size (Eriki & Osifo, 2015), leverage (Brigham & Ehrhardt, 2005), IFI age (Majumdar, 1997), institutional ownership and type of audit firm (Al-Sartawi, 2016).

Model 1:

$$SP_i = \beta_0 + \beta_1 SD_i + \beta_2 LFSZ_i + \beta_3 LVG_i + \beta_4 AGE_i + \beta_5 IOW_i + \beta_6 Audit_i + \varepsilon_i$$

Model 2:

$$TQ_i = \beta_0 + \beta_1 SD_i + \beta_2 LFSZ_i + \beta_3 LVG_i + \beta_4 AGE_i + \beta_5 IOW_i + \beta_6 Audit_i + \varepsilon_i$$

Table 1 illustrates the measurement used for the variables of the study.

Table 1: Variables of the Study

Label	Variable Name	Measurement
Dependent Variables		
SP	Social Performance	Natural logarithm of total donations, charity and employee support disclosed in the financial reports of IFIs for the period 2018. SP excludes obligatory taxes such as *zakat* in addition to unlawful gains and profits.
TQ	Tobin's Q	Equity Market Value / Equity Book Value
Independent Variables		
SD	Shariah Disclosure	Total scored items by the firm/Total maximum scores
Control Variables		
LFSZ	Firm Size	Natural logarithm of Total Assets
LVG	Leverage%	Total liabilities/ Total Assets
AGE	Firm Age	The difference between the establishing date of the firm and the report date.
IOW	Institutional Ownership%	The ratio of shares held by institutional investors to total number of shares outstanding.
Audit	Type of Audit Firm Employed	IFIs which employed a Big 4 firm scored a '1', and '0' otherwise
Ei	Error	

4. Results and Discussion

4.1 Descriptive Analysis

The descriptive analysis was derived and further presented in Tables 2 and 3. The tables highlight the multi-comparison post hoc test which compared and contrasted the level of the Shariah disclosure and the level of the CSR engagement (social performance) in the region. This was performed by calculating the mean differences between each country for the year 2017. The tables also highlight the distribution of the IFIs among the six countries, where the Kingdom of Saudi Arabia (KSA) is noted to have the largest number (42) of IFIs and Kuwait, the least number (6).

Table 2 indicates that Oman had the highest level of Shariah disclosure (84.12 %) whereas Kuwait has the lowest (69.69 %). This could be attributed to Oman's late entry into the Islamic financing market which has a stricter approach to Shariah regulations. Another

Table 2: Multiple Comparisons of Shariah Disclosure among the GCC Countries

Post Hoc Test for Multiple Comparisons of Shariah Dimension								
Country	N	Mean	S.D	KSA	Kuwait	Bahrain	Qatar	Oman
KSA	42	.7642	.19424	–				
Kuwait	6	.6969	.32266	-.12543 (.156)	–			
Bahrain	9	.7345	.20199	-.05647 (.366)	.07664 (.326)	–		
Qatar	8	.7467	.2267	-.00135 (.856)	.14545 (.267)	.03200 (.582)	–	
Oman	8	.8412	.6761	.13141 (.154)	0.2462* (.026)	.15430 (.222)	0.13800 (.362)	–
UAE	21	.7853	.22431	-.05613 (.189)	.06721 (.310)	-.02437 (.764)	-.04182 (.403)	-.18024* (.035)
Total	94	.7615	.3077					
F-Stat	1.364							
Sig.	.246							

Note: * The mean difference is significant at the 0.05 level; ** the mean differences are illustrated above brackets and the significance levels are illustrated between brackets.

reason for this could be the nature of the regulatory environments of the GCC countries where a minimalist approach is being adhered to, leading to variations in the level of regulations in each country. Despite these variations, only the mean differences between Oman and Kuwait, and Oman and the UAE, are significant at the levels of 0.026 and 0.035, respectively. Following this, the UAE, like Oman, has the highest level of Shariah disclosure at 78.53%. This could be attributed to the UAE's progressive technological environment and their efficient usage of technology in reporting their operations. Table 3 presents the multiple comparison of the social performance.

As can be noted, Table 3 shows the multi-comparison post hoc test which differentiates the level of social performance among the GCC countries. The table indicates that the UAE has the highest level of CSR (mean 392.63) while Kuwait has the lowest (mean 78.89). The main reason for this could be traced to the number and size of the IFIs

Table 3: Multiple Comparisons of Social Performance among the GCC Countries

Post Hoc Test for Multiple Comparisons of Shariah Dimension

Country	N	Mean	S.D	KSA	Kuwait	Bahrain	Qatar	Oman
KSA	42	276.82	164.68	–				
Kuwait	6	78.89	85.49	-33.37 (.487)	–			
Bahrain	9	110.05	52.74	-259.63 (.619)	-146.90 (.832)	–		
Qatar	8	240.21	43.52	308.20 (.011)*	219.31 (.002)*	377.09 (.252)	–	
Oman	8	130.76	27.89	-460.54 (.172)	-531.82 (.433)	-241.24 (.594)	-293.86 (.823)	–
UAE	21	392.63	112.45	1580.70 (.000)	866.80 (.000)	825.31 (.000)	1036.47 (.000)	971.71 (.010)
Total	94	119.39	82.14					
F-Stat	12.583							
Sig.	.007							

Note: * The mean difference is significant at the 0.05 level; ** the mean differences are illustrated above brackets and the significance levels are illustrated between brackets.

in each country. Another reason for the significant difference between the UAE and the other GCC countries is the various initiatives and programs developed in the UAE due to the encouragement of its federal government, as a part of their 'National Happiness and Positivity programme'. Based on the official website of the UAE's Ministry of Economy (CSR UAE, n.d.), one such initiative was detected in the 'CSR Smart Platform' which referred to "the nation's smart portal to provide organisations with entry-level access to the details of the initiatives, programmes and projects, and to coordinate active interactions between the State and, primarily, private-sector entities, thereby contributing to the welfare of the UAE's society, nature and environment". Additionally, the government of the UAE shows appreciation to firms contributing to social causes listed on the 'CSR Smart Platform' by honouring those firms with a CSR membership badge. Therefore, this paper recommends that the other GCC countries follow such initiatives which contribute to the performance of firms as well as their overall sustainable development in the long run. Table 4 displays the descriptive statistics for the continuous variables.

Table 4: Descriptive Statistics for the Continuous Variables

Variable	Min.	Max	Mean	S.D
SD	0.220	.8541	.7615	.3077
Social Performance*	2.78	5498.21	119.4	82.14
TQ	.00	18.32	1.0884	3.74875
IFI Size*	6.54	7351754.1	11152.97	194169.8
Leverage	.055	.86	.5329	.4657
AGE	2	50	21.3	16.85
IOW	.14	1.06	.6172	.24519

Note: *Millions.

Based on Table 4, it can be seen that the descriptive statistics highlight the mean of the dependent and independent variables for the sampling year 2017. The mean value of the first dependent variable, social performance, is 119.4 which is a low figure when compared to the size of the total assets. One possible reason for this is that *zakat* (obligatory taxes), and unlawful gains have been excluded from the calculation of the social performance. As both these variables have normality distributions which are skewed, natural logarithm was used in the regression analysis. On the other hand, the mean value of the second dependent variable, Tobin's Q, is 1.0884. As Tobin's Q represents the ratio of the market value of an IFI's share capital to the replacement cost of the IFI's share capital, a mean value greater than 1 indicates that the stocks are overvalued, i.e., the GCC stock markets are selling the assets of the IFIs at a higher price than as stated in the book value. This implies that most of the IFIs are overvalued, relative to their book values.

The mean leverage for the banks is approximately 53%, with a minimum of 5.5%, indicating that banks have somewhat high debts. A maximum of 86% would signify very high debts. This indicates that most of the IFIs assets are financed by debt instruments which support the perception that Shariah-compliant investments are less than customer deposits, thereby overstating the value of assets, and reducing the size of returns, as shown by the performance proxies above.

The age of the IFIs has ranged from two to 50, with a mean of 21.3. Meanwhile, the overall percentage of institutional ownership is 61.72%, making a concentration of ownership in the IFIs. This may lead to a collusion between managers and institutional owners who would be eager to increase their own profits at the expense of shareholders' interests. Finally, the analysis of the discontinuous variables shows that 83% of the IFIs are audited by one of the Big 4 auditing firms; this means higher costs due to higher fees, hence lower profits. The study further conducted a path analysis test as shown in Table 5.

As noted in Table 5, the IFIs were divided into two groups to determine the extent of the differences between the financial institutions, based on the size of their assets. The first group include IFIs which

Table 5: Distribution of Variables Based on the Firm Size

Variables	N	Firm Size		Two independent sample t-test	
		Large	Small	T. test	Sig.
Social Performance	47-47	4405.30	108.87	2.173	.032**
TQ	47-47	1.0326	1.8970	-1.785	.027**
SD	47-47	.7812	.7404	.529	.265
Age	47-47	32.13	20.02	.233	.339
IOW	47-47	.6211	.4387	.280	.338
Audit	47-47	.85	.85	.000	.60

Note: *p<0.05 level, **p<0.1 level.

exceeded the median, and they were labelled as large institutions. The second group include institutions below the median, and they were labelled as small institutions.

The results of the path analysis show that the social performance, i.e., the CSR engagement in larger IFIs is greater than small-sized IFIs. The positive value of the t-test show that larger IFIs tend to have higher social performance than the smaller IFIs. This difference is found to be significant at the 0.032 level. One possible cause for this could be that larger IFIs have an edge over the smaller IFIs by offering a larger menu of financial services, hence mobilising more funds. However, this contradicts the finding made by Wickert, Scherer and Spence (2016) who found that large firms tended to focus on communicating CSR symbolically, but they do less to implement CSR into their core structures and procedures. This also applied to the small firms that had less active communication, hence they placed more emphasis on the CSR implementation. Additionally, the path analysis shows that there is a significant and inverse relationship between Tobin's Q and size, where Tobin's Q in smaller institutions is greater when compared to larger institutions. One possible cause for this could be due to the larger IFIs being more highly leveraged as they rely more on debt instruments when compared to small-size IFIs. This could be due to the lower risks associated with larger IFIs when compared to smaller ones. Based on McConnell and Servaes (1995), market value is negatively correlated with leverage for firms with strong growth opportunities, but is positively correlated with leverage for firms with weak growth opportunities. This is because highly leveraged firms are less likely to exploit valuable growth opportunities as compared to firms with low levels of leverage, thereby reducing their market value. According to Dybvig and Warachka (2015), larger firms with greater total assets usually have more investments, thereby lowering their Tobin's Q. This is because over-investment reduces Tobin's Q rather than increases it.

Further to the above, the path analysis also indicates that larger IFIs have a higher level of Shariah disclosure when compared to their smaller counterparts. This result is expected because larger institutions can afford better resources, and advance technologies to communicate their operations, and financial and social activities with their stakeholders, and potential investors. As for the control variables, the path analysis shows that there is a positive relationship between age and size. One reason for this could be that older and more experienced banks are more attractive to depositors and investors, thereby contributing to an increase in the size of its assets. Lastly, the results shows a positive yet insignificant relationship between institutional ownership and type of audit firm with size.

4.2 Validity and Reliability

Several key tests were undertaken to assess the regression assumptions of multicollinearity, normality, linearity, and homoscedasticity. Table 6 illustrates the Pearson's correlation matrices which measured statistical relationship between the independent and the dependent variables, and to show whether multicollinearity exists among the data before assessing the model.

The analysis indicates that the IFI size and Shariah have the highest correlation (0.745). Other variables are also found to be correlated including IFI size, and social performance. However, since no coefficient exceeded 0.80, it can be assumed that no multicollinearity existed between the variables.

Table 6: Pearson's Correlations Matrix

Variables	SP	TQ	Shariah	IFI Size	LVG	Age	IOW	Audit
SP	1							
TQ	.125 (.114)	1						
Shariah	-.107 (.018)	.047 (.737)	1					
IFI Size	.209* (.007)	-.178 (.064)	-.745 (.392)	1				
LVG	.079 (.248)	.134 (.641)	.267 (.228)	.191 (.273)	1			
Age	-.052 (.533)	-.200 (.379)	.237 (.740)	-.043 (.716)	.195 (.108)	1		
IOW	.190 (.487)	.004 (.868)	-.078 (.457)	.005 (.943)	-.249 (.113)	-.087* (.011)	1	
Audit	-.712 (.743)	-.222 (.391)	-.536 (.816)	-.081 (.727)	.094 (.367)	.164 (.114)	-.077 (.459)	1

Note: * Correlation is significant at the 0.05 level, ** correlation is significant at the 0.01 level.

This study further checked for multicollinearity by conducting the variance inflation factor (VIF) and the tolerance test. The VIF scores are shown in Table 7, indicating that no score exceeds 10 for any variable in the models. Similarly, the tolerance test, which is the inverse of the VIF, suggests that no score is below 0.2. It is, therefore, concluded that no problems are found with regards to collinearity in the model.

Table 7: Collinearity Statistics Test

Model	Tolerance	VIF	Skewness	Kurtosis
SD	0.605	1.652	-1.418	1.240
Lev	0.815	1.227	-.972	-.344
Age	0.846	1.182	.756	-1.002
IOW	0.858	1.167	.300	-.824
IFI Size	0.834	1.199	2.202	3.895
Audit	0.810	1.235	–	–

The above table reports the normality test, where the skewness test and the kurtosis test suggest that all the predictive variables are normally distributed except for firm size. The variable, however, is treated using natural logarithms to transform the data to better fit the normal distribution before conducting the regression analysis. It should be noted that an auto-correlation test was not conducted in this research due to the nature of the data used which are cross-sectional.

To validate the results of the SD index, the Cronbach alpha was used as it measured the internal consistency of the 24-items within the disclosure checklist. The Cronbach alpha is 0.878 (exceeds 0.7), thus indicating that the disclosure index used is reliable. The disclosure index used in the study has been adapted from Wallace (1988) and Al-Sartawi (2016), and is expanded to include a Shariah perspective of disclosure.

4.3 Regression Analysis

Table 8 reports the empirical results of the regression analysis of both the study models. It also shows the coefficients of determination, where the value of the F-statistics for model 1 (social performance) is more than the F-schedule at the confidence level of 95% which is 4.624, with a p-value of less than 0.05. This finding statistically supports the significance of the regression model. On the other hand, model 2 (Tobin's Q) reported

Table 8: Regression Analysis

Variables		Social Performance			Tobin's Q		
		Beta	t	Sig.	Beta	t	Sig.
Independent Variable	Shariah Disclosure	-.276	-2.349	.021*	.020	1.191	.835
Control Variables	Lev	.115	1.467	.129	.056	.767	.482
	Age	.013	.057	.953	-.316	-2.625	.047**
	IOW	.064	0.172	.209	-.033	-.148	.809
	IFI Size	.126	1.383	.116	-.104	-1.394	.228
	Audit Type	-.044	-0.139	.684	-.169	-1.401	.273
		R	R^2	Adj. R^2	F-Stat		Prob. (F)
Model 1:	SP	.363	.146	.070	4.624		0.028*
Model 2:	Tobin's Q	.295	.101	.013	1.317		0.274

Note: **p<0.1 level, *p<0.05 level.

an F-statistics of 1.317 with a p-value of more than 0.05, thus model 2 is considered as not significant.

Focussing on model 1, the hypothesis testing of H_1 shows that the Shariah disclosure has a negative and significant relationship with social performance. One reason for the low level of CSR engagement by IFIs as reported in the descriptive analysis is the exclusion of the unlawful gains and obligatory taxes such as *zakat* since this study only included the voluntary charities and donations. Next, according to the opponents of the CSR, being socially active by engaging in charity projects, supporting and promoting staff welfare, and minimising environmental damage can be expensive, thereby elevating administrative burden (Platonova, Asutay, Dixon, & Mohammad, 2018). It is argued that CSR activities create financial burdens for corporations, and with high levels of disclosure there is a trade-off between the two since both are costly for IFIs as supported by Friedman (2007), and Perrini et al. (2011). As for the remaining control variables, this study found no association between IFI age, institutional ownership, IFI size and audit type with social performance.

On the other hand, model 2 reported a positive and insignificant relationship between Shariah disclosure and Tobin's Q. As Shariah disclosure provides a timely and relevant information regarding the IFIs' operations and financing activities to stakeholders, it is expected that the perception of investors would be affected. According to Abdel-Azim and Abdelmoniem (2015), the more transparent the disclosure, the lower the information asymmetry and the higher the premium allocated to the firm. This in turn increases the value of Tobin's Q and the firm. Likewise, DeMarzo and Duffie (1991) claimed that the lower the level of disclosure, the lower the value of Tobin's Q. Despite this significant relationship between Shariah disclosure and Tobin's Q, this study failed to find an association with the other dimensions. Regarding the control variables, this study found a positive and significant relationship between IFI age and Tobin's Q. The possibility for this could be due to the older and larger firms having a greater market value as a result of their vast experience and their availability of resources. Consequently, we can deduce that the level of Shariah disclosure by the GCC Islamic banks has a negative and significant relationship with social performance while the level of Shariah disclosure has a positive yet insignificant relationship with Tobin's Q. Accordingly, Figure 1 illustrates the conceptual framework summarising the findings based on hypotheses and variables.

5. Conclusion and Implications

The preceding empirical analysis allows us to understand the relationship between Shariah disclosure (SD) and performance of the listed Islamic financial institutions (IFIs) in the GCC stock exchanges. Two indicators were used to measure the dependent variables, social performance (CSR engagement) and Tobin's Q (market value). As for Shariah disclosure, this study expanded on the disclosure index proposed by Wallace (1988) and Al-Sartawi (2016) by including the Islamic perspective of disclosure. This study also used the content analysis approach for analysis by developing a checklist (see Appendix 1) to gauge the level of Shariah disclosure. This was based on the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI) and the Bank Negara Malaysia (BNM) standards of Shariah Supervisory Boards (SSBs).

The results indicate that the level of the Shariah disclosure made by the GCC IFIs is 76.15%. Based on this, it can be concluded that the Islamic banks listed in the GCC countries stock exchanges present a good level of SD (more than 50%), based on Wallace's (1988) index disclosure classification. This study thus concludes that there is a negative and significant relationship between the Shariah disclosure

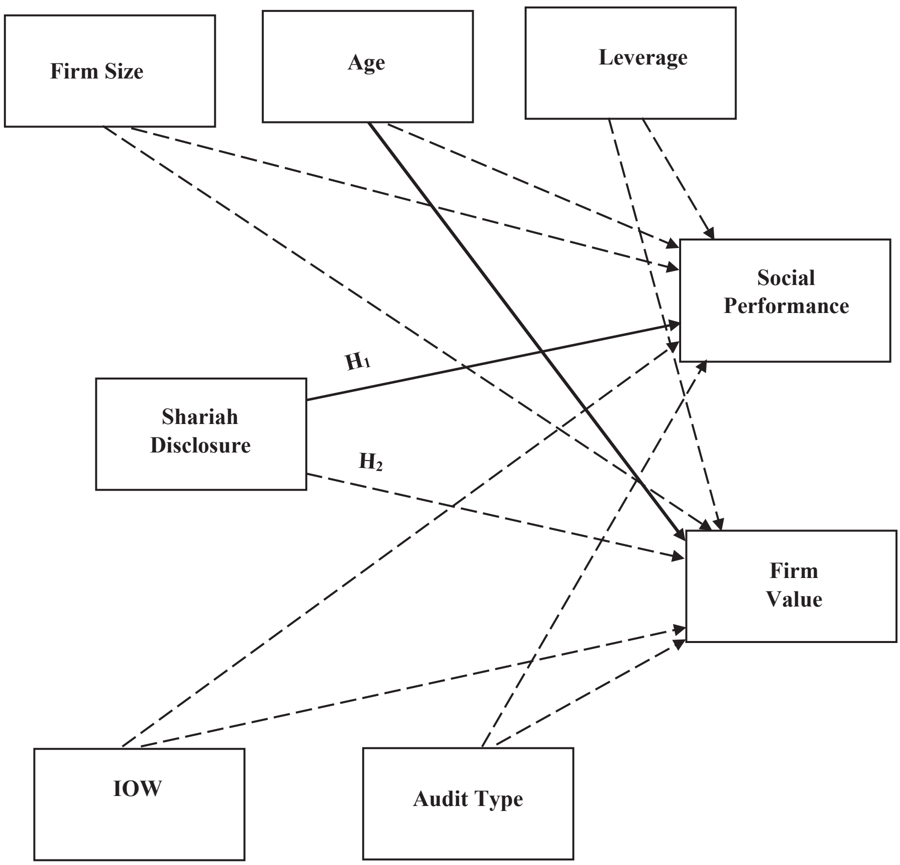

Figure 1: Conceptual Framework Findings
Note: ⟶ Accept – – – → Reject

and social performance, whereas there is a positive and insignificant relationship between the Shariah disclosure (content dimension) and Tobin's Q. This outcome could be attributed to the varying regulatory standards adopted by each GCC country.

The current study thus extends on previous studies conducted in the GCC countries by developing a new Shariah disclosure index and by considering Tobin's Q as a performance indicator, thereby offering a marketing perspective to view the same issue. In this regard, the current study provides new contributions pertaining to Islamic financing and disclosure to the literature. Additionally, this study also provides empirical evidence to interested parties of Islamic banking industry such as users, preparers, regulators and researchers within the GCC countries, with regards to the importance and benefits of Shariah disclosure. Clearly, Shariah disclosure can enhance IFI performance as well as maintain the rights of shareholders.

Although the GCC regulatory bodies have established a number of Shariah standards, different interpretations of the religious texts, and the minimalist implementation means that a variation exist in the levels of disclosure which could have an insignificant impact on performance. Accordingly, the research also recommends that the GCC regulatory bodies develop a set of standardised guidelines to harmonise disclosure practices since the level of Shariah disclosure varies among the IFIs and countries. This study also finds that larger banks disclosed more information as compared to smaller firms, hence corporate disclosure practices should be followed by all firms no matter their size.

Based on the negative relationship noted between Shariah disclosure and social performance, it is vital to implement CSR standards as a mandatory policy for the IFIs. Doing so would enhance their social performance and deliver a higher level of Shariah disclosure. Accordingly, by entrenching CSR practices into the working of IFIs could generate positive contributions to the social good of the Islamic society, thereby assisting them in fulfilling justice and equality, in lieu of the Islamic concepts.

The conduct of this study is in line with that of Platonova et al. (2018) in the sense that by maintaining a good CSR policy, the IFIs could cope with possible reputation-damaging events, and the external negative news they may receive in the future. This can protect their profits and financial results. Therefore, having a comprehensive socially responsible agenda could assist Islamic banks in generating valuable goodwill that will safeguard them from unexpected challenges and also give them access to new projects that are not available for companies with less CSR incentives.

The limitation of this study lies with the related sample size, which can be addressed by future studies. Nonetheless, 94 selected IFIs disclosing items that encompass Shariah compliance should provide a reasonable degree of generality regarding the findings. Since the findings are confined to the GCC listed IFIs only, future studies could empirically extend on this study to the Middle East and North African region and Southeast Asia, where IFIs prevail.

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Appendix

Shariah Disclosure Index

	SD Index
	Shariah dimension
1	Disclose about Shariah Review Unit or Shariah Department.
2	Clearly specify the role of the Shariah board.
3	Disclose the number of Shariah committee members.
4	Disclose Shariah committee qualifications, experience and knowledge.
5	Disclose members nationalities.
6	Disclose the Shariah Audit report.
7	Disclose the time of Shariah Review.
8	Disclose information about the Shariah Risk Management.
9	Disclose information about the Shariah Research Function.
10	Disclose Shariah decisions to relevant stakeholders.
11	Disclose information about the Shariah duties, responsibilities, functions and appointment.
12	Disclose information about the AAOIFI Governance standards they are following.
13	Shariah board independence.
14	Disclose policies in relation to appointments and dismissals of the Shariah board.
15	Shariah review is conducted by qualified independent body.
16	Shariah report tracking unlawful gains and profits.
17	Disclose about any conflict of interest.
18	Disclose the frequency of Shariah board meetings.
19	Disclose about the members of Shariah Committee who serve in board.
20	Frequency of Shariah reports.
21	Disclosure of attendance of every Shariah Committee member.
22	Percentage of attending meetings by the members.
23	Chairman of the Shariah Committee qualification and background.
24	Information about the Shariah controller.

Institutionalising 'High Performance Culture' in AirSub

Zubir Azhar*

ABSTRACT

Manuscript type: Research paper
Research aims: This longitudinal case study aims to analyse the process of change involving the institutionalisation of the 'high performance culture' (HPC) in one subsidiary of a Malaysian government-linked company (GLC) which had recently undertaken a business re-engineering exercise to improve its financial performance. Specifically, this study analyses the institutionalisation of the HPC by relating to the role of performance measures in influencing the process of change.
Design/Methodology/Approach: This study draws on institutional theory and institutional analysis to examine the process of institutionalising the HPC in the subsidiary. It also looks at the unfolding organisational responses towards sustaining legitimacy in view of the subsidiary's hierarchical complexity.
Research findings: The business re-engineering exercise undertaken by the subsidiary is aimed at promoting the HPC in relation to improving its financial performance. It appears to have legitimised institutional relationships with various stakeholders. While this promotion appears to correspond well with the commercial and technical objectives that drove its aviation-based business financially, there seemed to be more discourses related to its past role in rendering public services.
Theoretical contribution/Originality: This study contributes to the understanding of legitimacy at the organisational level. It highlights the importance of preventing the legitimacy from being challenged

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by any single source of pressure which appears to be competing with other pressures.

