International Financial Reporting Standards Adoption Strategies Effects on Supply Chain Management, Corruption and Accounting Quality: International Evidence

Abdullah Hammad Alhammad[1*], Asna Abdullah Atqa[2], Ahmed Razman Abdul Latiff[1], W.N.W. Azman-Saini[2]
[1]*Putra Business School, Universiti Putra Malaysia,43400 Serdang, Selangor Malaysia*
[2]*Faculty of Economics and Management,Universiti Putra Malaysia,43400 Serdang, Selangor, Malaysia*
[1]a.h.alhammad@hotmail.com

***Abstract*- The empirical literature on the effects of International Financial Reporting Standards (IFRS) adoption strategies on supply chain management and accounting quality focuses on more IFRS enforcement strategy. Limited studies have, in particular, examined IFRS modification strategy in relationship with accounting quality. In this regard, this paper investigates the impacts of different IFRS adoption strategies on accounting quality. The mediating effect of control of corruption on the relation between different IFRS adoption strategies on accounting quality is also examined. The paper uses the two step system GMM estimator with a sample of 35 countries for the periods that span from 2013 to 2017. The findings reveal that different IFRS adoption strategies have significant influences on accounting quality. The different IFRS adoption strategies, namely enforcement and modification are positively associated with accounting quality with measure of timely loss recognition ($\beta 1 = 0.190$, $p < 0.001$) and ($\beta 2 = 0.189$, $p < 0.001$), respectively. These findings are consistent with the prior studies. The findings underline the importance of distinction between different IFRS adoption strategies. Furthermore, control of corruption is found to mediate the associations between different IFRS adoption strategies and quality of accounting, indicating accounting quality is related to control of corruption, which in turn is affected by both IFRS enforcement and modification strategies. Additionally, the accounting quality is strongly improved by IFRS enforcement and modification through the control of corruption as mediation. This implies that the control of corruption in a given nation by consdring the SCM, improves in accounting quality more than IFRS adoption strategies. These findings provide flesh insights to stakeholders and contribute to accounting quality literature.**

Keywords- *IFRS, supply chain management, enforcement, modification, accounting quality, control of corruption.*

1. Introduction

In the past decades, the International Accounting Standards Board (IASB) has introduced a set of accounting standards (IFRS). For instance the highly quality accounting standards include International Financial Reporting Standards (IFRS) designed to improve accounting quality since these standards reduce the manager's discretions to manipulate earnings management [1-3]. Most of the countries in this regard have revolutionized their accounting practices and converged to IFRS. Such standards have reshaped financial reporting systems to be more formalized and standardized which , in turn, enhance the comparability and quality of accounting information [4-8]. The standards which are principal-based accounting standards are superior to domestic GAAP because they harmonize the standards of financial accounting across countries, advancing the transparency and comparability of financial reporting around the world in general and give users such as auditors and investors a unified view of financial reporting that will be accounted into their decision-making in particular [9].

Recent years, various works have attempted to investigate the relations between IFRS adoption strategies and timely loss recognition. Throughout this paper, we use enforcement and modification as IFRS adoption strategies by following the conventional literature [5]. HouqeHowever, the outcomes explain that different IFRS adoption strategies have positive and negative significant connections with timely loss recognition [10-15]. Additionally, only few studies emphasized the country-level data on the relations between IFRS adoption strategies and timely loss recognition. The country-level data can eliminate the potential bias that may emerge from the heterogeneity of data. To date, no single study has examined the link between IFRS modification strategy and timely loss recognition across countries. Consequently, the arising question could be is there any significant relationship between different IFRS adoption strategies and timely loss recognition, if yes, what are the effects of IFRS adoption strategies on timely loss recognition across countries?

Moreover, little studies have examined the mediating effect of control of corruption on the relation between

different IFRS adoption strategies and timely loss recognition. Inspired by institutional theory, the IFRS adoption strategies and their impacts on timely loss recognition are influenced by rules in the community or environmental restrictions. Institutional variables are contextual factors that shape human interactions, influencing the association between IFRS adoption strategies and accounting quality [16-22]. In other words, the accounting quality information is affected by IFRS enforcement and modification strategies through control of corruption.

The link between different IFRS adoption strategies and accounting quality certainly attracts both policymakers and practitioners as they provide fresh insights regarding the implication of IFRS adoption strategies. It is noteworthy that different adoption strategies in IFRS (i.e., IFRS enforcement and modification strategies) across countries provide an interesting setting to distinguish them and investigate their impacts on timely loss recognition. IFRS modification strategy provides new insights about the context which IFRS adoption requires changes in order to reflect the effectiveness of the accounting and reporting system. The relevant data for IFRS adoption with modification was based on countries that require their listed firms that adopt IFRS partially in order to suit the higher quality of accounting reporting. The data of IFRS modification strategy must be collected from each country. To this end, the data for IFRS modification strategy is established in this paper, the main aim of this research is to focus on IFRS adoption strategies at country level because it is of interest to examine the interplay between IFRS adoption strategies and their economic consequences on accounting quality. In this paper were proposed concerning the relationship between international financial reporting and supply chain management.

The remaining of the paper is structured as follows: Section 2 discusses the relevant literature. Section 3 gives some details about methodology and data. Section 4 discusses the empirical results and discussions. Section 5 elaborates the conclusion and policy implications.

2. Literature review

Fundamentally, supply chain financing has two elements: receivables and payables. If implemented correctly, both suppliers and purchasers can benefit. The theoretical debate posits that the quality of accounting information is subject to the associations between IFRS adoption strategies of each country, institutions, and accounting quality. Therefore, the inclusion of institutional variables is strongly believed to clarify better the relations between different IFRS adoption strategies and the quality of accounting. The empirical evidence that has shown the positive impacts of IFRS adoption on accounting quality is substantially consistent with the theoretical model that determined IFRS adoption affects accounting quality positively [23]. In [24] studied the accounting quality of publicly listed companies in 15 EU member states for 2000-2004 period for pre-adoption and 2005-2007 period for post-adoption. They examined earnings smoothing, management concerning earnings targets, and the level of absolute discretionary accruals, accruals quality, and timely loss recognition. They found that in post-IFRS, there was less managing earnings, a lower magnitude of absolute discretionary accruals and higher accruals quality. Higher levels of earnings smoothing and less timely recognition of losses were also reported. Similarly, [25] studied post-IFRS adoption for UK firms for a sample of 241 firms listed on the LSE and found that firms reported less smooth accounting numbers, more timely recognition of losses and a lower frequency of small profits post IFRS adoption. These are indicators of fewer earnings management. It implies that IFRS has reduced the scope of earnings management, is related to more timely loss recognition and more value relevant accounting measures.

On the other hand, there are handful of studies that show that the adoption of IFRS decreases the accounting quality. In [9] found that IFRS adoption had a negative result on quality of accounting. In similar way, [20] found that IFRS adoption resulted in a negative effect on accounting quality of EU firms, but did improve accounting quality of non-EU firms after IFRS adoption. By using 34 countries data [24] studies the dullness in determinants of earnings internationally The results of [24] showed that negative relationship exists between the capacity of earning and the lack of corruption after maintaining the control over economic development, government size, human development, and the freedom of economy. Recently, a number of academics have questioned the quality of financial reporting using IFRS. As an example, [5] analyzed the effect of the mandatory introduction of IFRS on earnings management in Australia, France and the UK. Their conclusion is that earnings management did not decline after the introduction of IFRS and in fact, in France, it increased. In addition, the study uses institutional theory to explain how different IFRS adoption strategies influence accounting through institutions as mediation [15],[21]. The institutions work as individuals that build up and sustain them think, make decisions and intermingle with others. These individuals jointly enforce the policies because of instilled culture. They also look over the fillings, specify the limitations, hold hearings and carryout other institutional activities [7].

Due to the above discussion, the literature reveals a number of research gaps that call for further exanimation. The empirical literature on effects IFRS adoption strategies on timely loss recognition focuses on more IFRS enforcement strategy. In particular, the studies on relationship between IFRS enforcement strategy and timely loss recognition provided positive and negative results, but the positive effect of IFRS enforcement strategy dominates in the existing

empirical literature. Regarding the conflicting results can be attributed to several factors, namely negligence of IFRS modification strategy, lack of consideration of impacts of control of corruption quality on the link between IFRS and timely loss recognition, differences in econometric estimations, single country study, firm-level study of country, and firm-level study across countries. Therefore, there is still gap that needs to be filled.