Practitioner/Policy implication: Although the HPC has shifted the orientation of the subsidiary from being largely concerned with technical operations to commercial activities, emphasis on the importance of financial performance (measures) has not fully shifted. Thus, there is a need for business managers (including accountants) to appreciate business complexities when making informed decisions, by leveraging on appropriate performance measures that would consequently impact on organisational performance.

Research limitation/Implications: This study has only analysed one subsidiary of a GLC, hence the findings of this study cannot be generalised to other subsidiaries.

Keywords: Business re-engineering, High Performance Culture, Institutional Theory, Subsidiary Setting, Government-linked Companies, Malaysia

JEL Classification: M14, M41

1. Introduction

Business re-engineering is an area that has received considerable attention and interest from researchers (e.g., Eke & Achilike, 2014; Sarkis & Sundarraj, 2015; Hillon & Mele, 2017). A particular focus of business re-engineering is an organisation's struggle towards sustaining business operations and achieving better performance (Gomes, Najjar, & Yasin, 2018). Such a challenge is further fuelled by today's dynamics and challenges characterised by the significant, fast-moving changes of the business world. The dynamic and challenging technological advancements and the rapidly evolving business regulations exert some forms of pressure on organisations to respond and to adapt so as to remain relevant. As a result, many organisations choose to redefine (or revisit) their existing business models and/or practices (Heusinkveld, Benders, & Hillebrand, 2013). Such redefinitions or revisits are termed as business re-engineering (Grover & Malhotra, 1997; Al-Mashari & Zairi, 2000; Eke & Achilike, 2014).

Research on business re-engineering within organisations, especially in relation to institutional pressures for business organisations to be high performing, is rather limited. Consequently, little is known about the unfolding changes and the sort of organisational struggles attributable to business re-engineering which contribute to better business performances. What the literature has postulated is that business re-engineering is associated with massive and/or complex changes (Sarkis & Sundarraj, 2015; Hillon & Mele, 2017). Such changes are not straightforward and they do not necessarily exemplify explicit effects. In many instances, they act as proxies for business re-engineering exercises, appearing to 'improve business performance' or to 'be high performing' (Wriston, 2007; Champy, 2018). Given that business re-engineering is a form of improvement initiative, those changes are impactful to business organisations (Sarkis & Sundarraj, 2015; Champy, 2018). Hence, there is a need to unravel its effects on how organisations institutionalise the idea of being high performing.

In the context of Malaysia, business re-engineering has been very much associated with government-linked companies (GLCs). Most GLCs' performance became a national issue because these organisations became underperforming upon privatisation. Alternatively, they became less competitive when compared to other market players in the country or other state-owned enterprises of neighbouring countries (Mokhtar, 2004; PCG, 2006; 2015). Indeed, there have been many claims that GLCs generally experience problems such as internal control conflicts, weak strategic directions, low productivity, high gearing ratio, inefficient procurement practices and poor business performances (Mokhtar, 2004; PCG, 2006; 2015). The re-engineering programme introduced by the Malaysian government is known as the GLC Transformation Programme in the mid-2000s (PCG, 2015). Interestingly, the coverage of this programme transcended the entire GLCs' business components, encompassing mainly subsidiaries and/or business units.

In view of the above, this study attempts to examine one subsidiary of a GLC in Malaysia (disguised as AirSub). It had recently undertaken a business re-engineering exercise which was influenced by the parent company's broader re-engineering exercise. The re-engineering exercise aims to reinforce the financial and non-financial performance of the group by introducing the 'high performance culture' (HPC). Such reinforcement appears to have some important implications on how AirSub responded to the changes arising from the business re-engineering. Drawing on this overview, the current study aims to provide an understanding on how AirSub institutionalised the concept of the HPC, given that it is regarded as a means for obtaining legitimacy.

The re-engineering exercise of AirSub appears to be an organisational response towards the HPC which aims at stimulating the subsidiary's efforts into undertaking more rigorous commercial changes.

This response might be regarded as important and significant. However, there appears to be some unclear links between the broader institutional pressures coming from the parent company's relationships with the government (in view of its 'GLC status') and the need for AirSub to shift from its operation-based concept to the commercial-based idea. This is because the unfolding changes resulting from the business re-engineering exercise was part of an effort to sustain its legitimacy as a 'relevant' subsidiary to the group (i.e. by being profitable). In addition, the reinforcement of the HPC within AirSub remains unclear. Therefore, this study aims to understand the process AirSub has taken in institutionalising the HPC concept, following the business re-engineering exercise. The issues which the current study attempts to address are threefold: (i) the process of institutionalising the HPC in AirSub, (ii) the role of performance measures in institutionalising the HPC in AirSub, and (iii) the responses of AirSub towards the multiple pressures to prevent legitimacy from being challenged. Following the above aim, the research questions to be addressed are:

a) How has the institutionalisation of the HPC unfolded in AirSub?
b) What was the role of the performance measures in institutionalising the HPC in AirSub?
c) How and why did AirSub respond to the multiple pressures in its struggle to sustain legitimacy?

The major concerns of this study are the process of change (within the scope of business re-engineering which led to the institutionalisation of the HPC in AirSub), and the ways in which different groups of organisational actors within this subsidiary responded to the business re-engineering which instigated the changes. In addressing such concerns, this study has adopted institutional theory with a particular reference to the concept of legitimacy that underpinned (or rather influenced) AirSub's institutional relationships with various stakeholders. A special reference is made to the hierarchical complexity of the subsidiary's business model, which was caused by business re-engineering, in addition to its existing business activities. To bring together insights from business re-engineering and management accounting studies so as to position them within the discussion of legitimacy issues, this paper draws on the recent institutional analysis emerging from institutional theory. The adoption of such an analysis and theory can explain the change processes, specifically the institutionalisation of the HPC and the organisational responses towards sustaining legitimacy in AirSub.

Many studies have adopted institutional analysis and institutional theory to understand how institutional environments condition organisations, and how the institutionalisation of certain business practices (which emerged as a response to institutional pressures) unfold in a given environment (Yazdifar, Zaman, Tsamenyi, & Askarany, 2008; Goretzki, Strauss, & Weber, 2013; Chiwamit, Modell, & Yang, 2014). These studies use institutional theory as a guide to explore how organisations operate and internalise business systems and practices in response to change (DiMaggio & Powell, 1983) within their respective environments (Covaleski & Dirsmith, 1988). The next two sections present the literature review and the theoretical framework that are relevant to this study.

2. Literature Review and Hypotheses

2.1 Business Re-engineering

Business re-engineering has become increasingly important in the business domain as a result of the new economic era of knowledge and technology (Heusinkveld & Visscher, 2012; Heusinkveld et al., 2013). Although business re-engineering has been interpreted in various ways to suit the importance and relevance of such an era, its core element remains the same, i.e., to redesign existing business practices substantially. In general, business re-engineering involves a substantial level of business redesigning which aims to establish business capabilities and to achieve a significant increase in business performances (Al-Mashari & Zairi, 2000; Champy 2018). Regarded as a change initiative, it transforms a particular business process or a group of processes into spectacular improvements in their business performance. It is not uncommon for business re-engineering to be viewed as a performance improvement initiative which redesigns the business processes of an organisation by excluding those processes that do not add value (Grover & Malhotra, 1997; Gandolfi, 2010; Hillon & Mele, 2017).

2.2 Business Re-engineering and Performance Measures

In most business re-engineering exercises, performance measures (or targets) have been leveraged. They serve as control mechanisms (Al-Mashari & Zairi, 2000; Heusinkveld et al., 2013) for these organisations to achieve the intended change initiative's objectives as well as the overall business objectives. Performance measures could influence the organisation's key decisions in implementing change in areas which so require. Such influence could be exerted through the provision of relevant information for decision-making (Hopwood, 1990; Otley, 1999; Jørgensen & Messner, 2010; Hall, 2010). The same influence can also provide useful information through activity-based performance analysis and cost-benefit analysis (Bhimani & Bromwich, 2010; Bhimani & Willcocks, 2014). This information can be used to stimulate an understanding of the change by indicating the necessary actions that need to be taken. As Altinkemer, Ozcelik and Ozdemir (2011) argued, such provisions are vital for fixing and improving business performance.

2.3 Pressures, Organisational Change and Business Approval

Given that business performance is subjected to significant pressures and challenges, many organisations have been considering a more holistic change approach as a step towards stimulating their business performance (Ozcelik, 2010; Altinkemer et al., 2011), and also to achieve and/or sustain 'approval' from their key stakeholders. The concept of 'business approval' offers a rich and coherent explanation on how organisations respond to the dynamic business environments, particularly in the presence of multiple pressures. As argued in the literature (Seo & Creed, 2002), the multiplicity of business pressures can lead to different forms of expectations which ultimately shape or influence 'business approval' (Modell, 2009; 2019).

The literature has also reported that business pressures can give rise to change (Modell, 2019). Such a change may be constructed through the influence of business pressures which shaped particular organisational actions, hereby termed as organisational responses (Durand, Hown, & Ioannou, 2019). While such responses may lead to positive or negative outcomes transpired through 'business approvals' or otherwise, the change may continue to evolve based on circumstances. Indeed, organisational responses to change depend on many factors, such as the availability of resources and organisational capabilities and competencies (Chiwamit et al., 2014). These factors can provide a basis for discussing how organisations respond to internal and external pressures that give rise to change. Apparently, such change is expected to bring prosperity to the business in terms of improved financial performance (Champy, 2018).

2.4 Culture of High Performance

It is not uncommon for organisations to have an inclination towards continuously achieving a significant increase in business performance (Jørgensen & Messner, 2010; Hillon & Mele, 2017; Champy, 2018). While some organisations appear to pursue actions that appeal to short-term performance improvements, other organisations find themselves more aligned with the long-term performance enhancements (Wriston, 2007). Nevertheless, many authors have argued that achieving long-term business performance is the main aim of today's business organisations (e.g. Champy, 2018). Regardless of whether it is short-term or long-term performance improvements, setting the right culture within the organisation is important as this enables the business organisation to experience a steady business growth (Altinkemer et al., 2011), and business stability (Sarkis & Sundarraj, 2015).

The literature has recognised that business organisations need to create a culture of high performance so as to achieve superior business results (Wriston, 2007; Gandolfi, 2010). An organisation's failure to develop this culture has been associated with organisational mediocrity and bankruptcy (Wriston, 2007; Hillon & Mele, 2017). Nonetheless, a culture of high performance takes many forms. Some organisations focus on customers while others focus on business processes. Under most general circumstances, organisations tend to strive for business sustainability by maintaining their business performance (Champy, 2018). Hence, instilling a culture of high performance should be viewed as a goal which should then direct organisations towards business sustainability.

2.5 Theoretical Framework: Institutional Theory

One of the issues highlighted by institutional theory is legitimacy (Suddaby, Bitektine, & Haack, 2017; Boxenbaum & Jonsson, 2017; He & Wilkins, 2018; Modell, 2019). Past studies (as noted above) had examined how organisations obtained their legitimacy (or 'business approval'). There have been arguments that organisations obtained legitimacy through the establishment of institutional relationships with various stakeholders by conforming to certain institutional expectations (Seo & Creed, 2002). For example, Covaleski and Dirsmith (1988) and Yazdifar et al. (2008) reported that organisations secure legitimacy from external stakeholders who provided resources by conforming to particular business systems and practices.

Nevertheless, given that organisations co-exist within the social, cultural and political environment (Carruthers, 1995; Gamage & Gooneratne, 2017), they do not necessarily follow the economic imperatives of efficiency. Instead, they are surrounded by various pressures for legitimacy. Arguably, legitimacy is not obtained automatically by merely acting rationally and striving towards economic efficiency. Rather, legitimacy is obtained through conformity to certain institutional environments that are relevant to specific contexts. Due to the importance of legitimacy for business sustenance and business survival, organisations tend to obtain legitimacy by adopting particular sets of business practices.

Whatever practices that these organisations choose to adopt in their pursuit for legitimacy, institutionalisation may happen initially, although such practices may be exposed to, and are influenced by, change at a later stage (Modell, 2009; Boxenbaum & Jonsson, 2017; Powell & Oberg, 2017), partly because the institutional environment is assumed to be dynamic (Modell, 2009). Over time, new practices may emerge as a part of the dynamism or the presence of new pressures. While the new institutionalised practices may continuously challenge the existing institutionalised practices, thereby putting pressures on organisations, there is often an elusive effort or power to resist change. It is this kind of resistance that creates clashes between the different institutions which then challenge the concept of legitimacy (Kostova, Roth, & Dacin, 2008; Boxenbaum & Jonsson, 2017; Modell, 2019). Thus, institutional theory was applied as the framework for explaining how organisations obtain legitimacy by conforming to institutional pressures (Suddaby et al., 2017; Modell, 2019).

The above overview on legitimacy can be related to the recent Malaysian government's effort to improve the GLCs' (and their networks) performance. In the mid-2000s, the government had introduced a business re-engineering programme that called for GLCs to improve their business performance by enhancing their business processes and practices so as to contribute to the national economy. As a subsidiary of a GLC that had undertaken a strategic business of national importance, AirSub responded to the government's call by developing its own business re-engineering programme. Such a programme was aimed at redesigning the airport-related services and business practices, hence improving the company's financial performance. These aims were mobilised through the notion of the HPC which served as a push factor for ensuring business sustainability through greater performance. By using Air-Sub as a case study, the current paper attempts to unravel the institutionalisation process of the HPC within AirSub.

3. Data and Methodology

This study aims to answer the three key research questions as stated in the introduction. A qualitative approach was applied in this study for two main reasons: 1) the complexity and depth of issues associated with institutional change at the subsidiary level which emerged from the broader institutional change at the parent company’s level, and 2) the need to explain the unfolding process of change (as a result of the re-engineering exercise). In order to explain the unfolding change process, it is necessary to briefly interpret the structural context of AirSub. This would enable us to better understand the change process and to reflect on the realities experienced by the individuals (and/or groups) in different circumstances (Lincoln & Guba, 1985; 2000).

Data were collected at both the field level and within AirSub between 2011 and 2017. The period was deemed relevant and crucial given that it reflected the re-engineering exercise and the institutionalisation of the HPC which unfolded in AirSub. Apart from the documentation reviews and observations conducted, the study was also triangulated through semi-structured interviews and extended discussions with key informants.

The snowballing approach was utilised, beginning with the interview of a key official who was heavily involved in the re-engineering exercise. Following this, a total of eight participants were recruited, involving AirSub’s senior managers, executives, financial controllers and administrators. Due to the important linkage which AirSub had with external stakeholders, the interview was further extended to encompass three representatives from AirSub’s parent company. This extension was suggested by those who had participated in the earlier interview, hence a total of 12 interviews were conducted. Table 1 summarises the list of interviewees and their responses.

Access was facilitated by a previous research project which was undertaken at a much broader level (involving those of various positions in the parent company, the Ministry of Transport Malaysia and other subsidiaries). The interviews were conducted based on a set of semi-structured questions. The aim was to enable the interviewees to broach on the subject first before giving their own comments in an unlimited manner. This helped to uncover some important themes and adequate

Table 1: List of Interviewees and Key Interview Responses

Participant	Position	Responses
1	General Manager	Airport background and strategic direction
2	Financial Controller 1	Financial matters
3	Financial Controller 2	Financial matters
4	Senior Manager – Airport 1	Airport operations (international)
5	Airport Manager – Airport 2	Airport operations (domestic)
6	Executive (CDT)	Commercial development
7	Senior Executive 1 (RMO)	Re-engineering exercise
8	Administrator 1 (AirSub)	Airport operations
9	Administrator 2 (AirSub)	Airport operations
10	Parent Company's Representative 1	Strategic direction
11	Parent Company's Representative 2	Parent-subsidiary relationships
12	Parent Company's Representative 3	Parent-subsidiary relationships

details. All the interviews conducted inside AirSub were voice recorded (with consent), and transcribed using the verbatim approach. However, elsewhere (i.e. outside of AirSub), some of the interviews and extended discussions were only manually noted per the interviewees' request. The notes were then transcribed into extensive extractions instantly.

The interview data were thematically analysed so as to understand how the participants or actors in AirSub translated the broader aspect of the HPC in their subsidiary setting, and how they coped with the changes caused by business re-engineering. Institutional theory and the interpretive approach used for analysing qualitative data necessitated the need to reiteratively analyse the interview data, the documentation reviews and relevant literature so that appropriate themes can be developed (Mason, 2017). The reliability of the findings derived from this study was enhanced through several procedures, such as the interview protocol, the recordings of the interviews, and the feed-back derived from the transcriptions of participants as per Silverman's (2017) suggestions. The main ethical considerations associated with this study include: 1) participants' informed consent, 2) confidentiality, and 3) potential harm to the participants. Consent was also obtained from the parent company and the subsidiary as well as the respective individuals during the fieldwork. All parties were informed about the research background and objectives, and how the interviews would be conducted.

The research methods highlighted above not only enabled the researcher to observe the organisational actors' involvement in the re-engineering exercise and the way in which the institutionalisation of the HPC occurred, it also enabled the researcher to gain an understanding of the organisational responses to the multiple pressures, within the context of a subsidiary of the Malaysian GLC.

3.1 Organisational Background of AirSub

AirSub was incorporated as a subsidiary of one specific GLC in 1993 through corporatisation. Following this, the same subsidiary was deemed to have moved from the traditional public service era to a more commercially oriented business entity. Since then, it had assumed the responsibility of operating and maintaining most airports (both domestic and international) throughout Malaysia by leveraging on the fixed assets and liabilities as well as the workforce inherited from the previous public service era. Although these airports supported different objectives and played different roles, their shared objectives were as follows: to ensure the safety and security of airport operations, to be able to meet diverse customers' expectations, and to comply with the regulatory requirements of the international and local authorities.

AirSub was also responsible for discharging the public service's commitment by providing aviation services to: 1) major Malaysian cities (which concerned stimulating their economic development and meeting increasing travel demands); and 2) geographically disadvantaged areas (by connecting remote places that were inaccessible through other public transport services). The subsidiary divided the airports geographically into several local regions, which varied not just in number, but also in terms of size and importance. There was a hub airport in each region, with each hub being responsible for the basic procedural management of the regional airports.

The AirSub subsidiary was headed by a general manager who was assisted by some experienced senior managers of different capacities. This subsidiary derived its revenues from three main sources: operations, commercial activities, and other revenues including car rental operations. Of these three sources, the revenue related to the aeronautical operations contributed the most to AirSub's overall business performance. This revenue was dependent on the passengers and cargo's demands, the national (and international) economic growth, personal incomes, airfares, and the service quality of airports.

4. Results and Discussion

The research findings begin with the business re-engineering programme that was introduced by the parent company. This leads to the way in which the HPC was interpreted in AirSub, that is, how it shaped its re-engineering exercise.

4.1 Business Re-engineering Exercise in AirSub

AirSub's business re-engineering was stimulated by the government's pressure to improve its parent company's business performance. AirSub was expected to improve its financial prospects not only for business sustainability, but also for enhancing the group's value. A business re-engineering unit (disguised as Re-engineering Management Office (RMO)) was responsible for facilitating AirSub's re-engineering programme which involved a number of systematic and formalised change initiatives.

Prior to the re-engineering, different categories of the airports pursued different business strategies. While international airports followed a largely commercial strategy due to a high record of passengers and their strategic locations (close to major cities), domestic airports had practised a cost-saving strategy due to their geographically disadvantaged locations. Consequently, financial performance was measured in terms of 'profitability' or 'cost saving'.

Following the establishment of the Commercial Development Team (CDT) in 2008, AirSub extended its commercial strategy by encompassing international airports. The AirSub team was responsible for developing various commercial activities throughout the airport networks. Through a focussed commercial role played by the CDT, AirSub also organised many 'public events' at major airports (both domestic and international) as a measure to encourage more business activities.

As a result, AirSub shifted its orientation from being largely concerned with airport operations to focussing on commercial activities not just for the international airports, but also certain domestic airports.

Such orientations had encouraged the different types of airports to engage more intensively in commercial activities. This was stated by a domestic airport manager:

> *We've given serious thoughts on how we can improve economic performance. The only solution that we can think of is to rely more on commercial activities rather than exclusively on the aeronautical operations. We're trying hard to negotiate with outsiders … asking them to set up their businesses here so that we can generate more money from commercial activities. (Participant 5)*

The shift in the business orientations was important for AirSub as it helped the subsidiary to meet the parent company's expectations in its performance improvement. This process was achieved through more intensive commercial undertakings. AirSub implemented these initiatives at various airports according to specific 'commercial models' designed by the CDT. Consequently, the commercial operations engaged by AirSub increased revenues. While the operations seemed straightforward and feasibly acceptable by AirSub, the business re-engineering exercise in itself was indeed complex; it was very much shaped by the financial performance measures propagated by the notion of the HPC.

4.2 Institutionalisation of the HPC in AirSub

As an airport operator, AirSub placed significant emphasis on its core operations of maintaining and operating Malaysian airports throughout the country. AirSub also recognised the importance of commercial activities for improving its financial performance which was the ultimate aim of the HPC. Nonetheless, it appears that the overall effect of the commercial initiatives on the business performance of AirSub had been relatively insignificant because AirSub was responsible for operating a large number of unprofitable airports. Although AirSub expected each airport to minimise its operating costs and to maximise profitability wherever possible, the maintenance of the airports involved a considerable amount of money. AirSub had to comply with various requirements involving a large number of airports as imposed by the airport regulators. Many interviewees also indicated that AirSub emphasised technical efficiency which was pivotal to its very existence as an airport operator and to its profitability. As an airport manager noted:

> *Being an airport operator, one thing that matters is to be technically sound. If you don't have this, you are gone … bye-bye. (Participant 4)*

Nevertheless, to improve profitability, AirSub could not depend exclusively on technical efficiency. Instead, it must also become actively involved in commercial activities. The strongly embedded public service commitment within AirSub, however, had constrained it from achieving the desired profitability. This had affected the process of institutionalising the HPC. AirSub is a subsidiary with a large number of people, especially those from the domestic airports due to its privatisation. As such, their way of thinking and doing things seemed to carry remnants of the public service commitment which was not beneficial to AirSub. This was commented by one domestic airport staff:

> *Well, everybody is aware that AirSub is operating many unprofitable airports. I don't think we can break this 'tradition'. We have to accept the fact that there's nothing much we can do to make them profitable. We just need to stick to what we're responsible for. This has become a part of our 'blood'. If we can make money out of it, that is a bonus. But we don't have to push too hard to meet the targets. This [profitability] is not our priority. So, it's okay if we don't achieve these targets. Anyway, commercial activities should be under the CDT's responsibility … not us. (Participant 9)*

In this regard, the institutionalisation of the HPC in AirSub tended to address issues concerning technical efficiency rather than economic performance, as expressed by one senior executive of the RMO:

> *In AirSub, there are many improvements in the operational performance rather than in economic performance. We've managed to reduce the number of lost baggage incidents. We've also received fewer complaints from passengers about the facilities that we provide at airports [e.g., toilets and waiting seats]. However, I don't really see any significant financial improvements in AirSub. Yes, international airports are improving; but the majority of the domestic airports are not really progressing [well]. (Participant 7)*

The above comment illustrates the feedback of some managers' understanding that failure to comply with the aviation rules and regulations would have severe implications, as explained by one interviewee:

> *Operating an airport is never an easy job. We have to observe many aviation requirements. For example, if our airports are not safe people might rate our airports as poor… [Consequently] no international airlines would want to fly here. So how do we make money then? The*

[International Civil Aviation Organisation] ICAO's reports are really crucial. In order to get 'clean reports', we need to comply with every bit of the technical requirements. (Participant 4)

4.2.1 The Role of Performance Measures in Institutionalising the HPC in AirSub

In the process of institutionalising the HPC in AirSub, it was noted that performance measures played a significant role. This can be seen in a number of instances where certain core business areas were measured. This observation was also noted by one domestic airport manager explaining how technical efficiency was measured in AirSub:

Our performance is measured in terms of whether we operate airports in accordance with the aviation rules and regulations. We have to comply with certain standards. If we do that well, we can consider that we've met our company's objectives. (Participant 5)

Based on the comments provided, it can be deduced that AirSub gave much more emphasis in its compliance with the aviation regulations (non-financial) than to commercialism (financial). Linked to this is the fact that certain airports did not show any likelihood of being profitable due to the geographical factors indicated earlier. Nonetheless, this did not mean that AirSub ignored the economic performance of the airports it maintained, as explained by one senior manager:

There are many things that can affect us … mostly beyond our control. Anyway, it's impossible to have control over everything. So, we should prioritise our focus. At the moment, we still give a high priority to technical [aspects], although profitability is still important. There's nothing much we can do to improve our profits except that we can try our best to be persistent with the cost reduction [strategy] wherever possible … and of course we pursue the profit maximisation [strategy] as much as we can. But still, so far, we've only managed to improve our performance by pursuing a profit maximisation strategy through many commercial activities, such as rentals, advertisements and so forth, in only a few airports, including the selected domestic airports … but not all. (Participant 4)

From the evidence provided, it appears that the international airports had paid serious attention to the financial measures whereas the domestic airports tended to view the financial measures less importantly. Despite this, there were many improvements that had emerged in the domestic airports following the introduction of the HPC. This was highlighted by an interviewee from the RMO:

Since we keep on emphasising the importance of performance, we can see that they've made some changes. One important change that really impressed me was the one that they achieved through the 'turnaround strategy'. They've turned those unused offices into commercial units. And their financial performance has improved [since] that year [2010]. (Participant 7)

The notion of the HPC had caused the organisational actors in AirSub to recognise the importance of financial performance, as noted by the General Manager of AirSub:

Most people here are aware of the importance of profits and the impact that profits can have on their individual performance. For example, they can get higher bonuses if they meet the financial targets. (Participant 1)

From the interview, it was further noted that some interviewees placed importance on improving the financial performance, and for sustaining and expanding AirSub's business operations in the future. This was observed by an administrator:

I believe that the more profits we make the better we become and the longer we can remain [and be relevant] in this business. Even if we want to expand our business, there shouldn't be any problem for us to do so. Indeed, this will bring more profits into our company. (Participant 9)

Nevertheless, as already indicated, the emphasis on the importance of financial performance was not a characteristic of the public sector, and this seemed to prevail even after privatisation. The bureaucracy involved in AirSub was noted by one senior manager:

We used to give instructions to our people to follow … and they followed. This was how we structured our people. If there were problems, they had to report to us. There were always many lines of reporting that they had to use. Yes, this sort of culture is still preserved until today. (Participant 4)

Although many people from the pre-privatisation era had retired, resigned or relocated, the changes taking place within AirSub seemed inconsequential mainly because of the strong embedded norms and values left by the previous system of the public sector. These norms and values were mainly passive, and they conflicted with some of the change initiatives introduced by privatisation. The organisation's neglect of, and its lack of responses to the change initiatives not only slowed down the change process; it had also resulted in a very small shift in the attitude of thinking and doing things. This was observed to be the case in the people working in AirSub. Consequently, the notion of the HPC was deliberately avoided by large groups of the staff, particularly those attached to the domestic airports. This was explained by one domestic airport manager:

> *I think we're not ready for this [improvement] idea yet… particularly to improve our performance commercially. To be honest, I don't see the point of pushing towards this [commercial] direction to our airport. Our top management is aware that there's nothing much we can do to be profitable. The most we can do is to minimise the cost. That's all. I think the international airports may well apply this idea because they're profitable… not a domestic airport like this one. That's why we can only consider the cost saving approach. (Participant 5)*

From the above quote, one can infer that the commercially oriented approach promoted by the HPC was 'unattractive' to some organisational actors, as exhibited through the language used by the participants. Alternatively, as a subsidiary, AirSub seemed more passionate with technical efficiency which emphasised on compliance with formal security and technical requirements imposed by the aviation regulators. This outcome was consistent with the underlying structure of the operational (technical) language used in the operating airports. Nonetheless, the CDT, which was responsible for commercial activities, had taken on the commercial development role in AirSub. This was emphasised by the CDT's executive:

> *Our role is to take care of commercial matters in AirSub as we represent the group's aspiration to increase commercial revenues. And for this reason, we liaise more with people in the international airports to make use of every commercial possibility that can ultimately meet this aspiration. (Participant 6)*

From the evidence noted, it can be deduced that different groups of people dealt with technical efficiency and commercialism respectively, thereby leading to the different interpretations of the HPC within AirSub. While the operational (technical) people regarded the HPC as an option for promoting operational efficiency, members of the CDT and people at the international airports regarded the HPC as an alternative for promoting commercialism which would improve financial performance. Nevertheless, in this study, it was generally observed that the institutionalisation of the HPC in AirSub was happening in a smooth manner. Indeed, the HPC was enacted in this subsidiary to be a public service rather than a commercial business (except in the international airports), in light of the local norms and values which underpinned its business model and workforce.

4.3 AirSub's Responses to Pressures in Sustaining Legitimacy

Other than the issues concerning the institutionalisation of the HPC, and the performance measures involved, this study was also driven by the empirical question on how AirSub had responded to the multiple pressures of business re-engineering. It appears that it was not uncommon for AirSub to operate airports efficiently by observing certain technology-related requirements. Such operational desires placed a considerable focus on the technical concerns (e.g., airport security and ground-handling) which require airport operators to comply with standards and procedures set by the regulatory bodies. A focus of this nature was crucial for the subsidiary in responding to pressures exerted by various airport constituents, such as airlines and passengers, who expected airports to be technically sound in rendering aviation services. In this regard, technical efficiency was therefore, embraced as an important business drive. Although this may be so, airport operations in AirSub could not be solely driven by technical efficiency; it also requires the hustle and bustle of commercial activities which were intended to sustain business survival.

Apart from technical efficiency and commercialism, AirSub's main concern was its commitment, on behalf of the government, to discharge airport services (mainly operating unprofitable airports). This commitment involved undertaking the government-imposed role of operating and maintaining airports efficiently by complying with certain processes, rules and procedures, as prescribed by the airport regulators. The compliance that originated from the two separate pressures had also been translated into obligations. This observation was noted by the General Manager of AirSub:

> *Rendering this public service is a part of our agreement with the government in accordance with the specified terms and conditions. Since we operate in a highly regulated environment, compliance with the*

rules and regulations has become a part and parcel of our operations. Therefore, our airport operations have to be good and we must be able to deliver public service in the public interest. We are lucky that the government has been supporting our cause in running the airports throughout Malaysia. This is good as it recognises our purpose of establishment. But our problem at this moment is how do we position our commercial objectives to achieve the performance targets? It is really difficult to look good to [impress] everybody. (Participant 1)

In this regard, it appears that operating and maintaining public facilities and ensuring technical efficiency predominated over business its business performance. Commercialism only appeared to penetrate into the various components of AirSub in a gradual and limited way although this was more evident in the international airports than the domestic airports. This observation was also noted by the General Manager of AirSub:

We have no problem whatsoever in doing business commercially in the international airports because they have strategic positions and capabilities to accommodate profitable business activities. However, this might not be the case for domestic airports due to the strong emphasis on social responsibility despite our commitment to ensuring that each airport under our care is technically efficient. (Participant 1)

This aspect of 'commercialism' was also reiterated by one international airport manager:

Yes, I think commercial is essential here. We have been enjoying much of our profits from the commercial activities, such as from car park fees. (Participant 4)

The response from one domestic airport manager also verified this scenario:

It's difficult to have commercial activities running here. No business prospect of that kind. (Participant 5)

Based on the data, it can be deduced that domestic airports emphasised on the bureaucracy practised by the public services for instance, its technical efficiency. This was confirmed by the interviews of the local airport managers which also indicated their inability to appreciate the importance of the commercial activities. Such a situation highlights how legitimacy was challenged in a subsidiary setting.

The evidence provided thus far indicate that AirSub responded quite uniquely to the different demands (and hence pressures) posed by its stakeholders. The diverse pressures experienced by AirSub had given rise to multiple expectations that had challenged its organisational legitimacy in fulfilling the ultimate aim of the HPC. This challenge could be observed through the way AirSub secured its legitimacy from the external stakeholders, such as the regulators, the government, and the parent company that provided the means (i.e. rules and regulations, public service facilities and policies, as well as financial and non-financial support) for it to function as an airport operator. At the same time, however, AirSub was expected to accommodate the economic imperative of a strong commercial orientation so that it can be recognised as a legitimate business entity with 'acceptable' financial means.

5. Conclusion and Implications

This study has observed the institutionalisation of the HPC in AirSub. It was required to improve its financial performance by leveraging more on commercial activities. This was due to the hierarchical-organisational pressures resulting from its relationship with its parent company. Such pressures had indeed influenced its re-engineering exercise which shaped the way in which the HPC was promoted throughout the airports which was maintained by AirSub in Malaysia. As an airport operator, such an exercise would have emphasised on technical efficiency, but the mounting pressure from the parent company requires that AirSub also improves on its financial performance, hence provoking it to become actively involved in commercial activities. Although the business re-engineering exercise of AirSub corresponded quite well to its commercial and technical objectives, it appears that it was still practising the attitude of its predecessor, the public services' way of operating. This has had some significant impact on its business practices even though it was pursuing for legitimacy. The shift in the orientation of this subsidiary from being largely concerned with technical operations to commercial activities was noted to face some resistance, especially from the non-profitable airports. Consequently, there was much debate on its very reason of existence despite the increasing pressure for it to improve its financial performance.

Thus far, what had been discussed reflected what Modell (2009) had signified, in that the institutional environment was assumed to be dynamic, but it was influenced by various institutional pressures

(Boxenbaum & Jonsson, 2017). Such dynamism and pressures may lead to the emergence of new practices. An introduction of such practices within an organisation which strives to receive support and legitimacy may lead to an initial stage of institutionalisation. Nonetheless, such practices may become overexposed, and subsequently change to another practice at a later stage. Over time, new practices may emerge and disappear cyclically, as part of the dynamism, thereby putting more pressures on organisations. Change is not a welcoming process, and often, there will be some resistance from some form of power (or effort). This kind of resistance causes conflicts among the different institutions, thereby leading to challenges which affect the defence of the legitimacy (Kostova et al., 2008; Smets, Greenwood, & Lounsbury, 2015; Modell, 2019). In the context of this study, the response of AirSub seemed to be influenced by the multiple external pressures surrounding it. Inevitably, this shaped the way it interpreted the HPC. Nonetheless, AirSub also had its own shared norms and values which prescribed particular sets of actions and practices for it to administer so as to support its day-to-day business activities. These shared norms and values have, over a period of time, governed the ways in which the subsidiary reproduced its actions and practices, to the point that these had become historically repeated, customary, and taken-for-granted assumptions (Oliver, 1991). Based on this, it can be said that the current study has described how the subsidiary of one GLC responded to and/or interpreted an external 'rationalised and legitimised' improvement concept by shifting its orientations from being largely concerned with technical operations to considering commercial activities.

Interestingly, the institutionalisation of the HPC within AirSub (which provided public services more than commercial businesses except in the international airports) had occurred in the course of its business processes while using certain operational and financial improvement initiatives based on the types of airport it maintained. Specifically, the enactment of the HPC in AirSub was unfolded in light of the local norms and values due to its technically oriented business nature. The enactment of the HPC was aligned differently in the different parts of this subsidiary.

In relation to the role played by performance measures, it can be observed that there was only a weak link between the business activities of AirSub and its financial targets since it maintained mostly unprofitable domestic airports. In contrast, it was observed that the international airports operated by AirSub were evaluated based on their financial and technical performance. From this outcome, it can be argued that the role that performance measures played was only confined to certain organisational parts. This finding is consistent with Chiwamit et al., (2014) whose study suggested that the institutionalisation of an economic valuation model in the Chinese and Thai state-owned enterprises had not changed the highly subjective performance evaluation practices. It had eventually led to the need to negotiate for the adjustment of the performance measures (or scores).

To date, extant literature had indicated that organisational actors' responses were based on prescriptive rules. Thornton (2004) indicated that institutional pressures can shape the rational and mindful behaviours of actors even though such actors can change their responses when under institutional pressures. In this regard, literature (Smets et al., 2015; Modell, 2009; 2019; Suddaby et al., 2017; He & Wilkins, 2018) had also highlighted that institutional pressures can reinforce (or influence) existing institutions (and/or practices) into co-existing or to be in conflict with each other in their pursuit for legitimacy. This implied that one should be mindful of the multiplicity of the institutional expectations (which emerged from the composition of different stakeholders) which can challenge organisational legitimacy (Oliver, 1991).

The above discussion has exemplified the significant role played by institutional theory in explaining the institutionalisation of the HPC within one subsidiary of a Malaysian GLC that had recently undertaken the business re-engineering exercise to improve its financial performance. Given that this study has drawn on the theoretical insights of the recent institutional analysis, an understanding of the process of institutionalising the HPC in a complex business setting, such as AirSub, could be developed. The process showed where the issues were emerging from during the implementation of the business re-engineering exercise. In this regard, institutional theory had been useful for explaining the empirical data analysed within AirSub, and for describing the organisational responses of the organisational actors in sustaining organisational legitimacy.

Apart from the theoretical contributions of this study, practical contributions in terms of promoting and/or implementing the programme of change, such as the business re-engineering, can be drawn from the current study. The findings derived from this study are not only useful for the subsidiary being examined, but also for the parent company and the government. The findings can be used for reflecting when considering business re-engineering as an exercise. The business dynamics and the complexity surrounding the subsidiary are concerns which need to be looked into. This study has also observed how different groups of organisational actors within the subsidiary had responded differently to the introduction of the HPC. In this regard, it seems vital for the relevant parties to recognise and understand what the underlying differences were (in terms of dynamics and complexity associated with a particular business setting), so that business performance can be improved, and more importantly, for the subsidiary to obtain legitimacy from the relevant institutional stakeholders.

In conclusion, this paper has explained how the traditional views observed by AirSub which seemed to emphasise its role as a provider of public service, had evolved to become more contemporary, putting a greater emphasis on commercialism, instead. Interestingly, such emphasis emerged upon the introduction of the business re-engineering exercise. This therefore, prompted the pursuance of a new business model. Nonetheless, even though AirSub also practised the previous government's work attitude, it had also implemented some effective changes as a result of the implementation of the business re-engineering exercise, particularly when striving to obtain legitimacy from the parent company. This was noted in the comments made by majority of the staff in AirSub. Although it can be argued that AirSub's performance could have been evaluated based on the non-financial measures more than the financial measures, there was evidence to suggest that there was more concern placed on the financial measures due to the shift towards commercialisation.

In this study, the institutional analysis and institutional theory had facilitated the understanding of the institutionalisation of the HPC in AirSub. Both were also used to explain how the changes had taken place, and how the re-engineering processes had unfolded. They further confirmed past studies which had analysed the role of institutional environments in conditioning organisations in the presence of institutional pressures (Yazdifar et al., 2008; Goretzki et al., 2013; Chiwamit et al., 2014), particularly during massive business re-engineering exercises (Hillon & Mele, 2017; Champy, 2018). The findings of this study had interestingly shown that the business re-engineering exercise in AirSub had imposed multiple external pressures causing it to be challenged when seeking its own legitimacy. This had led AirSub to mobilise a newly developed business model which was inspired by the broader business re-engineering propagated by the parent company.

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Taming *Wasta* through Training Opportunities in Jordan

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ABSTRACT

Manuscript type: Research paper
Research aims: This study examines the effects of *Wasta* on job performance in Greater Amman Municipality (GAM), Jordan. It also evaluates the mediating effect of perceived training opportunities (PTO) between *Wasta* and job performance.
Design/Methodology/Approach: A total number of 344 usable questionnaires were collected from employees working at GAM in 22 different regions in Jordan.
Research findings: The results indicate that *Wasta* has a negative effect on job performance. The results also show that PTO partially mediates the relationship between *Wasta* and job performance.
Theoretical contribution/Originality: The research findings enrich our understanding of the impact of *Wasta* practice on job performance in the public service of Jordan. The findings of this study expand on the existing literature on business relationships.
Practitioner/Policy implication: The findings of this study provide insights into how managers at GAM can enhance the performance

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of employees and gain citizens' satisfaction. This can be done by reducing or eliminating *Wasta* and avoiding the use of *Wasta* when nominating employees for training programmes.
Research limitation/Implications: The scope of this study is limited to only one governmental service organisation, specifically GAM, in Jordan.

Keywords: Job Performance, *Wasta*, Perceived Training Opportunities (PTO), GAM
JEL Classification: J20, J24

1. Introduction

Employees' job performance within the government service is crucial because it reflects the image of the government and the efficiency of the government administration. High job performance increases citizens' confidence in the government, hence their perception of its services (Yang & Holzer, 2006; Miao, Eva, Newman, & Schwarz, 2019). This has also been noted by Stredwick (2005) who emphasised that job performance improvement and behaviour is one of the many solutions taken by municipalities towards providing essential services efficiently and reliably to its citizens. One of the problems in the Jordanian public sector is over-hiring, which has led to a decline in the quality of the public services provided. This characteristic has led to the accessibility of unqualified employees with poor performance. In turn, this affects the government's image negatively. The poor performance of the Jordanian public sector is caused by the employees' lack of confidence in their employers' recognition of their hard work (Nimri, Bdair & Al Bitar, 2015). These employees do not believe that their starting salaries commensurate with the work they do; they also believe that their salaries are insufficient to meet their economic needs. They also lack the confidence in their work system, believing that the promotion system is not fair to them, nor would they be fairly and financially rewarded even if they were more productive. These employees also do not believe that the government cared enough about its employees' professional well-being. The reason causing all these lack of confidence is because the Jordanian government does not provide honorary promotions; it does not offer any training opportunities to its employees; it does not involve its employees in decision making; it does not recognise the ability of its employees for certain jobs, hence employees have very little opportunities to be transferred to a better department in lieu of their good performance (Shaheen, El-Hneiti, Albqoor, & Ahmad, 2019). In this context, few studies have been conducted to show the factors that can motivate an individual to serve the public service better, particularly within the Arab culture, including Jordan. In particular, few studies had actually focussed on the *Wasta* practice within the Arab culture (Alreshoodi, 2018).

Wasta intervenes the daily lives of the people in Arab countries (Cunningham & Sarayrah, 1993). It plays an important role in the hiring process, employee promotion, employee nomination for training programs as well as employee consideration for decision making within Arab firms (Mohamed & Hamdy, 2008). Conceptually, *Wasta* can be defined as favouritism based on tribal and family affiliations (Cunningham & Sarayrah, 1993). *Wasta* is perceived as a process whereby the individual's objectives are achieved through linkages or relationships with key persons associated with the firm (Smith, Huang, Harb, & Torres, 2011). These linkages are based on personal associations derived from family or close relationships. *Wasta* is sometimes seen as a corrupt or unjust act that contradicts the teachings of Islam (Hutchings & Weir, 2006; Mohamed & Hamdy, 2008). Many civil servants in Jordan are employed primarily due to *Wasta* (Loewe et al., 2007). This practice of *Wasta* has consequently led to poor job performance because employees with better qualifications do not get the job as a result of *Wasta*. Comparatively, the vacancies are often filled by those with *Wasta*. Often, these individuals have lower qualifications. As a result, many well qualified individuals and employees feel frustrated due to the unjust treatment practised by the government bureaucracy (Makhoul & Harrison, 2004).

In contrast, the equity theory focusses on the exchange relation whereby individuals give something while expecting something in return (Adams, 1965). Among individuals, it is noted that feelings of injustice lead to dissatisfaction, anger and guilt. People tend to have anger and dissatisfaction when they get less than what is expected compared to their input, and people tend to experience guilt when they get more than what they deserve (Adams, 1965). *Wasta* is a kind of corrupt or unjust act, and as such, the equity theory suggests that the employees' perception of unfair distribution may negatively affect their performance with regards to quality and quantity (Adams, 1965). The employee may have intentions of harming the organisation so as to make his/her sense of injustice less painful, and also for the sake of restoring a sense of justice through retributions (Cohen-Charash & Spector, 2001).

While the impact of *Wasta* on employee or job performance has been acknowledged in literature (e.g. Alreshoodi, 2018), there are studies which did not find any conclusive evidence on the *Wasta* relationship. Altindag (2014), for example, found that even though nepotism was considered an organisational weakness, it can be turned into an opportunity in the case of Turkey's small and medium businesses. The study reported that recruiting and placing close-related employees in a critical position helped to deliver good performance. Such employees felt that they were accountable for the organisation. Such inconsistent results makes it thus necessary to conduct further studies in this area of research. It is possible that the inconsistent results may be due to the interactions of certain intervening variables. In line with this contention, the present study expands on the existing literature by incorporating training opportunities as a mediating variable so as to explore how training opportunities could weaken the negative impact of *Wasta* on employee performance.

Various literature (e.g., Appiah, 2010; Mpofu & Hlatywayo, 2015; Shaheen et al., 2019) have highlighted the importance of training in enhancing organisational performance and productivity. Through training, employees' performance could be improved. Training enables employees to gain new skills and to improve on their existing ones. This will eventually facilitate their job performance. Similarly, an organisation that invests in staff training and development appears to have more satisfied employees (Algharibeh, Almsafir, & Alias, 2014). Relevant exercises provide learning opportunities for the employees, enhancing their self-confidence to embrace new things, thereby leading to improved morale. Employees who are given opportunities to attend training would see themselves as staff who are valued by their organisation, which in turn, motivates them to work harder. In contrast, the concept of *Wasta* may discourage or demotivate some employees from performing well due to the fact that *Wasta* is based on relationships such that it could fester negative perceptions, for example, unfairness in training opportunities. Although such training opportunities have been argued to intervene the impact of *Wasta* on employees' performance, little empirical work can be detected to demonstrate this phenomenon. While some past literature had discussed the influence of *Wasta* in organisational or employee performance, most literature (e.g., Alreshoodi, 2018; Alreshoodi & Andrews, 2015) tend to focus on examining the direct relationship between *Wasta* and employee outcomes, perceived competence, employee behaviour, human resources management, career success and employment process.

Motivated by the above limitations, the current study therefore, attempts to investigate the role of training opportunities (PTO) on employees' performance in the public sector of Greater Amman Municipality (GAM), Jordan. GAM is one of the governmental organisations in Jordan. It provides municipal services to more than three million citizens in the capital of Amman, which is divided into twenty-two regions.

The remaining discussion of this paper is organised as follows. Section 2 reviews the literature pertaining to job performance and *Wasta*, and its theoretical development. Section 3 discusses the methodology employed, while Section 4 reports on the results. Section 5 discusses the findings and Section 6 concludes the paper by focussing on the implications for management and theory.

2. Literature Review and Hypotheses

2.1 Job Performance

Job performance is one of the crucial variables that has been studied widely within the context of organisational psychology (e.g., Murphy & Cleveland, 1995; Johari & Yahya, 2016; Xie & Yang, 2020). Earlier studies (e.g., Campbell, McHenry, & Wise, 1990; Murphy, 1989; Rotundo & Sackett, 2002) referred to job performance as actions and behaviours of employees which may influence organisational performance. Other studies (Campbell, McCloy, Oppler, & Sager, 1993) had conceptualised job performance as a multidimensional construct that is made up of two dimensions, namely: core task performance (in-role performance or behaviour) and contextual performance (OCB – organisational citizenship behaviour) (Borman & Motowidlo, 1997; Van Scotter & Motowidlo, 1996). Core task performance refers to the results of technical tasks and job responsibilities carried out by an employee (Witt, Kacmar, Carlson, & Zivnuska, 2002). Contextual performance goes beyond the core job responsibilities. It is reflected by the activities performed by an employee in support of the social needs, such as coaching co-workers, strengthening social networks within an organisation and going the extra mile for the organisation.

2.2 Wasta

Wasta or sometimes called nepotism (Brahms & Schmitt, 2017; Fawzi & Almarshed, 2013) is a silent practice in many Arab organisations

(Hutchings & Weir, 2006; Tlaiss & Kauser, 2011). It is a practice that intervenes the daily lives of the society at large (Cunningham & Sarayrah, 1993). *Wasta* represents a kind of personal relationship that plays an important role (Branine & Pollard, 2010) in human resource practices, such as hiring, promotions and decision-making among Arab firms (Mohamed & Hamdy, 2008). With *Wasta*, one would be employed and promoted, regardless of his/her skills, capabilities or education (Altindag, 2014; Cunnigham & Sarayrah, 1993), due to personal connections.

Wasta is widespread in the Arab world, due to the culturally-based need to maintain authority. The high unemployment in many of the Arab countries has been observed to be one of the de facto that led the society to practice *Wasta* so as to secure a job (Mohamed & Hamdy, 2008). The use of *Wasta* to bypass a formal process leads to reduced workplace diversity and job engagement; it also damages organisation reputation (Albdour & Altarawneh, 2012). *Wasta* is considered as a kind of corruption (Bekker, 1991) since it involves the abuse of power to gain personal advantages (Al-Shamari, 2012; Hallak & Poisson, 2005). It is a negative phenomenon, built into political, economic and social friendship systems that treat people and groups unfairly (Alwerthan, 2016).

2.3 Wasta and Job Performance

Within the literature, many studies have documented the negative impact of *Wasta* on job performance (Makhoul & Harrison, 2004; Tlaiss & Kauser, 2011). These studies have noted that under the practice of *Wasta*, employees who have good personal connections may have higher chances of securing a job, regardless of the suitability of the qualifications possessed. In this regard, organisations may end-up hiring a workforce that is incompetent. This, in turn, can affect their productivity. On a similar note, employees who are qualified may not be able to secure the job opportunities. Subsequently, they may not perform well as they feel that they are treated unfairly. As a practice, *Wasta* reduces employees' motivation especially those who want to develop their skills and abilities. This is because such employees may have secured the job due to their connections rather than their capabilities.

In the context of Arab countries, Mohamed and Hamdy (2008) examined employees in the private and public universities in Egypt. They found that employees who were recruited through *Wasta* demonstrated lower efficiency and work ethics than employees without *Wasta*.

In Saudi Arabia, *Wasta* was found to negatively affect public service motivation, job satisfaction, commitment, and retention (Alreshoodi & Andrews, 2015). In another study, Kilani, Al Junidi and Al Riziq (2015) reported that the presence of employees without adequate experiences and who were employed through *Wasta*, seemed to affect business ethics and the employees' failure to perform work accordingly. The use of *Wasta* also created conflicts between group members in the organisation. This conflict negatively affects group performance, company performance and outcomes. In Turkey, Bute (2011) reported that in organisations where nepotism practices were widespread and yet considered normal, managers could not behave reasonably toward their employees. This affected the efficiency of the qualified employees who were enthusiastic about their work and organisation. Based on this, the current study postulates that:

H_1: *Wasta* is negatively related to job performance.

2.4 Perceived Training Opportunities (PTO) and Job Performance

Employees' training is vital for improving their job performance (Mpofu & Hlatywayo, 2015). When organisations provide employees with development opportunities, employees are motivated to do their best so as to benefit the organisation (Kuvaas & Dysvik, 2008). The high levels of training opportunities make employees feel important and valued (Dysvik & Kuvaas, 2008). This would eventually enhance their task performance as well as motivate them to engage in their work, hence generate a higher intention to stay. These employees tend to consider training opportunities as social exchanges between employees and employers (Maurer, Pierce, & Shore, 2002). It appears that training plays an important role in job performance because through training employees also acquire new skills whilst also sharpening their existing skills (Appiah, 2010; Mpofu & Hlatywayo, 2015). Based on these arguments, this study further postulates that:

H_2: Perceived training opportunity is positively related to job performance.

2.5 Wasta and Perceived Training Opportunities (PTO)

Under the *Wasta* practice, some studies (e.g. Zhrah, 2015) have indicated that employees are often not given equal opportunities to attend trainings. Since employees working under the *Wasta* influence were given 'first class' treatment due to their personal connection, the same employees would also be offered chances to attend educational and training courses for upskilling purposes, even though these employees may not require them. Similarly, the organisation also tends to discriminate employees who were not employed through *Wasta* by denying them similar opportunities for training and development (Altarawneh, 2009). It was observed by Arasli, Bavik and Ekiz (2006) that *Wasta* is considered a non-professional act, it offers benefits for career growth only to family members or close friends. This practice has been found to paralyse the HR department of firms. Based on this argument, this study postulates that:

H_3: *Wasta* negatively influences PTO.

2.6 Wasta, PTO and Job Performance

Whilst *Wasta* appears to be negatively associated with job performance (Alreshoodi & Andrews, 2015; Mohamed & Hamdy, 2008), the relationship between these two variables was observed to be inconsistent (e.g., Altindag, 2014). This indicates a possibility of interaction of the intervening variable. In this study, it is expected that the relationship between *Wasta* and job performance is dependent on a third variable – training opportunities. Studies (e.g. Appiah, 2010; Mpofu & Hlatywayo, 2015) have demonstrated that training could help firms to enhance their performance since training enhances the employees' individual value. Employees who had been offered and experienced such trainings often feel indebted to their organisations, hence this made them loyal to their organisations. In return, many of these employees would reciprocate by performing their work tasks and responsibilities effectively. In this regard, it is deduced that even though *Wasta* may demotivate some employees from performing well, this relationship may be tamed by providing employees with training opportunities. Based on these arguments, this study postulates that:

H_4: PTO mediates the relationship between *Wasta* and job performance.

Based on the literature review and hypotheses developed, this study presents a research framework as shown in Figure 1.

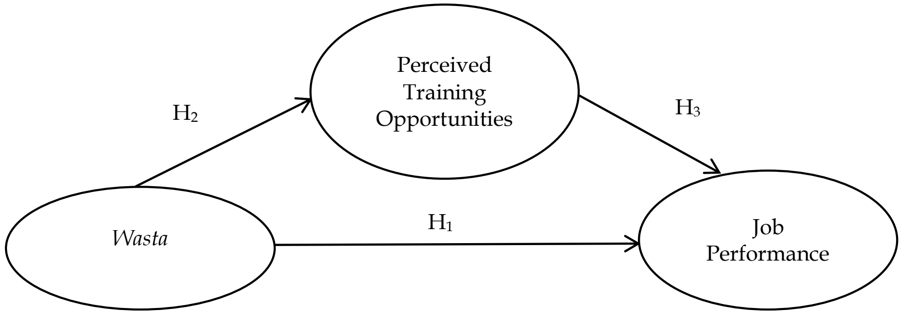

Figure 1: Research Framework
Note: H_4 is the mediating effect.

3. Data and Methodology

The target population of this study comprised employees (based on the information provided by the human resources department at GAM headquarters) who were attached to GAM units located in 22 regions in Jordan. As the total population of this study amounted to 7,805 employees, the sample size required was worked out to 365 (Sekaran, 2005). For this reason, the stratified random sampling was used for the classification and separation so as to make random selection of subjects from each stratum and region (Sekaran, 2005). This type of sampling technique was chosen because it provides equal opportunities for each respondent to be selected as a sample (Sekaran, 2005). This sampling technique has an advantage because there is no researcher bias involved in the selection of samples (Salkind & Rainwater, 2003). Table 1 shows how the 365 samples were derived from the total population.

Prior to the data collection, permission to conduct the study was sought from the management. The self-administered questionnaires were distributed to approximately 365 employees from the 22 regions through the heads of department. The participants were given one week to complete the questionnaire before a follow-up was made through telephone calls. Of the 365 questionnaires distributed, only 344 were deemed usable, indicating a response rate of 94 per cent. The respondents' profiles are depicted in Table 2. It appears that gender is almost equally distributed. Majority of the respondents are between 36 to 40 years old (26.2%), qualified with Bachelor's degree (41%), and with work experience of at least 11 to 15 years (38.1%). The results also show that more than half of the respondents work as administrators (55.25%).

Table 1: Sampling Design

Region	Number of employees (X)	Percentage of employees per strata (Y=X/N)	Percentage of employees per strata = Y* 365	Actual sample of employees from the strata
Al-Abdali	416	416/7805*100=5.3%	5.3% * 365	19
Rasualain	316	316/7805*100=4.0%	4.0% * 365	15
Almadina	380	380/7805*100=4.9%	4.9% * 365	18
Zahran	344	344/7805*100=4.4%	4.4% * 365	16
Alyarmouk	403	403/7805*100=5.2%	5.2% * 365	19
Badir	328	328/7805*100=4.2%	4.2% * 365	15
Tariq	333	333/7805*100=4.3%	4.3% * 365	16
Marka	416	416/7805*100=5.3%	5.3% * 365	19
Alnasir	365	365/7805*100=4.7%	4.7% * 365	17
Basman	484	484/7805*100=6.2%	6.2% * 365	23
Alquisma	431	431/7805*100=5.5%	5.5% * 365	20
Kerpet Assoq	437	437/7805*100=5.6%	5.6% * 365	20
Muqabalin	300	300/7805*100=3.8%	3.8% * 365	14
Aljobeha	356	356/7805*100=4.6%	4.6% * 365	17
Swaileh	412	412/7805*100=5.3%	5.3% * 365	19
Tela'lali	455	455/7805*100=5.8%	5.8% * 365	21
Abu Nusair	253	253/7805*100=3.2%	3.2% * 365	12
Shafabadran	205	205/7805*100=2.6%	2.6% * 365	10
Wadiassir	483	483/7805*100=6.2%	6.2% * 365	23
New Badir	122	122/7805*100=1.6%	1.6% * 365	6
Marjulhamam	306	306/7805*100=3.9%	3.9% * 365	14
Uhod	251	251/7805*100=3.2%	3.2% * 365	12
Total	7805	100%		365

Table 2: Profile of respondents (N=344)

Variables	Category	Frequency	Percentage
Gender	Male	182	52.9
	Female	162	47.1
Age	< 20	4	1.2
	20-30	65	18.9
	31-35	67	19.5
	36-40	90	26.2
	41-45	67	19.5
	46-50	33	9.6
	51-55	11	3.2
	> 55	7	2.0
Education Level	High School or Less	85	24.7
	Diploma	94	27.3
	Bachelor's degree	141	41.0
	Master degree	21	6.1
	Ph.D.	3	0.9
Working Experience	< 5	15	4.4
	5-10	77	22.4
	11-15	131	38.1
	16-20	79	23.0
	21-25	36	10.5
	> 25	6	1.7
Job Title	Section Head	41	11.9
	Unit Head	20	5.8
	Administrative	190	55.2
	Field Worker	26	7.6
	Engineer	21	6.1
	Accountant	31	9.0
	Legal Researcher	7	2.0
	Painter	8	2.3

The instruments used in this study were adopted from prior literature. Five items adapted from Tlaiss and Kauser (2011) measured the degree of *Wasta* being adopted in the organisation, seven items adapted from Kuvaas and Dysvik (2008) measured perceived training opportunities, and six items adapted from Chiah and Hsieh (2012) measured job performance. The instrument was based on a 5-point Likert scale, ranging from (1) strongly disagree to (5) strongly agree.

4. Results and Discussion

4.1 Descriptive Analysis

This study performed a descriptive analysis so as to analyse the mean and standard deviations of the constructs used. The results show that the use of *Wasta* in Jordanian society appears to be socially unacceptable (M=1.85). This outcome suggests that the use of *Wasta* which is perceived to be widespread in the Arab culture is generally viewed as negative by the respondents. This is not surprising as many of the Arab countries have started to experience revolutions, as a result of *Wasta* practice. For instance, in Tunisia, Morocco and Syria, *Wasta* has started to cause tensions and political unrests (Kilcullen & Rosenblatt, 2014). Unemployed graduates who were deprived from the opportunity to obtain a good education and to obtain a decent job due to the "elite" society have also started to express their dissatisfaction. Table 3 further illustrates the outcome.

Table 3: Descriptive Statistics of the Dimensions

Dimensions	N	Mean	Std. Deviation
Job Performance (JOP)	344	4.22	.702
Perceived Training Opportunities (PTO)	344	3.80	.666
Wasta (WAST)	344	1.85	.830

4.2 Measurement Model Results

This study employed structural equation modelling (SEM) to evaluate the conceptual model and to test the hypotheses formulated earlier. In line with Anderson and Gerbing (1988), the two-stage modelling was performed by incorporating measurement model analysis and structural model analysis. The measurement model was assessed through the convergent validity and discriminant validity. The purpose is to validate the psychometric properties of the measurement.

To assess the convergent validity, results of the factor loadings, composite reliability (CR) and average variance extracted (AVE) were inspected (Hair, Ringle, & Sarstedt, 2013), with items having a loading of more than 0.70, AVE of at least a value of 0.5, and CR having a value exceeding 0.7, are to be retained. Table 4 shows that all the latent constructs in this study have achieved convergent validity since the

Table 4: Items Loading, AVE and Composite Reliability for the Measurement Model

Constructs	Items	Items loading	CR	AVE
Job performance	JOP1	0.88	0.96	0.79
	JOP2	0.89		
	JOP3	0.90		
	JOP4	0.92		
	JOP5	0.85		
	JOP6	0.90		
Perceived training opportunities	PTO1	0.87	0.95	0.74
	PTO2	0.83		
	PTO3	0.87		
	PTO4	0.87		
	PTO5	0.88		
	PTO6	0.86		
	PTO7	0.83		
Wasta	WAS1	0.93	0.96	0.84
	WAS2	0.91		
	WAS3	0.93		
	WAS4	0.87		
	WAS5	0.93		

factor loadings are between 0.74 to 084, the CR values are above 0.9 and the AVE values are more than 0.7.

Following the above, the discriminant validity was then tested in the measurement model. Discriminant validity is the extent to which a variable is genuinely distinct from other variables in terms of how much it correlates with other variables, and how much the indicators represent only a single variable (Hair et al., 2013). The criterion and cross-loading scores of Fornell and Larcker (1981) were used to establish the discriminant validity. Table 5 demonstrates that the square root of the AVE for all the latent variables (diagonal) is higher than the inter-construct correlations (off-diagonal). Therefore, this confirms the discriminant validity (Fornell & Larcker, 1981).

Table 5: Discriminant Validity Analysis

	JOP	PTO	WAST
JOP	**0.890**		
PTO	0.617	**0.859**	
Wasta	-0.564	-0.537	**0.914**

Note: Diagonal elements represent the square roots of AVE values.

4.3 Structural Model Results

This study utilised the PLS algorithm and the standard bootstrapping procedure with a number of 5,000 bootstrap samples to examine the path coefficients' significance (Hair et al., 2013). Table 5 shows the path coefficient values and the bootstrapping results. The results explain the hypothesised relationship among the study variables.

To illustrate the research model conceptualised for this study, Figure 2 is provided. As shown, the R^2 values for job performance and PTO are 0.457 and 0.288, respectively. This outcome indicates that *Wasta* can explain 45.7% of the variance in job performance and 28.8% of the variance in PTO.

In this study, *Wasta* is found to have a negative relationship with job performance among employees attached to the GAM in Jordan ($\beta = -0.326$; $t = 5.88$; $p < 0.001$). This therefore supports H_1. The findings further show that the employment of GAM employees performed through *Wasta* is perceived to negatively affect job performance. The respondents viewed the influence of *Wasta* in the hiring decision had caused unqualified employees to obtain positions which were

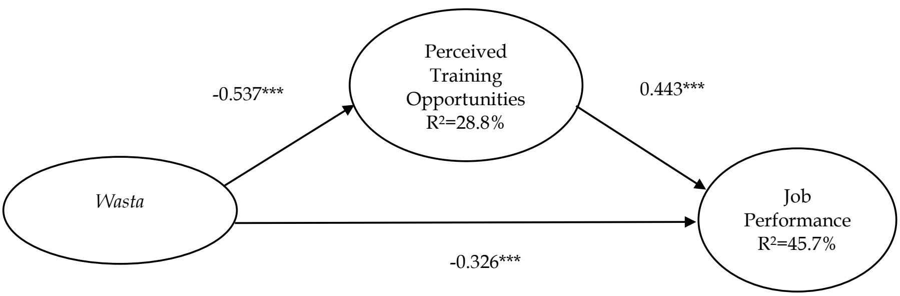

Figure 2: Structural Model

not matched with their qualifications. This situation may lead to inadequacies among employees while performing their duties as required. Not only was this noted, it appears that training of such employees who may not need the training was not a good move for the organisation because these employees would create further problems. If untreated, these problems would also affect the productivity and resources of the organisation. Similarly, the Jordanian employees also perceived the *Wasta* practice as an unethical behaviour, hence, an unfair treatment. These perceptions derived from the employees could lead to poor job performance. One expected outcome of this study is that a working environment that does not practise democracy or fairness leads to discontent and discouragement among employees. Such an atmosphere could lower employees' engagement and loyalty to the GAM. As a result, it could lead to negative consequences such as work absenteeism, work delays, weak performance and high turnover rates. The result derived from the current study is in line with prior studies (Alreshoodi 2018; Bute, 2011; Khatri & Tsang, 2003; Makhoul & Harrison, 2004). Table 6 displays the effects of the hypotheses testing.

Table 6: Hypotheses Testing (Direct Effect)

Path	Hypothesis	Path Coefficients	t-value	p-value	Decision
Wasta → JOP	H_1	-0.326	5.88	0.000	Supported
PTO → JOP	H_2	0.443	9.267	0.000	Supported
Wasta → PTO	H_3	-0.537	11.011	0.000	Supported

This study has reported the positive relationship between PTO and job performance at GAM in Jordan ($\beta = 0.443$; $t = 9.267$; $p < 0.001$), thereby supporting H_2. The findings are consistent with previous studies (Diab & Ajlouni, 2015) which argued that individuals who have the opportunity to participate in a training programme tend to see an increase in their job performance and skills. Increased training opportunities would also help to reduce turnover rates, increase organisational effectiveness, and increase the growth and development of the organisation (Issahaku, Ahmed, & Bewa-Erinibe, 2014). According to this result, employees who gained training opportunities at GAM can provide municipal services with higher efficiency because the training is reflected positively in their job performance.

As expected, *Wasta* is found to have a negative effect on PTO at the GAM in Jordan (β = -0.537; t = 11.011; $p < 0.001$), thereby supporting H_3. It indicates that *Wasta* will exert a significant negative influence on PTO. Working in an unfair and competitive environment makes GAM employees dissatisfied, thus it demoralised them in their jobs. This could turn them to become disloyal and uncommitted to GAM. They may also lose interest in their work involvement, in cooperating with their co-workers, and in their coordination with GAM activities. The intervention of *Wasta* in the nomination of employees for training programmes at GAM is also considered a waste of time and expenses. This is because the training was allocated to employees who do not need the training while those who require training was not given the opportunity. This intervention of *Wasta* made the GAM employees felt a sense of injustice and inequity, which was reflected in their performance and loyalty to GAM. The practice of *Wasta* had upset many of the employees. As a result, productivity was low. If this persists, it could lead to work absenteeism, and high turnover rates. Based on this, it can be said that *Wasta* leads to unfair advancement. The result of this study is consistent with the findings of previous studies (Arasli et al., 2006; Ali, Kirk, & Raidén, 2017).

Finally, this study used the bootstrapping method to investigate the mediating effect of PTO between *Wasta* and job performance. Specifically, the bootstrapping method with 5,000 samples and 95% confidence intervals (CI) was utilised to estimate the indirect effect. This method is in line with Preachers and Hayes (2008) and Hair, Hult, Ringle and Sarstedt (2014).

The results of the bootstrapping on the mediating effect of PTO on the link between *Wasta* and job performance are presented in Table 7 and Figure 3. The results show that the confidence interval of the indirect effect of *Wasta* on job performance (β = -0.332, $p < 0.001$, 95% CI= - 0.426 to -0.238) does not include zero, therefore, PTO significantly mediates the relationship between *Wasta* and job performance. The results also show that the indirect effect (a*b) is significant, thus implying that PTO is a partial mediator on the relationship between *Wasta* and job performance. Based on this, it can be concluded that H_4 is supported. This result shows that employees at GAM who did not obtain the training opportunities due to the influence of *Wasta* have the potential to perform well if properly trained. The result suggests that PTO could reduce the negative effect of *Wasta* on job performance at GAM. These findings are consistent with previous studies which had noted the use of

Table 7: Results of Mediating Effects

Hypothesis	Path a	Path b	a*b	SE	t-value	95% LL	95% UL	Result
H_4	-0.537	0.618	-0.332	0.048	6.854	-0.426	-0.238	Partial Mediation

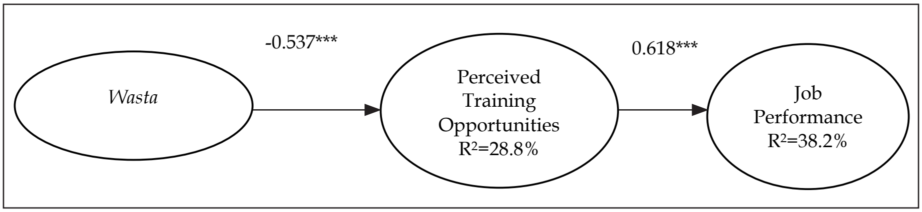

Figure 3: Results of Mediating Effects

training as an intervening variable between organisational practice and job performance (Asim, 2013; Van Eerde, Tang & Talbot, 2008; Sarkis, Gonzalez-Torre, & Adenso-Diaz, 2010).

5. Conclusion and Implications

This study has examined the relationship between *Wasta*, PTO and job performance. The findings derived from this study are in line with previous literature, thereby providing additional empirical evidence in the context of Arab countries. This study expanded on previous studies, especially in business relationships, by focussing on *Wasta* as a concept and PTO as a mediator in the relationship between *Wasta* and job performance. This study has also provided insights into the importance of PTO as a factor that could weaken the negative effect of *Wasta* and its impact on job performance.

The findings of this study also offer practical implications. Based on the results, it is suggested that the managers of GAM make an effort to reduce or eliminate the *Wasta* practice in their respective organisations, and to avoid the intervention of *Wasta* when selecting and nominating employees for training programmes. This is because the *Wasta* practice has a destructive impact on an organisation's abilities to enhance its "know-how" competence or intellectual skills. Employees under the influence of *Wasta* may not require the training opportunities provided. Similarly, allocating training resources based on relationships and family networks, rather than employees' qualifications and merits create organisational stress. Doing so could make employees feel unmotivated or demoralised in their work because no matter how hard they work, their status would be unchanged. It seems clear that organisations that are under the influence of *Wasta* are perceived as undesirable workplaces, particularly for those ambitious employees who depend solely on their hard work, knowledge and talents. If not addressed, such situation could lead the talented and qualified individuals to quit and opt for global opportunities rather than staying and serving in Jordan. These employees may feel unvalued and they may not have the equal opportunity to improve their career and enhance life conditions. Therefore, the situation would have a negative impact on the employees and the organisation. The Integrity and Anti-Corruption Commission (2018) in Jordan has currently begun to fight against the use of the *Wasta* in the workplace, and in looking for equal opportunities for employees. In this regard, it would be advisable for GAM to take a similar path by providing its employees with equal opportunities in training opportunities, rewards and promotions so as to elevate employees' performance.

This study has offered some good insights into the issue of *Wasta* and training opportunities in the context of Jordan. Nonetheless, like all studies, it also faced several limitations. First, this study incorporated employees from only one governmental organisation working in 22 regions of Jordan. Thus, the findings of this study may not be generalised to all governmental organisations. Second, the current study used cross-sectional data which only tested the association between constructs at one-point in a time. Given that the impact of *Wasta* in organisations may require lag time, it is suggested that future researchers conduct a longitudinal study. Third, this study had limited the mediator variable to PTO, while other variables such as fairness could be employed so that the remaining indirect effect on the job performance can be further explained.

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Zhrah (2015)

Usage and Impact of Artificial Intelligence on Accounting: Evidence from Malaysian Organisations

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ABSTRACT

Manuscript type: Research paper
Research aims: This study aims to investigate the use and impact of artificial intelligence (AI)-based accounting software among organisations in Malaysia.
Design/Methodology/Approach: Face-to face interview is performed with representatives from nine organisations that are using AI-based accounting software. Constant comparative method is used to analyse the data collected.
Research findings: The results highlight various adoptions of AI-based accounting software across the organisations. These are mainly used as a tool to deposit document images, to capture invoice information automatically, to monitor invoice approvals, to manage risks and also to track users' activities. The use of AI-based accounting software has accelerated productivity, improved efficiency, enhanced customer service, supported the flexible working style, increased process governance as well as saved manpower.
Theoretical contribution/Originality: This study fills the research void by providing insights into how the AI-accounting software is used, thereby benefitting organisations in Malaysia. With the arrival of industry revolution 4.0, comprehensive knowledge on the usage of AI is pertinent. The findings of this study may also serve as a foundation for future research in AI adoption.

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Practitioner/Policy implication: The findings of this study encourage industries to consider the usage of AI-based accounting software in the management of their accounts payable functions. It also provides useful guidance for practitioners on how the AI-based accounting software can be effectively applied as part of the innovation process.
Research limitation/Implications: Since the scope of this study only involves the accounting service provider, the generalisation of this study may be limited.

Keywords: Artificial Intelligence, Accounting, AI, Malaysia, Payable, Qualitative
JEL Classification: M150, M410

1. Introduction

Artificial intelligence (AI) is the catalyst of the Industry Revolution (IR) 4.0 eruption in the digital age. It makes the machine learns from experience, adjusts to new input and performs human-like tasks. With the existence of these technologies, large amounts of data can be processed, making patterns in the data more recognisable (Miller, 2019). This was also noticed by Frisk and Bannister (2017) who stated that digital technologies enable the skilful usage of data analytics, and for big data to radically improve a company's performance. In this competitive and dynamic market, all business entities need to have its competitive edge in order to stay sustainable.

AI is the main driver of the organisation in remaining competitive and sustainable (Omar, Hasbolah, & Ulfah, 2017). This is because AI is well known for its advantages in time saving, cost reduction and increased productivity (Pavaloiu, 2018). In today's dynamic business environment, organisations have no choice but to adopt the AI technology into their operations in order to stay sustainable. There are escalating trends of AI technology in the accounting operations as is evidenced by the research done by Sutton, Holt and Arnold (2016). Their study showed that the use of AI in accounting is on a strong upward trend. The application of AI can be implemented in various accounting types, such as bookkeeping, auditing, tax, and used by financial institution, and securities trading. All these operations are long and arduous when done traditionally. However, by transferring such monotonous tasks to the AI technology, accountants can spend their precious time dealing with more complex matters that require critical thoughts. By integrating AI technology with accounting databases, a solution can be reached to mitigate the limitations faced by traditional accounting systems (Jeneesh, 2017). The integration of AI-based accounting software into the operational tasks can make the job of doing account payables (AP) and account receivables much easier and more efficient. A good management of account payables will underpin the strong alliance between a company and its suppliers. It will also improve business operations and strengthen good credit records for future expansion (Nwakaego & Ikechukwu, 2015). The conventional method of processing the AP in todays' digital transformation era is no longer conducive. Among the apparent benefits to be gained from converting conventional methods to digital forms is that organisations can eliminate the issue of lost paperwork whilst increasing operations efficiency, such as saving paper, time and space. Further to that, payments can now be processed on time to vendors, thereby building up credit reputations (Deloitte, 2015).

Regardless of the great benefits provided by AI to organisations, its adoption in Malaysia is still at its infancy stage (Omar et al., 2017). The International Data Corporation (IDC) in 2018 disclosed that within the ASEAN region, Indonesia was leading in the adoption of AI, with 24.6 per cent of its organisations having invested in AI technology. In contrast, Malaysia was lagging behind at 8.1 per cent. This shows that AI adoption by Malaysian corporations is relatively low. Evidence can be traced to the outcome of a survey conducted by the Malaysian Institute of Accountants (MIA) between July and September 2017. The finding indicated that the current adoption and usage rate of AI was only 13 per cent, which is the lowest compared to other technologies such as Microsoft applications, accounting software, cloud applications, fintech, data analytics tools, and so on. However, the growth of AI usage is expected to reach 15 per cent in three years' time (MIA, 2019). The low number of AI applications suggest that many more potentials of the tool may have been overlooked by most industries in Malaysia. This situation has raised considerable concern since AI is considered one of the drivers for IR 4.0.

Many studies have examined the use and application of AI in the field of accounting. For instance, Guo, Shi and Tu (2016) investigated the use of AI in textual analysis to examine the unstructured data of finance and accounting. The authors found that neural network worked better than other machine learning in recognising data patterns. In South East Nigeria, Chukwudi, Echefu, Boniface and Victoria (2018) analysed the use of AI in audit practices. They found a positive relationship between the expert systems and audit process performance. Whilst these studies provide some insights into the use of AI in accounting, they were focussed on the areas of financial reporting and auditing. These studies also discussed the impact of AI on accounting by using quantitative data which may offer risks of partiality, thereby overlooking the reality of the problem.

The above limitation thus creates the need for an in-depth investigation to be conducted using a qualitative approach. A study that aims to identify the usage and actual implications of AI adoption in managing the accounts payable functions within organisations is imperative, since the outcome generated can then be used as a reference by future academic researchers who are interested in exploring the usage and impact of AI technology in the domains of accounting. The findings derived may also boost the confidence of Malaysian organisations investing in AI-based accounting systems. In this way, they would not be lagging behind other countries. Based on these expectations, the current study aims to answer the following research questions:

1. What is the purpose for organisations in Malaysia to use the AI-based accounting software in the accounts payable functions?
2. How are the organisations in Malaysia impacted by the use of the AI-based accounting software in their AP functions?

The remainder of this paper is organised as follows. Section 2 reviews the literature on AI adoption. Section 3 explains the methodology employed while Section 4 reports on the results. Section 5 discusses the findings of this study and Section 6 concludes the paper by discussing the implications and limitations.

2. Literature Review

2.1 Artificial Intelligence (AI)

Pan (2016) explained that AI is the ability of machines to understand, think and learn in a way that is similar to human beings. This indicates the possibility of using computers to simulate human intelligence. Although there are various definitions for AI, all these definitions have one similarity – they all focussed on the intelligence of the machine.

Globally, the adoption of AI technology spans multiple sectors of industries. Different industries, media and political organisations have shown a strong interest in AI adoption, therefore AI-related research and its applications in the organisations are ubiquitous. For example, Gentner, Stelzer, Ramosaj and Brecht (2018) highlighted the use of machine learning algorithms on a customer database in their report. The database consists of the customers' and the product-related data of a manufacturing company. In this regard, machine learning was used for the data mining purpose to study the market information for the strategic foresight project even though in business-to-business (B2B) industries, analysing an entire customer base in terms of future customer potential is often done manually. The researchers found that market knowledge can be used to address management functions of the company such as product management. They were also able to provide a detailed listing of the measurement tools that would be suitable for sales. The measurement on the sales performance was then used to identify the high-potential customers based on individual needs and behaviour.

Focussing on healthcare, Bini (2018) had intended to demystify AI for practicing surgeons so that they can better understand how AI technology can be applied in their treatment. The AI technologies that were being referred to include machine learning, artificial neural networks and deep learning algorithms. These can be used as tools to support and amplify human cognitive functions. Likewise, Mehta and Devarakonda (2018) observed that AI could support intelligent data which were retrieved from electronic health records (EHR) in the near future. The combination of the EHR comprising patients' socioeconomic data with real-time data streams can be provided to machine learning to potentially solve complicated health care needs such as predictive modelling, precision medicine and population health. Chassignol, Khoroshavin, Klimova and Bilyatdinova (2018) studied the adoption of AI which had reshaped the education sector although it would not completely replace the traditional education system. The study used narrative overviews to provide a broader picture of the educational landscape in the context of AI. The study used a model which consists of four major parts of the educational process – contents, teaching methods, assessments and communication to see how they were affected by AI. It was noted that among the AI technologies which had been embedded into the educational process was an intelligent tutoring system. This was used to gather appropriate feedback for students and educational robots and the outcome was then used as teaching aids.

In Malaysia, Omar et al. (2017) studied the diffusion stage of AI in the governance of public listed companies in Malaysia. Data were derived from the latest *Annual Reports* of 806 companies listed on the main market of Bursa Malaysia. Their aim was to examine the stage of AI diffusion, hence the Diffusion Theory was adopted to explain the diffusion process by which an innovation initiative was communicated to the member of the social system via certain communication channels. They then concluded that AI raised some behavioural and legal concerns. The behavioural concerns include employees' negative attitude towards AI adoption while the legal concerns encompass the organisations apprehensions about data security.

In general, literature has shown the AI momentum to be one of the disruptive technologies as can be noted in finance, the automotive industry, retail, travel and media while on the global basis, AI adoption had been examined in diverse industries. Despite this, there has been very few studies done on similar areas in the context of Malaysia.

2.2 Theoretical Perspective

Previous studies have examined the usage of information systems at the individual, group and organisational level (Chan, 2000). The current study focusses on the adoption of the AI accounting software at the organisational level. The AI adoption can be studied from two different fashions: 1) the user centred fashion where the user's cognition, during use, can be examined, and 2) the system centred fashion where the tasks for which the system is used are examined (Burton-Jones & Gallivan, 2007). This study uses the system centred approach where the various usage (tasks) of AI based accounting software is examined.

Burton-Jones and Gallivan (2007) mentioned that three elements of the system usage need to be considered at any level of analysis for information system studies. They include: the user (the subject using the system), the system (the information system used), and the task (the function being performed). Based on this, the samples comprised nine organisations which are using the AI auditing software as a system. The aim is to uncover the usage purpose of the AI software and its impact on the organisations concerned. The subsequent section discusses the previous studies on AI adoption and its impact as background for the development of this study.

2.3.1 AI Adoption in Accounting

The application of AI in the field of accounting has a long history, dating back to more than 25 years ago, but it is mainly applied in the areas of financial reporting and auditing (Chukwudi et al., 2018). Research on AI application in accounting is increasing, as concurred by Sutton et al. (2016). They noted that research examining the use of AI in accounting is showing a strong upward trend since 2016. However, Gray, Chiu, Liu and Li (2014) mentioned that research on AI/expert system is on the decline. Focussing on AI technology in textual analysis, Guo et al. (2016) used the literature review method to extract evidence which compared the performance of the methods used in various studies. They finally concluded that the neural network worked better than other machine learning approaches. However, there were still some challenges in the future development of textual analysis. In another study, Chukwudi et al. (2018) examined the application of AI in audit practices in South East Nigeria. The authors stated that the accounting systems and operations had evolved from the arena of paper journals and ledgers into computerisation, such that computers were being embedded with AI technologies like expert systems and intelligent systems. A survey was used to collect the data to examine the relationship between the adoption of expert systems and its effect on the performance of the audit process. The finding showed a positive relationship between these two variables. From the literature review performed thus far, it seems clear that the research on AI topic is gaining momentum.

AI application is also being used by different industries for different purposes. AI applications in studies throughout the world vary widely in terms of the subjects used when compared to the studies done in Malaysia. To date, not much literature is available on AI usage within the financial accounting perspective. This is because a majority of these studies tend to focus on the auditing scope instead of financial accounting or bookkeeping functions. On a similar note, Sutton et al. (2016) concluded that research looking at the usability of AI techniques in the accounting domains is currently imperative. As a result, researchers including those from developing countries like Malaysia, can take the lead into examining the AI usage from the perspective of financial accounting or in bookkeeping functions.

2.3.2 *Impact of AI Adoption*

A few studies have empirically investigated the impact of AI in organisations. Kaplan and Haenlein (2019) reported in their research that AI will have implications on any kind of organisations, both internally and externally. From the internal perspective, AI will allow an array of tasks to be completed faster, better and at a lower cost. More complex tasks can thus enjoy the benefit of AI too, including industries related to consulting, financial services and law. From the external perspective, the AI adoption will influence the relationship between firms and their customers, firms and other firms, and firms with the society at large.

Kokina and Davenport (2017) commented that senior accountants in large firms had commonly argued that organisations still require human accountants, whether with or without AI technology. The authors further mentioned that the skills required by an accountant may be subjected to changes in the future and that the demand for entry-level accountants will decrease in the coming years.

Davenport and Kirby (2016) stated that accounting is one of the business fields which is likely to be augmented by technology instead of being fully automated in the next couple of decades. Their claim was based on the fact that AI technologies can replace specific tasks rather than entire jobs. Therefore, the loss of employment in the short term is likely to be comparatively slow, most likely marginal rather than dramatic. Tschakert, Kokina, Kozlowski and Vasarhelyi (2016) also noted that entry-level accountants were relatively structured and because of this, they were at the highest risk of becoming automated by AI technologies. It was further mentioned that the skill required of an accountant can thus be further enhanced – from the data entry level to effective communication with clients. Accountants who are equipped with these skills would not be threatened by AI adoption even when it gets aggressive in the accounting domain.

Wright and Schultz (2018) focussed on the ethical issues of AI. They clarified and assessed the cultural and ethical implications of AI adoption for stakeholders, from labourers to nations. They used a novel framework which integrates the stakeholder theory and the social contracts theory to disclose the ethical implications of the AI businesses. Based on their study, it was proposed that organisations, policymakers and researchers take into account the ethical implications of business automation and artificial intelligence when approaching the burgeoning, and potentially, disruptive business practices.

Chukwudi et al. (2018) provided some insights of the advancement of AI and its positive influence on the accounting operations. They noted that there will be an increase in terms of accuracy and speed, an improvement in the external and internal reporting, a reduction of paper usage, increased flexibility and efficiency as well as an improved data-based system. This means that AI would transform the tedious and painstaking nature of bookkeeping to one that is an efficient consulting service. The authors also discussed the negative side of AI within the accounting profession, for instance, the emergence of negative feelings among professionals. The same observation was noted by the research team of the University of Oxford when in 2015, it was also found that 95 per cent of the accountants had feared losing their jobs because of AI. It appeared that the fear was about machine automation taking over the roles of accountants in data analytics and number crunching. Sutton et al. (2016) and Sun and Medaglia (2019) also noted that AI application in the accounting domain posed a threat to the profession. Based on these outcomes, it can be deduced that many of the studies had expressed the same concern, which is that AI adoption would lead to job losses. It seemed obvious that AI has the ability to replace human beings who perform very repetitive and structured tasks. Nonetheless, not all studies were in concurrence. Some carried the mixed implications of AI adoption (Chukwudi et al., 2018). Some past studies (Sutton et al., 2016; Sun & Medaglia, 2019) had highlighted the negative impact of AI adoption instead of the positive impact. The reason is because there is a lack of literature focussing on the impact of AI adoption within the accounting industry. It is hoped that the current study can fill the gap by investigating how the adoption of AI may impact the organisations of Malaysia, in particular.

3. Data and Methodology

3.1 Sampling Procedures and Data Collection

In this study, organisations that had adopted the AI technology into their accounting functions were approached. The face to face interview was conducted to gather data. The interview offers a more conducive approach to gathering information and to better understand the research problem which may be experienced by respondents of the study. Through their openness, more information based on their experiences, opinions and knowledge (Patton, 2012), particularly about the AI adoption in their organisations, were obtained.

Purposeful criterion sampling was applied in the current study to gather the adequate samples for study (Bitsch, 2005; Anney, 2014). It was also applied to develop the particular research question as well as to consider the resources available to the researcher (Hesse-Biber & Leavy, 2010). The target population for this research were the organisations located in Malaysia. They were from different industries, but their commonality is that they have adopted the AI technology into their accounts payable functions. From the web search conducted on AI software and organisations, the list comprising 43 organisations in Malaysia which had adopted the AI based accounting software or solution was obtained. Table 1 demonstrates the software brand whose websites were searched so as to detect the relevant samples for this study.

The organisations identified were contacted via email. The respondents were informed about the study, its purpose and the type of information that would be sought. A total of nine organisations expressed their interest to participate. They were further contacted to arrange for a convenient time for the interview. A copy of the interview guide was also forwarded to them.

The nine organisations were from different industries, but the representatives who participated in the interviews were from the accounting service division of the respective organisation. The interviews were conducted on a one to one basis at the time and place convenient to the interviewees. Before the interview started, the purpose of the interview was explained clearly to the interviewees. They were also assured that the information provided would be strictly used for research purposes only, and the anonymity of their names and identity would be maintained. Each interview session lasted for approximately an hour. The interview was conducted in the English language. The interviewees were asked about the AI software usage in the account payable function and its impact (see Appendix).

3.2 Data Analysis Techniques

All the interviews were recorded and transcribed verbatim. For this study, the constant comparison method was used to form the categories that emerged from the data. In this regard, the analysis attempted to look for important themes and subtexts that would reveal more about the research topic. The process of unitisation and categorisation was then performed on the data so as to analyse and interpret the data. At the unitisation stage, the information was isolated from the text and then coded.

The researcher reads the transcript and categorised the statements according to the appropriate categories (Pan, 2017). The statements which have been categorised, ranged in length from a few words to

Table 1: AI-based Accounting Software

No.	Software	
1.	Xero	Xero[1] is a New Zealand based AI accounting software which has experienced the fastest growth globally. It led the New Zealand, Australian and United Kingdom cloud accounting markets. It has over 2 million subscribers worldwide.
2.	SAP Concur	SAP Concur is part of the SAP family. It is the leader of expense management. The software is committed to simplify everyday expenses, travel and invoice management and create convenience. There are about 700 higher institutions[2] using this software to improve the management system.
3.	Wavelet	Wavelet offers the business organisation an AI solution which can expedite the decision-making, integrate different systems, and allow real time business operations management. Currently, there are 51,000 users.[3]
4.	Financio	Financio has developed the AI-based accounting software for small business owners and non-accountants in Malaysia. The feature of the AI software is localised to cater for Malaysian market requirement. It has approximately 25,700 users.[4]
5.	Beacon	Beacon Systems is a simple accounting software designed to be as streamlined as possible. It is built using automation and artificial intelligence. Currently the company has 35,000 customers.[5]
6.	Zoho	Zoho with its headquarters based in India has a range of solutions and suite of software that can be deployed to automate the business process of an organisation. The company has 50 million users[6] globally.
7.	Esker	Esker is well-known with its AI-driven software all around the world. It is an early adopter of AI technology in the market. As of today, it has over 600 thousand users from more than 50 countries.[7]
8.	Automation Anywhere	Automation Anywhere is the industry's largest Robotic Process Automation (RPA) and AI software company based in the USA. Their presence can be found at more than 90 countries globally. As of today, the company has more than 3500 customers.[8]

Notes: [1] https://www.xero.com/my/about/
[2] https://www.concur.com/
[3] https://wavelet.net/
[4] https://financio.co/malaysia
[5] https://www.beaconsbay.com/accounting-software-malaysia/
[6] https://www.zoho.com/
[7] https://www.esker.com/company/locations/malaysia/
[8] https://www.automationanywhere.com/

several paragraphs. They were then grouped into themes to answer the research questions provided earlier, based on Schulenberg's (2007) recommendations.

The validity of the qualitative data collected in this study was assessed based on three measures: credibility, confirmability and transferability (Anney, 2014). To satisfy the credibility requirements, the recorded interview data were transcribed verbatim. Recordings were replayed several times to ensure that the transcripts were accurate, and that they represented what was being conveyed by the respondents. To justify the confirmability of the data, content analysis was performed. Prior to the interview, relevant literature was reviewed thoroughly before the interview questions were designed. Following the transcriptions, all transcripts were emailed to the representatives of the organisations to obtain their confirmation on the correctness of the interview. The representatives then responded positively by giving their agreement to the authenticity of the contents. This means that the researcher can facilitate the transferability of the data to other users through 'thick description' and 'purposeful sampling'. Based on this, it can be said that the data collected for this research had fulfilled the three conditions of data validity. In brief, the qualitative data collected for this study were considered valid and reliable.

4.0 Results and Discussion

4.1 Respondents' Profiles

The findings of the study (Table 2) show that most of the organisations are from different industries and of different capacities of clientele. A majority of the organisations have adopted the AI powered accounting technology and accounts payable solution for a period of two to three years. The types of software adopted also vary between the organisations.

Table 3 outlines the profile of the representatives who participated in the interview. All representatives had a wide range of working experience within the organisations, ranging from one to 19 years. Nonetheless, the years of service do not influence the quality of the data collected. All the interviewees are also at the senior level of their positions, so they have a very good understanding of the AI adoption in their respective companies.

Table 2: Organisation Profile

Organisation	Industry	Size	Years of establishment	AI-based accounting software	Years of software used
R1	Biopharmaceutical Asia Pacific Business Service	300	40	RPA I Gen	0.5 years
R2	Pest maintenance and hygiene solution – finance shared service centre	1100	47	E Flow and Medius	3 years
R3	Accounting firm	7	3	Only You	2 years
R4	Accounting firm	5	3	Xero	0.5 years
R5	Content provider finance shared service centre	6000	17	Esker E - invoice	3 years
R6	Accounting firm	300	26	Xero	3 years
R7	Multi-level marketing Asia Pacific Business Services	400	42	Inspiro	0.5 years
R8	Accounting firm	70	10	Only You	2 years
R9	Electrical appliances global finance shared service centre	500	46	Kofax	0.5 years

Note: Size of the organisation refers to the number of employees.

Table 3: Interviewee Profile

Organisation	Interviewee	Years of service	Position
R1	N	5	Team leader of account payable
R2	P	10	Finance manager
R3	L	3	Business owner
R4	K	3	Business owner
R5	S	17	Head of account payable
R6	M	2	Finance manager
R7	Y	1	Finance manager for business unit
R8	K	19	Branch manager
R9	C	5	Team leader for Non-PO invoice division

4.2 Features of the AI-based Accounting Software

From the data collected, it was observed that most of the organisations adopted different types of AI-based accounting software. Some of those used comprised a full set of accounting software such as Xero and Only You, while the rests utilised software solutions which are embedded into the mainstream's accounting system with most of the AI-based accounting software having similar AI features (Table 2).

From the list of the main features identified from the AI-based accounting software, a comparison was made with the traditional software. It was observed that the major features of the AI-based were very different from the traditional accounting software which does not carry a huge storage of images in its system. It also does not have the machine learning ability. Hence all transactions of processing the accounts payable need to be performed manually. This is because the software does not have the OCR technology. Most traditional accounting software cannot be integrated with other software. Although a few may be able to do so, the number is extremely limited. The next section elaborates on the usage of the AI technology in accounts payable functions.

4.3 Usage of AI in Account Payable Function

The findings on the usage of AI-based accounting software in the accounts payable functions were summarised into five main usage categories: 1) storing images of invoices, 2) auto capturing of the invoice information, 3) risk management tool, 4) routing and monitoring of invoices' approval, and 5) tracking users' activities.

The first and main purpose of implementing the AI-based accounting software in the accounts payable functions was to store the images of the invoices. The repository provided in the software can leverage context-based content searches and views. Most of the respondents were using the software to store the images of the invoices. This was endorsed by respondent, R5:

> *… We tend to create one specific email address, ask Esker (AI software) to configure at the back end, all the suppliers to send their invoices to this common email. Then this email will direct link to Esker server and the invoices will store in the server*. (R5)

The next common usage of the accounting software was to auto capture the invoice information. This auto capture function is attributed to the updated version of the optical character recognition (OCR) system which is embedded in the AI technology. The OCR system is able to train itself and help in extracting text from any image by using neural networks and the ability of machine learning (Garg, Gupta, Prabhakar, Garg, & Trivedi, 2018). The representative, R4, revealed that the purpose of the AI-based software and solution was to automate information capturing. This is evidenced by the following extract:

> *… for AP information, you upload the document, it auto pulls all the information and capture the entry at the AP part…* (R4)

The AI technology that was embedded into the accounting software can further be utilised as a risk management tool. In most accounting departments, dealing with payments and accounts, is one of the most common issues encountered by the staff in the accounting department. There were fraud cases where invoices were submitted without the support of the PO or without authorised approvals noted in the system. Therefore, if there were any invoices unmatched to the authorised PO from the system, the invoice would be blocked from being processed any further into the account. This e-workflow setting can mitigate human manipulations on the PO, and the invoices approval. Thus, this system helped to mitigate risks of fraud invoices happening. The understanding was endorsed by respondent R1:

> *"… we just need to key in the PO number, the invoice number issued under this PO will come out, all the information of the invoice will show include the vendor code, so we no need to manually key in. That's how PO can match with invoice…"* (R1)

The next main function of the AI-based software was routing and monitoring the approval of invoices. The vendor invoices would be routed from the initial stage; it is then auto captured for final approval by the head of the department (HOD). This is to ensure the validity of the invoice before posting it into the accounting system. This was adopted by R5's company for its internal control purposes:

> *… Once the invoice updates, it will route to our procurement for the person in charge's approval. They will check to make sure it is genuine.* (R5)

The next common usage expected by a majority of the organisations was for the system to track the users' activities. It appears that the software adopted can generate the history log or audit trails for the transactions processed. This was highlighted by interviewee R4, in tracing the history logs of the transaction.

> *… one good thing of the Xero is that it has the history. Which is the err… so called the audit trail. Whenever you amend the information, it will show the history, the date and the time, and by whom. So, you can easily see what is he doing…* (R4)

Based on the input given by the interviewees, the main usage purpose of the AI-based accounting software for AP functions is listed through the themes and categories as portrayed in Figure 1.

The next section will deliberate on the findings of the impact of AI-based software on organisations.

4.4 Organisational Impact

The respondents from the various organisations also expressed their views on the benefits of the AI technology to their organisations, which were many. These can be further classified into six main positive impacts: improved efficiency, improved productivity, improved customer service, flexible working style, process governance and manpower saving. The most prominent impact, after the adoption of the AI technology, was improved efficiency in the accounts payable functions, as noted by interviewee R6:

> *… we need half a day to complete 100 invoices, but with Xero, only need 1 to 2 hours to complete.* (R6)

The other interviewees from R1, R2, R3, R4, R5 and R8 also shared similar opinions depicting the efficiency of the accounting functions

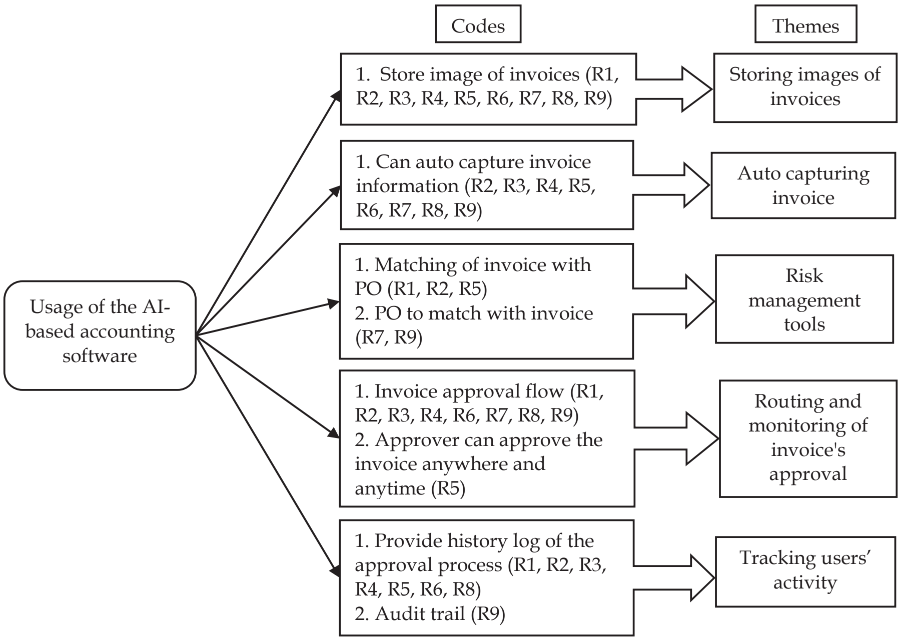

Figure 1: Main Usage of AI-based Accounting Software

within their respective organisations. The next positive impact arising from the adoption of the AI software was an increase in productivity. All of the organisations supported this benefit.

> *… The volume of the transaction is increasing. Now the productivity of the staff has increased. They can handle more volume now. Eight years ago, we have 30 staff to handle 10 entities with 8 activities. Now we have less manpower to handle volume of 10 entities with 37 activities*. (R5)

After the adoption of the AI-based accounting software, there were a few organisations which also noticed an improvement in their customer service quality. This was traced to the interview data, as expressed by interviewee R5.

> *… 60% of the clients' invoices managed to be paid within the due date since the invoices can be captured on time into system …* (R5)

Not only did the customer service improved, adoption of the AI technology into the company's accounting system was also able to implement flexible working styles. The staff were able to perform work from anywhere and anytime at their convenience. The business owner, R3 mentioned that:

> *… it is cloud based, then anywhere we can access the system, so staff can continue work from home if they choose not to stay back late at office …* (R3)

Adoption of the AI-based technology into the organisation's accounting software offered the solution for organisations to process their governance. Organisations can implement better internal controls and involve fewer human interventions in their accounts payable functions. These can mitigate fraud purchases or fraud payments from happening. Most of the organisations shared the same opinion.

> *… The process of the AP department can be standardised and align with the group policy after the adoption because the universal AI based accounting systems are utilised across all regions …* (R2)

The other interviewees from R4, R6, R7 and R9 also had the same opinion that the AI-based software can help organisations to govern the workflow of the accounting functions more efficiently. The next positive impact that was observed is manpower saving. Representatives from R1, R2, R5, R8 and R9 declared that they had saved manpower at the accounts payable after the adoption of the AI-based accounting software, as shared by interviewee, R2:

> *… initially we have more than 30 staff in AP team, but now we have around 25 only after the adoption …* (R5)

The themes and categories derived from the AI software and its impact on the organisation are illustrated in Figure 2.

4.5 Discussion

Overall, the results show that the adoption of AI is not limited to the specific size of the organisations. The small and medium sized organisations had also been able to use the AI-based accounting software effectively to obtain specific benefits.

The findings of this study indicates that the main purpose of using the AI-based accounting software is to store the images of the invoices in soft copy and to reduce the need to print hard copies. The image of the invoices could be stored in the software's database so as to facilitate

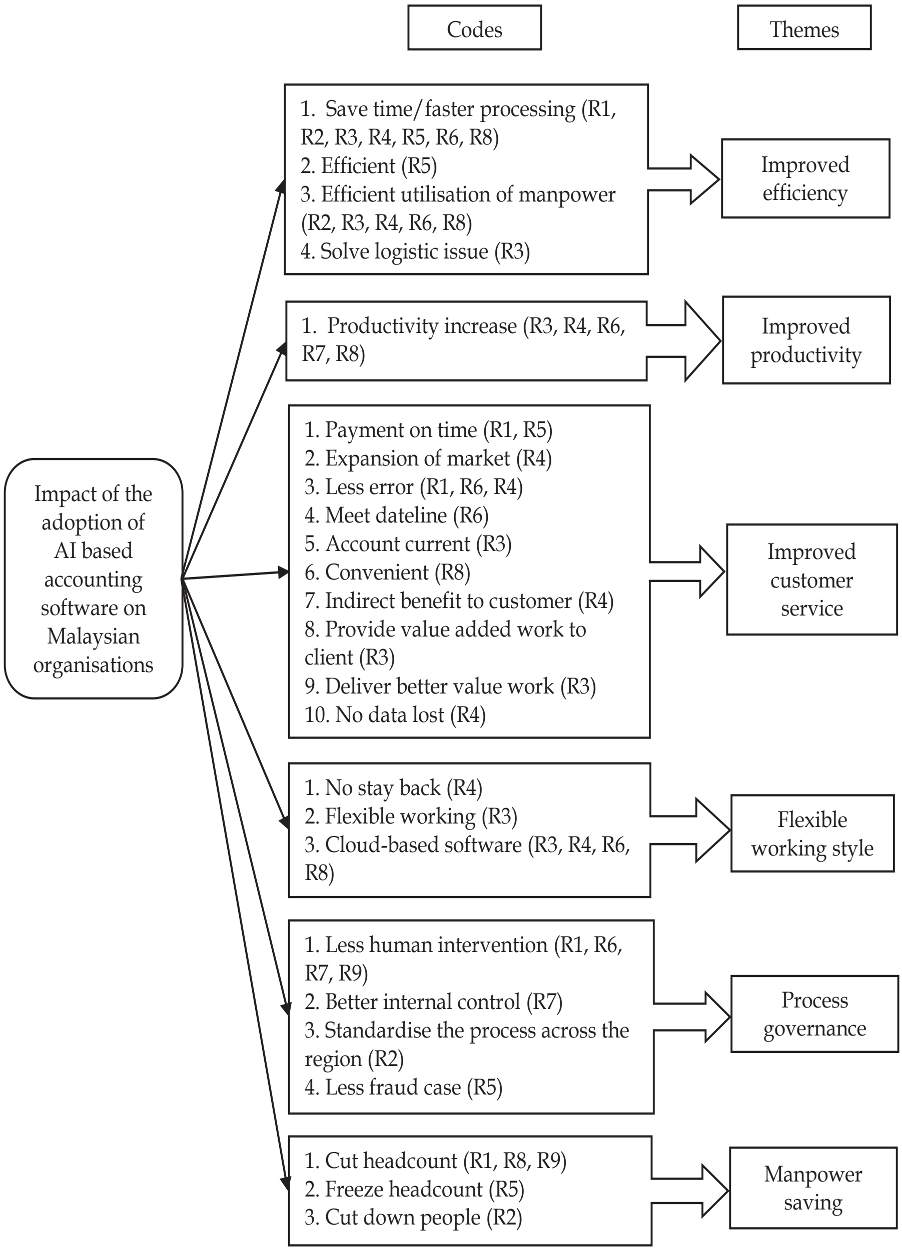

Figure 2: Impact of the AI-based Accounting Software on Organisations in Malaysia

checking and referencing. It has also reduced the issue of missing invoices. Another purpose of using the AI software is to automate the information capturing process. This function can be performed by the OCR feature that is embedded into the software. These two distinct purposes differentiate the AI-based accounting software or solution from the traditional accounting software. Tarmidi, Rozalan, Rasli, Roni and Alizan (2018) had mentioned that the OCR feature, as part of the AI system, can be used to digitise the documents and to convert the documents into editable forms. It was emphasised that the OCR application in the accounting system contributed to the enhancement of the business records of the small and medium enterprises (SME) in Malaysia.

The AI technology in the accounting software or solution is useful as one of the risk management tools. The solution can perform the matching of purchase orders (PO) and invoices. This matching is important for ensuring that invoices are genuine; it also mitigated invoice manipulations by irresponsible staff. The process of automation involves capturing the invoice, routing the invoice for approval and monitoring it. In contrast, traditional methods of manual processing for approvals are slow, hence it should be slowly abolished from current practices. The AI software can also track user activities, such as matching the history of the invoice with the PO, like when the invoice was received and approved by the person in charge. This tracking is beneficial when there is conflict about invoice issues or the payment of late invoices. The history log from the system can be referred to for investigating the root cause of any lateness of payment or missing invoices. The manual task of filing, printing the payment voucher, stamping the "paid "on invoices can thus be removed. This saves time which can be utilised more efficiently. Similar to the current findings, the study by Chukwudi et al. (2018) found the use of AI, namely expert system and intelligent agent has a positive influence on the accounting functions. However, the study did not explain with in-depth how these technologies can enhance the performance of accounting functions.

From the studies done by Microsoft and IDC Asia Pacific, results had shown that the application of AI in Malaysia would increase employees' productivity by 60 per cent. It would also double the rate of innovation by 2021 (SMEBIZ, 2019). This vision was certainly observed in the current study. Data analysed from the interviews noting the impact of AI adoption on AP functions show that the efficiency of the employees in the respective organisations has improved. The automation of the transactional process has expedited the AP processing, and employees could complete the same amount of task in a shorter time. This means that the productivity of the employees has also increased. This finding is similar to the outcome noted by Yaser and Mina (2012) who noted a positive relationship between IT adoption and organisation productivity. With an increase in employee productivity, the staff have more time to perform other more value-added tasks for the benefit of the organisation.

The current study has also noted that AI technology enables the organisations to enhance customer service. This impact, contributed by the AI adoption of accounting software, is similar to the results of Aduloju, Olowokudejo, and Obalola (2014). They noted that the usage of IT brought positive impact on the customer service in the insurance industry. The analysis of the current study further validates the fact that AI adoption enables payments within organisations to be processed on time and clients' queries to be attended to swiftly. Reports can be generated on time to meet the deliverables' deadlines and the accuracy of the invoice transactions can be further improved. This enhanced customer service, thereby minimising customer complaints. Another impact of the AI adoption is noted in the flexible working styles which can be implemented in organisations. This flexibility can be attributed to the cloud base of the accounting software which provides staff with the opportunity to work from home or anywhere they feel convenient. This positive impact can increase staff's engagement in the organisation. Likewise, this finding concurs with the results of Parry, Battista and Olivas-Lujan (2019) who found that innovative technology can be used to support the implementation of flexible working styles in the organisation.

The AI-based accounting software has also enabled organisations to implement a better governance system. In their study Askary, Abu-Ghazaleh and Tahat (2018) also revealed that AI can generate the impact of good governance systems to produce high quality accounting information. The transitional automation provided by AI adoption can also mitigate human intervention in the process. The automated 2-way matching of the PO with invoices and the routing of the invoice approval can mitigate fraudulent activities. Finally, the last significant impact of AI adoption to organisations is manpower saving as was also noted by Hemin (2017). The automation process for some of the mundane transactional data entry would minimise the amount of manpower required.

5. Conclusion and Implications

AI has emerged to be a part of the daily lives of every individual in today's digital era. It also serves as one of the drivers for IR 4.0 and has influenced every aspect of the human life and corporate business. Due to its enormous benefits to the business world, the AI-based technology should be the focus of all researchers. Although some researchers (Tschakert et al., 2016; Davenport & Kirby, 2016) have studied the application of AI in the accounting field, none had pursued the study of AI adoption in the accounts payable functions of organisations, particularly in Malaysia. Previous studies (Chukwudi et al., 2018) had attempted to evaluate the impact of AI adoption on audit practitioners, but they had not touched on accounts payable functions. This study thus attempted to identify the usage and impact of the AI adoption by focusing on accounts payable functions among organisations in Malaysia, using the qualitative approach. The findings derived from this study can be used as a reference by other researchers to conduct more AI-related studies, especially when looking at the impact of AI adoption.

The findings of this study have shown that AI is a disruptive technology that is not limited to global tech giants and blue-chip companies. In fact, it is important for small and big organisations to consider adopting AI when performing their accounting processes. The technology of AI is excellent for replacing lower level and repetitive tasks. The potential of AI is its ability to change the way organisations operate. All it takes is for organisations to be willing to embrace new opportunities wherever and whenever possible.

The outcome gained from this study can be used as valuable insights by organisations that are planning to invest in the AI technology in the near future. The report derived from the current study serves as a reliable source of evidence to interested parties that are keen to extract the benefits of AI adoption. Organisations can now use this evidence as a guide to make better decisions for any intended future investments of the AI software, particularly for accounting functions. The MIA 2019 report had mentioned that 57 per cent of the respondents had stated that the lag in technology adoption was due to a lack of understanding about the benefits of AI adoption. Therefore, the findings derived from the current study can serve as a reliable source for others to strategise the best way to invest in the AI-based accounting software.

The results of this study can also serve as a constructive marketing tool to AI technology vendors. The AI vendor can leverage on the findings of this study to substantiate their sales pitch to customers on the benefits of acquiring the AI-based accounting software. In addition, the vendors can work with educational institutions to introduce the learning of AI software. This could be added as one of the syllabi in the course outline in universities as an approach to prepare the younger generation to enter the workforce with practical skills on the use of AI-based accounting software in supporting business operations.

Although there is much to be gained from this study, it is also restrained by one of the limitations, which is the size of the samples. The small sampling is inevitable because the adoption of AI based accounting software is still low in Malaysia. It was a challenge to look for the target samples. The scope of this study was confined to the accounting service provider only, hence the generalisability of this study may be limited. Future studies can focus on other areas of accounting, such as accounts receivable, inventory and bookkeeping functions as a whole. There are many subfields of AI on which future researchers can investigate, such as robotic process automation. Future researchers may also consider the quantitative method of studying the relationship between AI usage and its impact on the organisation via surveys.

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Appendix

Interview Protocol

Date: XX
Interviewee: XX
Organization: XX

Introduction

The purpose of the research is to study the use and impact of Artificial Intelligence (AI) software in account payable function by corporates in Malaysia. The research aims to study three main scopes, namely the purpose of the adoption, the level of usage and the impact of the adoption to the organisation. Therefore, the purpose of this interview session is to obtain some valuable information on the use and impact of the AI software in the organisation. All the information discussed in the interview session will be kept highly confidential and will be used only for academic purposes.

Interview Questions

Section 1 – Basic Information of the Company

1. Size
2. Industry
3. AI Software used (type and description)
4. How long the software been used?

Section 2 – Purpose

1. What is the purpose to adopt this software?
2. When did your company decide to explore the usage of the AI in accounting function?

Section 3 – Level of Usage

1. How frequent this software is used?
2. Can you explain the use of AI software in Account Payable (AP) function?
3. Beside AP, does the software is used in other accounting/non-accounting function in your organisation?

Section 4 – Implication of the Adoption

1. Can you explain how the adoption of AI has improved the business processes and benefited the organisation?

Achieving Marketing Performance through Acculturative Product Advantages: The Case of Sarong *Samarinda*

Herning Indriastuti*, Jati Kasuma, Saida Zainurrosalamia ZA, Dio Caisar Darma and Anusara Sawangchai

ABSTRACT

Manuscript type: Research paper
Research aims: This study aims to investigate the role of acculturative product as an isolative mechanism for achieving the marketing performance of small and medium enterprises (SMEs) in Indonesia. Specifically, it focusses on the Indonesian Sarong *Samarinda* industry.
Design/Methodology/Approach: Data were collected from 207 individual entrepreneurs who are involved in Sarong *Samarinda* businesses in East Kalimantan, Indonesia. Structural equation modelling (SEM) using AMOS was utilised to analyse the data.
Research findings: The results of this study show that the advantages of the acculturative products influence the marketing performance. This study highlights the importance of innovativeness in securing the potentials of the acculturative products for the SME industry in Indonesia. It is also observed that the acculturative product acts as the mediator between innovativeness and marketing performance.

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Theoretical contribution/Originality: The empirical evidence of this study highlights the importance of acculturative products as an isolating mechanism which can help organisations to maintain and sustain their competitiveness.
Practitioner/Policy implication: This study offers insights to entrepreneurs and policy makers to better understand how the Sarong *Samarinda* industry could be developed, which potentially would contribute to the country's economy.
Research limitation/Implications: Since this study focusses on *Samarinda* city only, the generalisability of the findings may be limited. Therefore, future studies should incorporate a larger and more diverse set of samples.

Keywords: Innovativeness, Acculturative Product Advantage, Isolating Mechanism, Marketing Performance, Creative Industry
JEL Classification: M3

1. Introduction

Small and medium enterprises (SMEs) play an important role in the economic development of Indonesia. They account for 60 per cent of the country's GDP, offering 97 per cent of employment opportunities to the country's population. As of 2018, the number of SMEs in Indonesia had increased to 58.97 million (Indonesia Central Bureau of Statistics, 2018). Keeping in view the importance of the SMEs towards the country's economic growth, the government has taken steps to further develop these SMEs through cooperatives created in each province/district/city. Various grants including credits, working capital and investment financing plans are provided so as to promote local entrepreneurship.

Although it is imperative for the SMEs to be supported by external institutional support, there is also a dire need for these SMEs to develop their internal capabilities. Innovativeness, creativity and the ability to create new ideas, processes or products are important fuel for SMEs (Wang & Chen, 2018; Terziovski, 2009). Innovativeness helps the SMEs to gain sales and revenues, thereby leading to sustainability (Tuan, Nhan, Giang, & Ngoc, 2016; Indriastuti, Nugroho, & Aryanto, 2017). However, there were reports (Al-Zyadaat, Saudi, & Al-Awamreh, 2012; Boermans & Roelfsema, 2015; Icwan & Nursyamsiah, 2019) noting that innovativeness had not been able to improved marketing performance. This inconsistency derived from prior empirical works imply that there is a possible intervening variable that may affect the relationship between innovativeness and marketing performance. Among literature (Rumelt, 2005; Mazur & Kulczyk, 2013) focussing on strategic performance, isolating mechanisms have been noted to be a factor that may help the resource owner to gain value appropriations. This is because isolating mechanisms allow the resources to be protected, for instance, from being copied by competitors. In this regard, the isolating mechanism enable companies to generate abnormal profits for the long term. This isolating mechanism may come in the form of knowledge, or any physical or legal barrier. Taking this into account, this study thus includes isolating mechanism as a mediator that could affect the relationship between product innovation and marketing performance.

Acculturation is a social, psychological and cultural process that causes a change when two or more different cultures are assimilated. In this process, individuals adopt, acquire and adjust to a new cultural environment. From the contacts and interactions of these cultures, acculturative products are born. These acculturative products have a strong product identity which is difficult to imitate, since they represent the local culture owned by the community. Being a multi-ethnic country, Indonesia possesses various types of distinct local cultures which are represented by its local products. In the case of the sarong *Samarinda* industry, the local product is the sarong which is made traditionally. It is an acculturative product derived from the Bugis-Wajo tribe of the island of Sulawesi and Dayak and Kutai tribes of the island of Borneo. The sarong was therefore born from the assimilation of three different ethnic cultures in Indonesia. As an acculturative product, the sarong has a unique geometric pattern and motive, and it has been claimed to be a typical product of Samarinda. Due to this, the government of Indonesia has a duty to protect this legacy so that it is not copied by other parties, making it a product that is difficult to imitate. As a result of this uniqueness, the Sarong *Samarinda* can then be used to support the industry's business strategy (Barney, 1991; Day & Wensley, 1983). While acculturative products have been taking place in Indonesia over the years, research focusing on this aspect of the country is scarce (Ferdinand & Fitriani, 2015; Yuliarma, 2019). Many of the earlier studies looking at acculturative products tended to focus on culture tourism and the batik industry only (e.g., Lumbaraja, Lubis, & Hasibuan, 2019). Given this research gap, the current study aims to fill the research void by investigating the mediating effect of the acculturative product on the relationship between innovativeness and marketing performance.

The remaining discussion of this paper is organised as follows. Section 2 reviews the literature pertaining to Sarong *Samarinda* as a creative industry in Indonesia, and its theoretical development. Section 3 discusses the methodology employed while Section 4 reports on the results. Section 5 discusses the findings and Section 6 concludes the paper by focussing on the implications for management and theory.

2. Literature Review

2.1 Sarong Samarinda as a Creative Industry in Indonesia

Creative industry refers to a business that uses creativity, culture and environment so as to produce an outcome or product that can be categorised under the arts, culture and entertainment group (Howkins, 2001). In Indonesia, the concept of "creative industry" was first coined in 2007 when the government realised the country's potential, having a population of people who were not only highly skilled and talented but also with enormous creativity. All these had been underpinned by its bountiful multi-ethnic cultures (Windarti, 2016). The creative industry of Indonesia is mainly dominated by the micro, small and medium scale enterprises. In 2016, there were approximately 60 million SMEs in the industry which contributed towards 61.41 per cent of the GDP (Indonesia Central Bureau of Statistics, 2018). Sarong *Samarinda* represents one of the creative industries in East Kalimantan. The sarong is an item used as a clothing by men who had migrated from South Sulawesi (Bugis-Wajo tribe) to East Kalimantan. The sarong produced is used widely since a majority of the residents are Muslims who utilise it as a clothing for worship. The Sarong *Samarinda* has been assimilated with the local culture, mainly from the Dayak and Kutai tribes, and today it is recognised as the "identity" or "trademark" of its residents, hence it has been promoted as one of the acculturative products in the creative industry.

Sarong *Samarinda* is currently produced manually, either by using non-machine weaving or *gedogan*, which is recognised to offer originality (Purwadi, 2016). Due to this, Sarong *Samarinda* is accepted as an Indonesian culture and wealth. It is considered a unique and valuable product passed down from the ancestors. As of 2015, there were already 300 weavers in the city of Samarinda with 100 of them having received training in motif designs and colouring (Ministry of Trade, 2015). The production process incurred for a single Sarong *Samarinda* can take about 1.5 to 2 months (Cahya, 2018). The woven sarong carries a very good quality, and it is quite well known both locally and abroad because of its unique style and superiority in comfort. Although there is also printed Sarong *Samarinda* available, most consumers still prefer the original Sarong *Samarinda* because of its uniqueness and high quality. Due to its identity and uniqueness, the Sarong *Samarinda* could be integrated to become a part of the acculturative products of the country's creative industry. Doing so would help to stimulate the country's tourism growth where tourists could be introduced to the cultural heritage of East Kalimantan.

The production of Sarong *Samarinda* has been mainly performed by traditional weavers who weave the sarong for their own use only. Without doubt, it can be introduced to the community as an economic activity that could generate side income for the individual members of the community (Samsir & Nurwati, 2018). Through promotions conducted by the creative industry and the government of Indonesia, many of the locals and other sectors are beginning to see the potential of this sector. This sector is a small scale industry where the production is only sufficient to accommodate the market's needs. However, due to its uniqueness, quality and creative potentials, the Sarong *Samarinda* industry can be considered as one of the community's source of income. To date, the weavers or the entrepreneurs of this industry have started to make some small innovations to the product by designing new motives as well as varying the products such as creating new forms of sarong, and turning the product into other creations. This move was established by the entrepreneurs in their effort to embrace and to accommodate current market needs. In other words, the sarong has been turned into other types of clothing. This phenomenon was in line with the instruction of the City of Samarinda's ruler who wanted the government officers to wear clothing lines that were based on Sarong *Samarinda* for their official events (Purwadi, 2016).

2.2 Theoretical and Hypotheses Development

2.2.1 Resource Based View Theory

This study employs the resource based view (RBV) theory as the underpinning theory. The theory asserts that an organisation's performance is explained primarily by the existence of its valuable, rare, non-substitutable and inimitable products (Barney, 2001). These valuable resources can be divided into tangible and intangible resources. It is normal for an organisation to acquire and exercise control over its resources so that these can be used to offer a competitive advantage. To ensure that their resources remain unique, rare and inimitable, the organisations would use various control mechanisms. For instance, for a resource to remain inimitable, Barney (1991) said that at least one of the following three isolating mechanisms must be used as a protective measure: unique historical condition, causal ambiguity (i.e., the link between the resource and the firm's competitive advantage is not fully understood), and social complexity (e.g., culture). An organisation can only compete through these isolating mechanisms by effectively producing products that are perceived as "superior", "different" and "rare", that is, there is no available substitute (Busby, 2019). Meantime, organisations also utilise their capabilities to enable them to develop and embrace new innovations (Crook, Todd, Combs, Woehr, & Ketchen, 2011). In other words, organisations that possess unique resources and capabilities would be able to gain and sustain their competitive advantage. This theory is relevant in the context of this study because the resources of the Sarong *Samarinda* are particularly important for the small and medium scale businesses. Clearly, inadequate resources can influence firms to focus on the short-term gain rather than the long-term benefits, and this can hinder the industry from exploiting further opportunities to develop their unique offerings (Zucchella & Siano, 2014), hence, the RBV perspective is of use in the context of this study. It offers an opportunity for the current study to analyse how the success of small businesses are associated with internal resources and capabilities.

Based on the RBV theory, two variables, namely the advantages of the acculturative product and innovativeness were applied. Acculturative products are those which are unique and have distinct values when compared to the original products. They are developed based on the assimilation of the cultural values of a particular place. This gives the industry its competitive edge when compared to its competitors (Sugiyarti, 2018; Sugiyarti, Ferdinand, & Nurhayati, 2018). Sarong *Samarinda* is a typical acculturative products that is the result of the interaction and assimilation of three cultures – the Bugis-Wajo, the Dayak and the Kutai tribes in East Kalimantan in Indonesia (Ferdinand & Fitriani, 2015). Although imitations of the Sarong *Samarinda* are available in the market since they could be produced and marketed at a much cheaper price than the original, consumers tend to favour the original because it has a distinctive quality and characteristic (Samsir &

Nurwati, 2018). This means that as an acculturative product, the Sarong *Samarinda* can be used as Indonesia's cultural heritage. However, this has to be dependent on the isolating mechanisms. In the RBV theory, isolating mechanisms have been used by companies to create barriers so as to prevent competitors from imitating their resources, capabilities and respective strategies used to develop their products. In the case of Sarong *Samarinda*, the motives, patterns, designs and attributes can be made unique because they have some symbolic strength when used in combination with the local cultures that also have different values. This would make it difficult for competitors to imitate the product. Moreover, the process of producing the original Sarong *Samarinda* is also unique; it requires the weavers to possess unique skills and knowledge. These two resources, clearly represent the acculturative products advantage, thereby making the product difficult to be transferred and copied (Purwadi, 2016).

Previous literature noted that an acculturative product could serve as an iconic product; it can represent a certain community, thus it can be used potentially to enhance its marketing performance (Sugiyarti, 2018; Wingwon, 2012). In the context of Sarong *Samarinda*, the differentiation strategy, as noted through the product uniqueness, is believed to enable the producers to sustain their marketing performance. The unique features or characteristics that can be easily spotted by the customers may lead to their full awareness of the product's uniqueness, thereby encouraging more purchases of the product to be made (Agrawal & Bhuiyan, 2014). Based on these arguments, this study postulates that:

> H_1: Acculturative product advantages are positively related to marketing performance.

Substantial literature (e.g., De Jong & Marsili, 2006; Berends, Jelinek, Reymen, & Stultiens, 2012) showed that small and medium scale businesses have the ability to survive and grow. However, this may depend on the SMEs' ability to adopt new ideas, products and processes even though the original idea may have been developed somewhere else. The entrepreneurs or the owners of such SMEs need to be innovative if they want to be market leaders. They need to be proactive and be willing to make innovations (Tajeddini & Mueller, 2009; Billore & Billore, 2019). SMEs that are innovative demonstrate an open-minded behaviour which responds to customer needs, thereby enhancing their ability to obtain high marketing performance (Sulistyo & Siyamtinah, 2016; Killa, 2014). In contrast, those that are narrow-minded, myopic or do not possess creativity, tend to have lower marketing performance as they are unable to meet the needs of the customers.

In the context of Sarong *Samarinda* industry, it is expected that innovative producers will exhibit creativity in exploring new designs, motives and materials that would create positive customer engagement, thereby triggering better sales performance. Innovative producers are inclined towards creativity; hence they are better at articulating the value proposition of Sarong *Samarinda*. Therefore, marketing performance will increase and this may even exceed their comfort zone where they seek new business opportunities. In a creative industry, such as Sarong *Samarinda*, the ability of the human resources in producing innovative products is important. This will enable the industry to gain marketing performance since the industry is highly dependent on human input which comes in the form of know-how and specific and highly unique skills (Booyens, 2012). Based on these arguments, this study postulates that:

H_2: Innovativeness is positively related to market performance.

As a creative industry, Sarong *Samarinda* is more oriented towards micro and small-scale productions that require a high level of exclusivity and creativity. The ability of the weavers to produce unique products can increase the value and competitiveness of Sarong *Samarinda*. Since the sarong is the outcome of an acculturative process, there is a need to preserve the local cultural identity. In that regard, it requires innovation. Through this innovation, there will be modifications, such as motifs, designs and materials. All of these would be tailored to the taste of the end-consumers, thereby increasing the value of the Sarong *Samarinda* produced. Previous literature (Staniewski, Nowacki, & Awruk, 2016) mentioned that innovativeness helped to produce solutions that can overcome production problems. Innovativeness can bring about benefits which can enhance the quality of the products for customers. Based on these arguments, this study postulates that:

H_3: Innovativeness is positively related to acculturative product advantages.

While many studies (De Jong & Marsili, 2006; Berends et al., 2012) had demonstrated the significant relationship between innovativeness and marketing performance, findings have been inconsistent. A handful of studies had actually failed to establish the association between these two variables (Zhang, Liang, & Wang, 2016; Kyrgidou & Spyropoulou, 2013; Story, Daniels, Zolkiewski, & Dainty, 2014). This inconsistency has led to the ambiguous result of the relationship between innovativeness and marketing performance. Our preceding hypotheses have associated the relationship between innovativeness, acculturative product advantages and marketing performance. Implicitly, the discussion also suggests that innovativeness affects marketing performance through acculturative product advantages. This implies that entrepreneurs with higher innovativeness are better able to produce acculturative products that have higher values, thereby enabling them to increase their marketing performance. While innovativeness may help entrepreneurs to gain in marketing performance, the production of acculturative products is an opportunity for the industry to gain rents through temporary establishments of monopolies. The introduction of the Sarong *Samarinda* which has its own uniqueness as noted in its traditional motives and designs, is thus an opportunity for the entrepreneurs to stand out among its competitors. Based on these arguments, this study postulates that:

H_4: Acculturative product advantages will mediate the relationship between product innovativeness and marketing performance.

Following the above discussion, a research framework which posits that product innovativeness has a positive impact on marketing performance was developed. Acculturative product advantages are also expected to mediate the relationship between product innovativeness and marketing performance. Figure 1 illustrates the research framework.

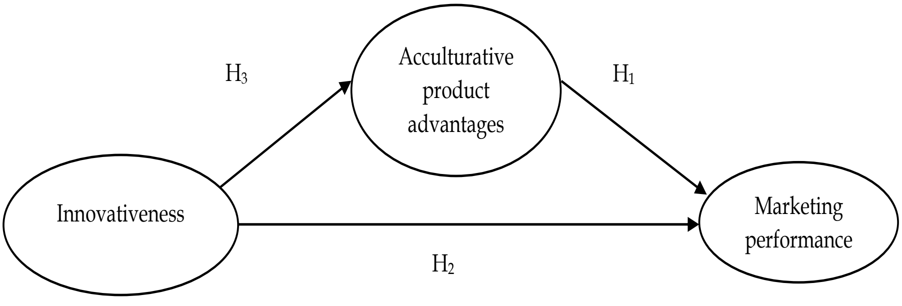

Figure 1: Research Framework
Note: H_4 is the mediating effect.

3. Data and Methodology

This study is quantitative in nature. A survey questionnaire was administered to 207 entrepreneurs. The measurements used to assess each construct of the questionnaire were adapted from previous studies. The indicators used for measuring the acculturative product advantages include looking at the superiority of the acculturative motive, the superiority of the acculturative patterns, the superiority of the symbolic designs and the advantages of its unique attributes. These items were adapted from Ferdinand and Fitriani (2015). The product innovativeness was evaluated through four items which measured the extent of the entrepreneurs/weavers' capabilities in producing unique, novel and creative products as well as developing business opportunities. In this study, the marketing performance was measured using indicators such as: sales volume growth, sales opinion growth, customer level growth, and sales area growth. These items were adapted from Ardyan (2016). As was expected, the entrepreneurs used mainly the Indonesian language as they were not well-versed in the English language; hence the questionnaire was translated into Indonesian without changing the contents and meanings of the questions. The questionnaire was first evaluated by five academics in the area of strategic marketing. Then, it was pilot tested on 20 entrepreneurs. This helped to establish the content and face validity of the instrument used.

Samples serving as the entrepreneurs were from Kampung Tenun, a village in the city of Samarinda, East Kalimantan. This village was chosen because it is the centre of Sarong *Samarinda*'s production. It has also been recognised as the icon of the Samarinda city. It is located on the edge of the Mahakam River and it was the first settlement developed in Samarinda. From 2012, the Indonesian government has established various programmes to help the business to flourish. A majority of the villagers are involved in the Sarong *Samarinda* weaving industry (Samsir & Nurwati, 2018). Since there is no existing list of entrepreneurs, this study relied on the purposive sampling technique to recruit the potential respondents. They are eligible to participate if the business they operate is more than three years, and they must be willing to give their consent to participate in the survey.

Three-hundred entrepreneurs who satisfied the identified criteria were contacted through the telephone. Information about the study was explained, and an assurance of confidentiality and voluntariness were given during the telephone conversation. Upon obtaining their consent to participate, the self-administered questionnaires were personally distributed. The completed questionnaires were collected after two days. Of the 300 questionnaires distributed, only 207 were retrieved, providing a response rate of 69 per cent. Table 1 depicts the respondents' profiles.

Data were analysed and results show that a majority of the 207 samples or 95.65 per cent are females. This is not surprising since the weaving activity is synonymous with females who treat this entrepreneurial activity as a "part-time" job. From the socio-economic perspective, the role of females as a contributor towards the family economy has increased in society (Ramadani, Hisrich, Anggadwita, & Alamanda, 2017). Notwithstanding this, the absence of males in this enterprise is due to their cultural values and beliefs. The community believes that the weaving process of Sarong *Samarinda* may lead to impotent problems among the men (Purwadi, 2016). More than half or 63.77 per cent of the entrepreneurs possess senior high degrees, with a very low percentage of 4.83 per cent having a bachelor's degree. This disparity could be due to their perception of the industry as a "home-based industry" or a "cottage industry" which requires no educational qualification. Most of these SMEs have been operating for more than 11 years, raking a monthly revenue of between two million to five million rupiahs. This indicates that

Table 1: Respondents' Characteristics

Respondents' characteristics	Frequency	Percentage
Gender		
Male	198	95.65
Female	9	4.35
Education		
Primary degree	9	4.35
Junior high degree	56	27.05
Senior high degree	132	63.77
Bachelor's degree	10	4.83
Establishment length in years		
3–7	27	13.05
7.1–11	46	22.22
> 11	134	64.73
Revenue (Rupiah) per month		
< 2,000,000	38	18.36
2,000,000–5,000,000	135	65.22
>5,000,000	34	16.42

the industry is a small-scale industry. This information is not surprising since entrepreneurs who are involved in this industry normally work from home, and they also treat this industry as their part-time occupation.

4. Results and Discussion

4.1 Measurement Model

This study performed the structural equation modelling (SEM) by using AMOS to analyse both the measurements and the structural model. Anderson and Gerbing's approach (1998) was applied where the model was tested in two steps. First, a measurement model incorporating all the constructs were tested for convergent and discriminant validity. This was to validate the psychometric properties of the measurements. Upon validating the measurements, a structural model analysis was performed to test the research framework and the hypotheses developed.

Table 2 indicates the results of the measurement model analysis. The data seem to fit the model well, as the values for χ^2 = 112.22 and p = 0.172. The incremental (GFI = 0.938, AGFI = 0.915, TLI = 0.990, CFI

Table 2: Convergent Validity

Indicators	Factor Loadings	Cronbach alpha	AVE	CR
Product innovation				
Level of uniqueness	0.72	0.83	0.83	0.57
Novelty	0.76			
Development of business opportunities	0.76			
Development of product creativity	0.75			
Acculturative product advantages				
Motive acculturative superior	0.69	0.78	0.78	0.59
Pattern acculturative superior	0.73			
Design acculturative superior	0.68			
Attribute acculturative superior	0.64			
Marketing performance				
Degree of expected sales	0.75	0.87	0.86	0.74
Score of sales growth	0.81			
Level of firm market share	0.80			
Overall profitability	0.79			

Note: χ^2 = 112,224, p = 0.172, GFI = 0.938, AGFI = 0.915, TLI = 0.990, CFI = 0.992, RMSEA = 0.025, CMIN/DF = 1.082.

= 0.992) and absolute indexes (RMSEA = 0.025) have achieved their cut-off values (Byrne, 2001). In line with Hair, Hult, Ringle and Sarstedt (2016), this study tested the convergent validity by examining the factor loadings, the average variance extracted value (AVE), and the composite reliability (CR). As indicated in Table 2, all the factor loadings are above 0.6. In addition, both the AVE and the composite reliability are above 0.5. These results imply that the measurements satisfied the convergent validity (Hair et al., 2016). Using Fornell and Larcker's approach (1981), the discriminant validity was examined by comparing the correlation values between the variables, and their square root of AVE. As indicated in Table 3, all the correlation values seemed to be lower than the square root of AVE, indicating that the discriminant validity has been achieved.

Table 3: Discriminant Validity

	INN	APA	MF
Product innovativeness (INN)	**0.911**		
Acculturative product advantages (APA)	0.148	**0.88**	
Marketing performance (MF)	0.10	0.18	**0.927**

Note: Diagonal elements represent the square roots of AVE values.

4.2 Structural Model Analysis

Assuming that all the constructs used are valid and reliable, a structural model was then constructed to test the hypotheses. The structural model was evaluated by investigating the coefficient determination (R^2) square. The results reveal that the model is capable of explaining 62.5% of the variance in the acculturative product advantage, and 67.4% of the variance in marketing performance (Figure 2).

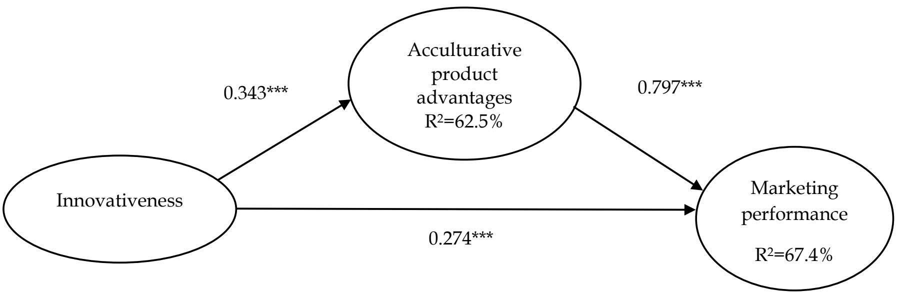

Figure 2: Structural model

As highlighted in Table 4, the effect of innovativeness on marketing performance is significant (β = 0.274, t = 2.547, p = 0.011). Therefore, H_1 is supported. This study also demonstrates a substantial evidence on the relationship between innovativeness and acculturative product advantages (β = 0.343, t = 4.22, $p<0.001$), and acculturative product advantages and marketing performance (β = 0.797, t = 5.383, $p<0.001$). This, therefore, provides support for H_2 and H_3. Following the direct effect, the mediating effect using the Sobel test was also performed (Preacher & Hayes, 2004). The Sobel test statistic was obtained with a value of 2.176 at p = 0.01. This result suggests that there is another explanation for the high marketing performance of the Sarong *Samarinda* industry, apart from its innovative capabilities. In part, its better marketing performance seems to be determined by its high capacity in generating the advantages of its acculturative products. This finding therefore supports H_4.

Table 4: Results of Hypotheses Testing

Hypothesis	Path	β	t-value	p-value	Result
H_1	Acculturative product advantages → Marketing performance	0.797	5.383	***	Accepted
H_2	Innovativeness→ Marketing performance	0.274	2.547	0.011	Accepted
H_3	Innovativeness → Acculturative product advantages	0.343	4.220	***	Accepted

4.3 Discussion

This study has investigated the relationship between innovativeness, acculturative product advantages and marketing performance. The outcomes derived from this study demonstrate that the innovativeness of the entrepreneurs serves as a crucial factor which increases the value of the acculturative products. The impact of its innovativeness on the marketing performance is also found to be substantial. The results also show the acculturative product is advantageous for the entrepreneurs to gain higher marketing performance. The advantage of the acculturative product act as a mediator in this study. It could be a reason for local entrepreneurs of Sarong *Samarinda* to enhance their marketing performance. In other words, the entrepreneur could use the unique characteristics of their local cultures which is the sarong as a marketing distinction to sell this acculturative product.

In this study, innovativeness is found to have a significant effect on marketing performance in the context of an acculturative product, specifically Sarong *Samarinda*. This finding is found to be in line with previous studies (Abril & Martos-Partal, 2013; Billore & Billore, 2019). The innovation capability of the entrepreneurs has been noticed mostly in their ability to offer new designs, motives and materials that will create positive customer engagement. Despite this situation, this study also provides evidence on the importance of coupling the innovative capabilities with the ability to maintain product value and uniqueness. Being a creative industry, the entrepreneurs of Sarong *Samarinda* may not be able to highly improve the marketing performance by emphasising on exploring new technologies to drive efficient production as they have to maintain the uniqueness and novelty of the product. Rather, most of the industry players may use their innovativeness on product development by finding ways to increase the product quality and attractiveness. They have to be careful with product innovation, as they need to ensure that the new products produced still maintain the uniqueness of Sarong *Samarinda* which represent the local culture.

The empirical evidence of the study has shown the advantage of the acculturative product of Sarong *Samarinda* especially its uniqueness when categorise through the isolative mechanism. This study has shown the significant relationship between the advantages of the acculturative product and its marketing performance. The outcome has been endorsed by Sugiyarti et al. (2018). Nonetheless, the result is not surprising given that as an acculturative product, Sarong *Samarinda* has its own uniqueness, thereby providing superiority against other competing products. While the sarong industry maybe flooded by digitally printed Sarong *Samarinda* which are cheaper, the originality of Sarong *Samarinda* that is traditionally woven offers a distinctive quality attribute. In this respect, Sarong *Samarinda* offers entrepreneurs a competitive barrier. Moreover, since the industry is a know-how industry, the acculturative product produced by the weavers could not be easily imitated. The use of the *gendogan*, the non-technology woven tool, for this acculturative product also plays a role in supporting the uniqueness of the Sarong *Samarinda* (Purwadi, 2016).

5. Conclusion and Implication

Underpinned by the resource-based view theory, this study has developed a research model which incorporates three isolating mechanism, represented by the acculturative product advantages as a mediator that will influence the interactions between innovativeness and marketing performance. The findings obtained from this study should contribute to the body of literature in several ways. First, this study expands on the literature in the context of Sarong *Samarinda*. Being a cultural heritage of East Kalimantan, this product is embedded by strong skills, talent, and knowledge, and the industry appears to potentially contribute to the high economic wellbeing and wealth creation of the local residents. Being an acculturative product, Sarong *Samarinda* is a local production which has the potential to promote the villages located in Samarinda Seberang, East Kalimantan as tourist centre and hence enhance the national tourism sector. Second, this study provides empirical support showing the importance of the isolating mechanism as a tool in creating a competitive barrier for the industry, thereby preventing competitors from entering the market. In this regard, it would seem practical for Indonesia, as a developing country, to make attempts to integrate the concept of acculturative product as one of the country's source of income. Third, there is evidence drawn from this study to show that the entrepreneurs may gain higher marketing performance from their innovative capabilities when they also have the ability to produce a distinctive product. In fact, in a creative industry, such as Sarong *Samarinda*, the key factor in securing its marketing performance is by positioning its uniqueness as an acculturative product.

The findings of this study have implications for practitioners. An entrepreneur involved in the creative industry such as Sarong *Samarinda* must be able to innovate by always displaying the uniqueness of the product itself. Rather than developing new designs and motives which may not represent the culture of *Wajo-Bugis*, *Kutai* and *Dayak*, the entrepreneurs should consider looking at how their current motives can be woven to make different types of products instead of only focussing on the sarong. Through this, they can maintain the uniqueness of their cultures. Although the *gendogan* may take a longer production time, the entrepreneurs should not consider using machines to hasten their Sarong *Samarinda* as an acculturative product. The use of modern machines and technologies tend to reduce the value of the product. Instead, practitioners should persevere with producing the Sarong

Samarinda as a handmade product. Although Sarong *Samarinda* is being used mainly by the local people, the product should be widely promoted to tourists, for it to be considered as one of the cultural tourism products, since it promotes the assimilation of Indonesia's multi-ethnic tribes.

While the current study has provided some useful insights into the role of the acculturative product as an isolating mechanism in the context of Sarong *Samarinda*, there are some limitations that need to be addressed. The first of these is the generalisability of the results which has focused on Samarinda city only. The second limitation is that the survey was confined to only a few variables. Thus, it would be interesting for future research to incorporate more variables that are related to the Sarong *Samarinda* industry.

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What Tickles Your Fancy? The Case of Technology and Engineering Students Becoming Entrepreneurs

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ABSTRACT

Manuscript type: Research paper
Research aims: This research aims to investigate the factors affecting entrepreneurial intention among technology and engineering students.
Design/Methodology/Approach: Quantitative data were collected from 210 students majoring in technology and engineering. Data are then analysed using Smart PLS.
Research findings: Findings indicate that perceived desirability, perceived feasibility, need for achievement and need for autonomy have a significant relationship with entrepreneurial intention. This study highlights the role of entrepreneurship education programme as the moderating variable among technology and engineering students.
Theoretical contribution/Originality: This study expands on existing entrepreneurship literature. It looks at the issue from the perspective of technology and engineering students. The study seeks to determine the role of entrepreneurship education programme as the moderating variable.

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Practitioner/Policy implication: The findings of this study indicates the importance of entrepreneurship programme as a platform for graduate students to develop their entrepreneurial skills, which in turn would encourage them to be an entrepreneur.
Research limitation/Implications: Since this study measures entrepreneurial intention rather than entrepreneurs' actual behaviour, it has to be reminded that intentionality may not necessarily lead to actual behaviour.

Keywords: Technology, Engineering Students, Entrepreneurial Intention
JEL Classification: L26, L31

1. Introduction

Entrepreneurship is an activity to exploit products and services whereby a person follows chances regardless of the capital owned (Barringer & Ireland, 2016). The concept of entrepreneurship has gained a huge attention in today's age and time because of its importance and significance on economic growth, job creation, sources of innovation and productivity (Urbano & Aparicio 2016). In developing countries, entrepreneurship is seen as a means to stimulate economic development and to tackle social challenges (Ozaralli & Rivenburgh, 2016) such as unemployment. In the context of Malaysia, the rising rate of unemployment among graduate students has become one of the major concerns of the government. A report (Bernama, 2019) implied that almost 60 per cent of the local graduates were still unemployed a year after graduation. Taking the initiative to address this issue, the government has introduced various programmes with the purpose of encouraging university students to start their own business, even before graduating. It appears that having a business not only rules out unemployment for one student, it also has the capacity to create new employment for others. This practice can transform the perception of society, and the graduate students now become job creators rather than job seekers (Gelaidan & Abdullateef, 2017).

In view of the importance of entrepreneurship in fostering economic development, various studies (e.g., Karimi, Biemans, Lans, Chizari, & Mulder, 2016; Bolton & Lane, 2012; Sesen, 2013) have investigated the reasons that caused people to become interested in becoming entrepreneurs. The findings showed that certain factors were responsible, for example, personality, environment, business and economics education programmes available, innovativeness, risk-taking attitudes, as well as educational and structural support. All these factors were key in motivating the individuals to take on entrepreneurship. All of these studies had also focussed on the student context. For example, Gelaidan and Abdullateef (2017) found that entrepreneurial intention among Malaysian students was highly influenced by educational support. In China, students were found to be more inclined towards entrepreneurship due to the existence of psychological capital. Despite the important insights offered by these studies, findings were also mainly focussed on business students except for Barba-Sánchez and Atienza-Sahuquillo (2018). Many of them seemed to have overlooked the fact that the idea of entrepreneurship is inherently ingrained within the engineering trade. Students from the engineering technology were better suited for entrepreneurship because of their ability to develop new technology-based companies, thereby creating new jobs for others whilst reducing unemployment rates (Steering Committee of the National Engineering Education Research Colloquie, 2006). As an elaboration, many of the big international firms such as Rolls-Royce, Intel, Oracle and Yahoo! were founded by engineers. Despite not having a 4-year degree in business or rntrepreneurship, these students had ventured and excelled in being entrepreneurs dealing with businesses that were both related and not related to their field of study. According to Law and Breznik (2017), there are several entrepreneurial traits that have been identified in engineering students and which influenced them into becoming entrepreneurs. These traits are noted as risk-taking, creativity and innovativeness. Engineering students who had chosen to be entrepreneurs possessed the risk-taking characteristic because they were not afraid of failure. Even in the worst case scenario, they were still able to make best decisions. On top of that, their high creativity and innovativeness also stimulated the engineering students to become entrepreneurs. They tended to be more creative in improving their current process and in developing new ideas. These traits were most noticeable in engineering students who had also taken entrepreneurial classes and programmes. Motivated by the above arguments, this study thus aims to investigate factors influencing entrepreneurial intention among technology and engineering students of a university in Malaysia. For this purpose, an empirical study involving 210 technology and engineering students attending an optional entrepreneurship program was developed. The outcome derived may be useful to the policy makers for understanding not only the pattern of relationship among intention antecedents, but also its implications for intervention and for developing entrepreneurial intention.

The remainder of this paper is organised as follows. Section 2 presents the literature review and discusses the theoretical framework. Section 3 highlights the methodology. Sections 4 and 5 report and discuss the findings. Section 6 concludes the paper by providing the research implications and limitations.

2. Literature Review and Hypotheses

2.1 Entrepreneurship and its Importance in the Malaysian Context

An entrepreneur is a self-employed individual or person who operates a small business that takes on all the risks and benefits of the company he/she is working on. A successful entrepreneur must focus on creativity, innovation, dynamism, management, team building, performance, motivation and issue solving (Charantimath, 2006). Most entrepreneurs require technical and management skills and also entrepreneurial orientations (Adjimah & Perry, 2014), thus entrepreneurs need to be able to seize opportunities and to manage their resources effectively so as to produce goods and services for the consumption of others.

According to Soete and Stephen (2004), countries which focus on entrepreneurship and self-employment are experiencing an increased economic growth. Due to this, entrepreneurship is being given serious attention by governments, including Malaysia. To this end, the Malaysian government has narrowed its focus on entrepreneurship by helping and improving the industrial structure in order to create industries for the younger generation to explore. This can be noted from the national programmes and policies which had been established by the government to enhance entrepreneurial growth in the country. Entrepreneurship funds, physical infrastructure and company consultancy assistance were among the programmes that had been introduced. In its effort to transform Malaysia into an entrepreneurial nation and to curb unemployment problems, the government had also promoted the involvement of women and youths in entrepreneurship (Nor, 2015). As a result, there was a marginal rise in the number of entrepreneurs between 1982 and 2012 (Department of Statistics Malaysia, 2014) during which the number of entrepreneurs had increased from 1.3 to 2.6 million.

Similar to other countries, the school and education system play a significant role in enhancing and creating entrepreneurial characteristics among students in Malaysia (Ibrahim & Soufani 2002; Ali, Hashim, & Ibrahim, 2017). One of the goals of encouraging entrepreneurship among students in schools and universities is to foster the desire of developing one's own interest for one's own future, i.e. to become a job creator rather than a job seeker. In setting up the entrepreneurship curriculum, universities are also striving to balance the academic standards of the students and those desired by the industry. The goal of the curriculum is to align it with the nation's goal of creating jobs that can help to improve the economy of the country (Keat, Selvarajah, & Meyer, 2011). All local universities in Malaysia are currently investing in entrepreneurship where many have also set up their own units or centres for entrepreneurship development. Universiti Teknikal Malaysia Melaka (UTeM), for example, has such a centre called the Centre for Enterprise and Technopreneurship Development (CREATE). Its aim is to encourage and enhance the entrepreneurship skills of its students. This shows that Malaysian universities are slowly adapting the entrepreneurship environment to prepare its graduates, including those from the technical and engineering background to establish their own businesses rather than to be working for others in the industry.

2.2 *Entrepreneurial Intention*

Intention is interpreted as the tendency people have in exercising their efforts in designing or applying a certain behaviour. In the context of entrepreneurship, Bird (1988) said that entrepreneurial intention can be explained as the mindset of the entrepreneur who is aiming at the attention, incident and activity so as to achieve the concept of business. The understanding of entrepreneurship intention is important because such intentions stimulates or triggers the entrepreneurial journey; it acts as a guidance for the individual in the actual development of a business (Iakovleva & Kolvereid, 2009).

Considering that entrepreneurial intention is an important behaviour that drives an individual to start a new business, many studies were conducted to explain the determinants. Many factors, such as cognitive and psychological traits (Siu & Lo, 2013; Isiwu & Onwuka, 2017), educational support (Gelaidan & Abdullateef, 2017), public policy (Sperber & Linder, 2019), and culture were identified from existing literature.

Focussing on entrepreneurship intention, past studies had also used university or college students as their target samples (e.g., Ismail et al. 2009; Turulja, Veselinovic, Agic & Pasic-Mesihovic, 2020; Gelaidan

& Abdullateef, 2017). Student samples were engaged in examining entrepreneurial intentions because they were thought to be in the state of a psychological process of making decisions on whether to venture into new business creations or to work for others (Liñán & Chen, 2009). Supporting the use of students as samples, Chuah, Ting, Run and Cheah (2016), stated that a clear understanding of entrepreneurial intention needs among students is imperative because they are the future potential entrepreneurs. In the Malaysian context, Mat, Maat and Mohd (2015) found that the need for autonomy and the need for achievement had a strong relationship with entrepreneurial intentions among their participants.

2.3 Underpinning Theory and Hypotheses Development

This study employed the entrepreneurial event model that was developed by Shapero (1982). This theory asserts that an individual's choice to embrace a new venture depends on three factors: the perception of the desirability and the propensity to act, and the perception of feasibility. This model had been empirically tested by many studies (e.g., Tiwari, Bhat, & Tikoria, 2020; Omidi Najafabadi, Zamani, & Midamadi, 2016; Zhang, Duysters, & Cloodt, 2014).

While the model had proposed three elements, it appears that perceived desirability and perceived feasibility were the main factors that contributed towards entrepreneurial intention among students (Davids, 2017; Liñán, Rodríguez-Cohard, & Rueda-Cantuche, 2011). Following this trend of development, the current study also includes perceived desirability and perceived feasibility as variables so as to determine the level of entrepreneurial intention among the technology and engineering students. In addition to these two variables, two other important variables, need for autonomy and need for achievement were also integrated into the original research model (Shapero, 1982).

The study by Dan, Chenchen and Yuchen (2019) had noted that a higher need for autonomy would lead to higher entrepreneurial intention among Chinese postgraduates. However, among accounting students, it was their ambition of becoming a partner in an existing CPA firm or starting their own CPA firm that seemed to affect their high entrepreneurial intention (Lam, Azriel, & Swanger, 2017). Thus, the variables "need for autonomy" and "need for achievement" were included in this study. The aim was to examine whether the intention of becoming an entrepreneur was the result of the individual need to have autonomy in making decisions and to be able to achieve the outcomes that they have set for themselves (Chen, Elliot, & Sheldon, 2019; Lammers, Stoker, Rink, & Galinsky, 2016). The following highlights the hypotheses developed in this study.

Perceived desirability can be described as the extent of attraction an individual has towards a specific behaviour (Davids, 2017). An individual who has higher perceived desirability tend to view entrepreneurship as an appealing and attractive career. These individuals would display a favourable attitude and more enthusiasm towards entrepreneurship. They believe that the successful creation of a new venture would lead to net benefits. A high desirability towards independence, extra income and taste of challenge and variety are also the reasons why some individuals would develop a positive attitude towards entrepreneurship and ideas. This shows that entrepreneurship is considered to be the best option as long as it is viewed as professionally stimulating, and financially rewarding. Based on these arguments, this study postulates that:

H_1: Perceived desirability is positively related to entrepreneurial intention.

Perceived feasibility reflects the individual's perception on their personal capability to do a certain job or task (Bandura, 1995). It is the individual's perception of how difficult or easy it is to initiate a start-up behaviour. Within the context of entrepreneurship, individuals who perceive that they have capability in terms of skills, knowledge and personality to be a successful entrepreneur would be more willing and more interested in embracing new business creations. This is because they believe and are confident that they could manage the business well (Godsey & Sebora, 2010). Individuals who perceive that they have the capabilities tend to have the perception that they could learn faster. Based on these arguments, this study postulates that:

H_2: Perceived feasibility is positively related to entrepreneurial intention.

McClelland, Atkinson, Clark and Lowell (1976) revealed that the concept of the need for achievement could be referred to as the individual desire to get achievements and to master the competencies, supervision or high standards. Individuals with a higher need for achievements are called risk-takers. They set challenging objectives for themselves and they take some potential threats to achieve those objectives. They regard goal accomplishments as a set of reward and they appreciate these more than the financial reward. Their need for achievement is also one of the factors that contribute to entrepreneurship among the technology engineering students (Mat, Maat, & Mohd, 2015). A fundamental feature of personality trait such as the need for achievement can affect the person's entrepreneurial intention (Karabulut, 2016; McClelland et al., 1976). Individuals who have a strong need for achievement have a powerful desire to be successful in their lives. They expect their decision to bring them good results. Studies also noted that individuals with a high need for achievement also had a low acceptability for failure (Steinmayr, Weidinger, Schwinger, & Spinath, 2019). Individuals who have a higher need for achievement tend to have higher levels of entrepreneurial potential as an indication of their desire and capacity to engage in the entrepreneurial activities (Zeffane, 2013). Based on these arguments, this study postulates that:

H_3: The need for achievement is positively related to entrepreneurial intention.

The need for autonomy can be explained as the ability of individuals to make choices according to their own free will or preference. The characteristics that are suitable to be described under the need for autonomy are: they like doing unconventional things, they prefer to work alone, they have to do "own things", they have to express what they think, they hate to take control of others, they like to make up their own minds, they do not bow to group pressure, they are stubborn, and they are determined (Mohamed, Rezai, Nasir Shamsudin, & Mu'az Mahmud, 2012).

According to Martin and Javalgi (2018), the need for autonomy positively corresponded with entrepreneurial intention. Individuals who already have a higher need for autonomy may pursue to maintain or improve that level through entrepreneurial activities. As indicated by Wickham (2004), most of the entrepreneurs have a need for independence. They aspire to be their own bosses. One of the main reason why people intend to be an entrepreneur is because they want to be their own boss; they do not want to be imposed by others' rules and regulations. Based on these arguments, this study postulates that:

H_4: The need for autonomy is positively related to entrepreneurial intention.

Whilst perceived desirability and perceived feasibility are expected to encourage students to consider entrepreneurship as a career opportunity, an individual may have a change in behaviour when the push and pull factors set in. Such changes may alter the perception of the individual on whether the level of desirability and feasibility possessed would be sufficient for undertaking entrepreneurship. In the educational environment, the change of attitude may depend on the educational support provided.

The entrepreneurship development programme, known as EDP is a short-term approach to address the crisis of unemployment. The EDP is aimed at moving entrepreneurship among youths into the mainstream of the economy, along with the growth-oriented and sustainable businesses (Awongbenle & Iwuamadi, 2010). It was further observed by Awongbenle and Iwuamadi (2010) that the entrepreneurship development programme acted as a mechanism which would inform youths about the world of business and the possibilities of setting up their own businesses. Entrepreneurship development programmes thus give the youths more awareness about entrepreneurship and enterprises. The goal of the EDP is to assist the youths into considering realistically the alternatives for starting a small business or self-employment. Hence, the EDP could support and equip students with the necessary technical skills, personal entrepreneurial skills and management skills, all of which are important elements for promoting student readiness in starting new businesses (Roxas & Azmat, 2014). Based on these arguments, this study postulates that:

H_5: Entrepreneurship development programmes moderate the relationship between perceived desirability and entrepreneurial intention.

H_6: Entrepreneurship development programmes moderate the relationship between perceived feasibility and entrepreneurial intention.

Based on the above hypotheses, a conceptual framework (Figure 1) was formulated.

3. Data and Methodology

This study is quantitative in nature. The survey method was used to extract data based on designed questionnaires which were distributed

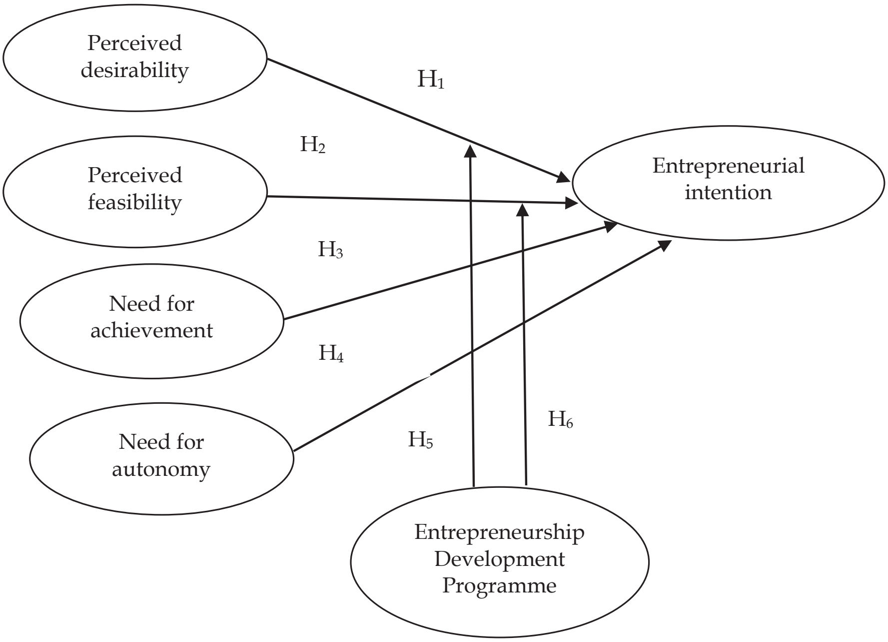

Figure 1: Conceptual Framework

to a group of undergraduates studying technology and engineering in a local university. The measurements used were adapted from previous studies (see Appendix).

The target sample used in this study comprised 210 final year undergraduates studying at Universiti Teknikal Malacca, Malaysia. This university focusses on producing technology and engineering graduates. It also has a dedicated centre, Centre for Enterprise and Technopreneurship Development, also known as CREATE. One of the aims of this centre is to facilitate the technology and engineering students into obtaining knowledge and skills to help them start their business, rather than to work in the industry. It also serves as a platform to promote and encourage the students into gaining entrepreneurship skills.

For this study, the university's registrar was contacted through email to secure permission and support for conducting the survey in the university. Based on the list provided by the university's registrar, there were 1,960 final year degree students in the field of technology and engineering. A total of 1,000 students who were taking courses in the campus and not undergoing practical training, were contacted through email with an attachment containing the questionnaire, information about the study, instruction for questionnaire completion and an assurance of confidentiality. A cover letter explaining the study was also provided. It also explained that the survey was voluntary and confidential and that no individual results can be identified from the report. Of the 1000 questionnaires distributed, a total of 210 questionnaires were retrieved and used for analysis. Table 1 depicts the descriptive statistics on the respondents' profiles. It appears that a majority of the

Table 1: Demographic Profiles

Demographics	Frequency	Percentage (%)
Gender		
Females	109	51.9
Males	101	48.1
Faculty		
FTMK	29	13.8
FKM	29	13.8
FTKMP	31	14.8
FTKEE	30	14.3
FKP	29	13.8
FKEKK	32	15.2
FKE	30	14.3
Age		
20-25 years old	194	92.4
26-30 years old	12	5.7
More than 30 years old	4	1.9
Race		
Malay	141	67.1
Indian	29	13.8
Chinese	39	18.6
Others	1	0.5

Note: FTMK: Fakulti Teknologi Maklumat dan Komunikasi (Faculty of Information and Communication Tehnology), FKM: Fakulti Kejuruteraan Mekanikal (Faculty of Mechanical Engineering), FTKMP: Fakulti Teknologi Kejuruteraan Mekanikal dan Pembuatan (Faculty of Mechanical and Manufacturing Engineering Technology), FTKEE: Fakulti Teknologi Kejuruteraan Elektrik dan Elektronik (Faculty of Electrical and Electronic Engineering Technology) FKP: Fakulti Kejuruteraan Pembuatan (Faculty of Manufacturing Engineering), FKEKK: Fakulti Kejuruteraan Elektronik dan Kejuruteraan Komputer (Faculty of Electronic and Computer Engineering), FKE: Fakulti Kejuruteraan Elektrik (Faculty of Electrical Engineering).

respondents were Malay and between the age of 20 to 25 years old. They were equally distributed among genders and faculties. These results show that the samples are broadly representative of the final year students of the university.

4. Results and Discussion

This study employed structural equation modelling using SMART PLS to analyse the measurement and structural model. In line with Anderson and Gerbing (1988), the two-step procedure was utilised, whereby the measurement model was first examined to measure convergent validity and discriminant validity. A structural model analysis was then performed to test the hypotheses.

4.1 Measurement Model

A measurement model analysis comprising the five constructs was performed. The convergent validity was examined based on the factor loadings, composite reliability, and average variance extracted (AVE). As indicated in Table 2, all the constructs appear to have factor loading, composite reliability and AVE values of above 0.5, indicating an acceptable convergent validity (Hair, Black, Babin, & Anderson, 2010).

In this study, the discriminant validity was assessed by comparing the inter-correlation between the constructs and their square root of AVE values (Fornell & Larcker, 1981). As indicated in Table 3, all the constructs have a square root of AVE values that are more in comparison with their correlations with others, implying an adequate discriminant validity.

Based on the results of the measurement model, it is deduced that all the constructs have achieved substantial reliability and validity. The model is found to be suitable for the structural model analysis and hypotheses testing.

4.2 Structural Model Analysis

A 5,000 resample of bootstrapping procedure was performed to test the structural model and the hypotheses developed. As indicated in Figure 2, the R^2 value of entrepreneurial intention is 0.563. This value is above the threshold value of 0.333, indicating a moderate model. Path coefficient was then used to examine the strength of the relationships.

Table 2: Convergent Validity

Constructs	Outer Loadings	Composite Reliability	AVE
Perceived desirability (PD)		0.894	0.680
PD1	0.845		
PD2	0.896		
PD3	0.743		
PD4	0.805		
Perceived feasibility (PF)		0.852	0.527
PF1	0.813		
PF2	0.861		
PF3	0.832		
PF4	0.784		
PF5	0.672		
Need for achievement (NFA)		0.835	0.506
NFA1	0.748		
NFA2	0.593		
NFA3	0.788		
NFA4	0.683		
NFA5	0.728		
Need for autonomy (NFB)		0.844	0.578
NFB1	0.820		
NFB2	0.714		
NFB3	0.830		
NFB4	0.663		
Entrepreneurial intention (EI)	0.791	0.511	
EI1	0.898		
EI2	0.901		
EI3	0.582		
Entrepreneurship development programme (EDP)		0.687	0.55
EDP1	0.865		
EDP2	0.651		
EDP3	0.663		

Table 3: Discriminant Validity

	PD	PF	NFA	NFB	EDP	EI
PD	**0.820**					
PF	0.663	**0.730**				
NFA	0.322	0.441	**0.711**			
NFB	0.344	0.462	0.660	**0.766**		
EDP	0.351	0.452	0.554	0.334		
EI	0.530	0.609	0.320	0.350	0.554	**0.711**

Notes: Diagonal elements report the squared root of AVE values. PD = perceived desirability, PF = perceived feasibility, EDP = entrepreneurship development programme, EI = entrepreneurial intention.

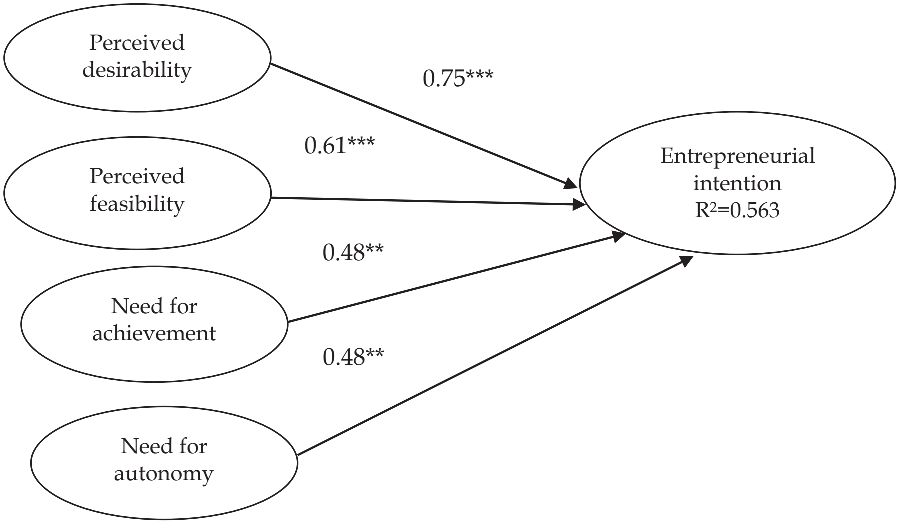

Figure 2: Structural Model for the Direct Effect
Note: ***p<0.001, **p<0.05.

It shows perceived desirability (β = 0.75, t = 6.615, p < 0.001), perceived feasibility (β = 0.61, t = 3.74, p < 0.001), need for achievement (β = 0.48, t = 2.01, p = 0.02), and need for autonomy (β = 0.48, t = 1.99, p = 0.03) to be significant with entrepreneurial intention. Hence, H_1, H_2, H_3 and H_4 are supported.

In addition to the direct effect, we also performed the moderation analysis to examine the impact of education development programmes on the relationship between perceived desirability, perceived feasibility, and entrepreneurial intention. Interaction effects were computed through the product indicator approach. The significance of the interaction effect was assessed using a bootstrapping procedure (5,000 resamples) (Hair, Ringle, Sarstedt, 2011). The R^2 had increased from 0.563 (main effect model) to 0.64 (interaction effect model). The path coefficients were also found to be significant, indicating that entrepreneurship development programmes acted as a moderator between perceived desirability and entrepreneurial intention ($\beta = 0.64$, $t = 6.68$, $p < 0.001$), and perceived feasibility and entrepreneurial intention ($\beta = 0.36$, $t = 3.75$, $p < 0.001$) (Table 4). Hence, H_4 and H_5 are supported.

Table 4: Moderating Effect

Path	β	t-value	p-value	Results
PD * EDP → EI	0.64	6.68	0.000	Accepted
PF * EDP → EI	0.36	3.75	0.000	Accepted

Notes: PD = perceived desirability, PF = perceived feasibility, EDP = entrepreneurship development programme, EI = entrepreneurial intention.

This study has provided empirical evidence showing the effect of perceived desirability, perceived feasibility, need for achievement and need for autonomy as predictors of entrepreneurial intention. The significant effect of perceived desirability on entrepreneurial intention in this study appears to be consistent with Davids (2017). Decades before this kind of intervention, Malaysian graduates only thought about a well-defined career path, where children would commonly follow the desire of their parents or elders in taking up a profession. However, the expansion of the social media as a platform, and other great advances of technology applications have opened up new horizons and unexplored opportunities for the young and ambitious graduates. This opportunity has influenced them into feeling unsatisfied with being just an employee in the industry. The success stories of many young Malaysian entrepreneurs such as Vivy Yusof, the founder of FashionValet and dUCk Group, who was listed in Forbes Asia could have instilled a strong desire among the other youths to become an entrepreneur.

Thus, it is not surprising that perceived desirability had emerged as the strongest predictor.

On a similar note, this study also found perceived feasibility to be an influencing factor. The outcome is consistent with Godsey and Sebora (2010). The higher the competencies, skills and resources possessed by the students, the stronger their willingness to embrace entrepreneurship. These results are predictable considering that the students in the sample received substantial support from CREATE. At this centre, the students are given training and other development programmes that could help them to gain related entrepreneurship knowledge and skills. These skills are expected to prepare them for self-employment when they graduate. Notwithstanding this, the technology and engineering students are also found to have a strong attitude towards rebuilding self-confidence after a setback. They responded positively to failure and they remained optimistic, as noted in prior studies. These characteristics have perhaps contributed to their higher perceived feasibility which led to their willingness to venture into a new business opportunity.

In this study, we have found that entrepreneurship development programmes moderated the relationship between perceived desirability, perceived feasibility, and entrepreneurial intention. Respondents who have received higher levels of entrepreneurship education have a stronger desire to be entrepreneurs. They also have higher confidence to start a new business. This result shows that entrepreneurship education, such as the one provided by CREATE, could provide students with clearer expectations of what is needed to be a successful entrepreneur. As they received more educational support, they would become more confident in their ability to evaluate entrepreneurial opportunities and to secure resources (Maresch, Harms, Kailer, & Wimmer-Wurm, 2016).

Our results also show that respondents who perceive a higher need for autonomy and achievement are more attracted towards considering entrepreneurship as their profession. Autonomy is strongly related to entrepreneurship in a sense that by being an entrepreneur, one can decide what, how, and when work would be done. By being an entrepreneur, one can also have the freedom to make decisions. In the context of this study, the result is expected since the respondents are mainly from the millennial generation. Studies have shown that millenials want the independence to work in the way they prefer. For them, flexible scheduling and work-from-home opportunities are the key factors in their decision to embrace a certain profession (Berkup, 2014). On a similar note, millennials have also been found to be highly motivated for achievement, and as a result, they would try to excel in the tasks and to perform their duties as best as they can, optimising all the existing resources, skills and abilities possessed (Mahmood, Mamun, & Ibrahim, 2020). These characteristics make them suitable to be entrepreneurs.

5. Conclusion and Implications

This research has set out to investigate factors affecting entrepreneurial intention among the technology and engineering students, by focussing on the interactions of five different variables, namely: perceived desirability, perceived feasibility, need for achievement, need for autonomy and entrepreneurship development programmes on entrepreneurial intention. This study has also sought to expand on previous studies by focussing on the technology and engineering students to see what factors would affect their decision to become entrepreneurs. The entrepreneurship development programmes offered by CREATE was added as the moderator. The findings show that these students may require educational support to boost their desirability and feasibility to be an entrepreneur. Where previously graduates were more likely to work in the industry, today, the youths seem more incline to try out being an entrepreneur. This study utilised Shapero's entrepreneurial intention model by incorporating two important variables – need for autonomy and need for achievement as variables to assess the characteristics of the millennial generation.

The findings of this study show that the initiatives of universities such as UTEM in dedicating a centre for the entrepreneurship programme is a positive move. It enables and encourages the graduates to become entrepreneurs. This has helped to open up an additional avenue for the younger generation of this country to develop their future. By opting to become entrepreneurs, the younger generation will also be contributing to the economy of the country. This endeavour would encourage more innovations, more job openings and more independence, thereby reducing unemployment. The findings of this study also imply that the entrepreneurship programme established by local universities should not be confined to the business graduates only. Instead, graduates from different faculties such as technology, science and engineering should also be exposed. Notwithstanding the university, the government and policy makers need to initiate new outlooks of developing an appropriate platform for youths in the rural areas. This can promote them to develop the need for achievement and autonomy since these youths have lesser opportunities. For such groups, the government may consider organising trainings which can be extended to these youths. By developing these two needs of the younger generation, their desirability to be an entrepreneur could be elevated. They would have more confidence to venture into this profession as they have gained the knowledge and skills to kick start this aspiration.

Despite the substantial contributions generated from the current study, there are also some limitations in this study. First, the samples used were confined to the technology and engineering students from UTEM. Future research may extend on the population by including those from different universities. Second, the findings are confined to the technology and engineering students. Future research may conduct a comparative analysis of the various students from various backgrounds of study. This would provide a more diverse input in terms of values and personality traits, which may contribute to the impact on their entrepreneurial intention.

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Appendix

No.	Items	Source
Perceived desirability (PD)		
PD1	I know what it takes to start a business.	Adapted from Lepoutre, Van den Berghe, Tilleuil and Crijns (2010)
PD2	I feel sure enough of myself to start my own business at some point in the future.	
PD3	If I would start my own business, it would certainly be a success.	
PD4	I am determined to start a business within the next five years.	
Perceived feasibility (PF)		
PF1	I think it would be very cool to start my own business.	Adapted from Lepoutre et al. (2010)
PF2	I would love to start my own business.	
PF3	I think my business success depends on my willingness.	Adapted from Boukamcha (2015)
PF4	Launching a new business seems to be feasible for me.	
PF5	I have confidence in my ability to achieve my business creation and ensure its completion.	
Need for achievement (NFA)		
NFA1	I would not mind routine unchallenging work if the pay was good.	Adapted from Maoto and Niekerk (2014)
NFA2	I like challenges that really stretch my abilities rather than things I can do easily.	
NFA3	I think more of the present and the past rather than of the future.	
NFA4	It is more important to do a job well than to try to please people.	
NFA5	When I am faced with a challenge, I think more about the results of succeeding than the effects of failing.	
Need for autonomy (NFB)		
NFB1	I do like to do things that are novel or unconventional.	Adapted from Maoto and Niekerk (2014)
NFB2	I like to do things in my own way without worrying about what other people think.	
NFB3	When tackling a task, I rarely need or want help.	
NFB4	Most people think I am stubborn.	

No.	Items	Source
Entrepreneurship development program (EDP)		
EDP1	I have taken entrepreneurship technology subject.	Adapted from Lame and Wan Yusoff (2013)
EDP2	I have gone through the experiential learning in the subject of entrepreneurship in my university.	
EDP3	I have undergone training in entrepreneurship organised by my university and other training providers.	
Intention to become an entrepreneur (EI)		
EI1	I am more likely to become an entrepreneur after graduation.	Adapted from Maoto and Niekerk (2014)
EI2	I am more likely to be an entrepreneur at any point in the future.	
EI5	I will become an entrepreneur based on the support from my family.	