3. Methodology and data

It forms the latest in the association's suite of publications focused on how to originate, distribute and manage trade risk and debt in supply chain finance. In this section we discuss the research design of study. First, we discuss the empirical proxies. Second, we discuss the empirical specification, econometric specification, source of data and sample used.

3.1 Timely loss recognition (TLR)

In this paper, accounting quality is the dependent variable which is measured by the timely loss recognition (TLR). The timely loss recognition (conservatism) is defined as the degree which earnings can capture the bad news during a period faster than good news. We apply CSCORE firm-year as measure for timely loss recognition following [1]. The study constructs C-score as the measure of asymmetric timelines following [4]. Following Khan and Watts, (2009), our specification is as follows:

$$NI_{it} = \beta_1 + \beta_2 NEG_{it} + \beta_3 R_{it} + \beta_4 R \times NEG_{it} + \varepsilon_t \quad (1)$$

Where NI is the net income scaled by share price, R is firm return, NEG is dummy variable which takes value 1 when the firm return (R) is negative and zero otherwise, i is firm, t is the year, ε is residual value. Furthermore, the coefficient estimates β_3 is positive firm return and captures the timeliness of earnings in the case of good news, whereas β_4 turns negative measuring the timeliness of earnings in case of bad news. To put it differently, the timely loss recognition (TLR) is estimated with β_4 .

The timeliness of earnings for each situation (i.e., good news and bad news) in an isolation, the study uses GSCORE and CSCORE, the former captures the timeliness of earnings in case of good news which is denoted as (GSCORE = β_3) and latter highlights the incremental timeliness of earnings in case of bad news is referred as (CSCORE = β_4). The Eq. (6) captures the country-level information, but the heterogeneity in firm-specifics, such as firm size which is measured by logarithm of total assets (SIZE), market to book value (MB), leverage which is estimated by total liabilities divided by total assets (LEV) can affect GSCORE and CSCORE and can be calculated as following equations.

$$CSCORE_{it} = \lambda_0 + \lambda_1 SIZE_{it} + \lambda_2 MB_{it} + \lambda_3 LEV_{it} \quad (2)$$

$$GSCORE_{it} = \mu_0 + \mu_1 SIZE_{it} + \mu_2 MB_{it} + \mu_3 LEV_{it} \quad (3)$$

Following [1] and [18], the study uses regression across the firms that operate in sample countries to estimate net income scaled by share price. The study combines Eq. (1) and Eq. (2) with Eq. (3) and derives the following single equation.

$$\begin{aligned} NI_{it} = {} & \beta_1 + \beta_2 NEG_{it} + R_{it}(\mu_0 + \mu_1 SIZE_{it} + \mu_2 MB_{it} + \mu_3 LEV_{it}) + \\ & R \times NEG_{it}(\lambda_0 + \lambda_1 SIZE_{it} + \lambda_2 MB_{it} + \lambda_3 LEV_{it}) + (\delta_1 SIZE_{it} + \delta_2 MB_{it} + \\ & \delta_3 LEV_{it} + \delta_4 NEG \times SIZE_{it} + \delta_5 NEG \times MB_{it} + \delta_6 NEG \times LEV_{it}) + \varepsilon_t \end{aligned} \quad (4)$$

3.2 Empirical specification

The paper examines the empirical relationship between IFRS adoption strategies and accounting quality with a proxy of timely loss recognition in international perspective by applying dynamic panel regression. Additionally, the mediating role of corruption on the relations between adoption strategies and accounting quality is investigated. The specification of IFRS adoption strategies-accounting quality nexus is given below.

$$TLR_{it} = \delta TLR_{it-1} + \beta_1 ES_{it} + \beta_2 MS_{it} + \phi Controls_{it} + \varepsilon_{it} \quad (5)$$

$$TLR_{it} = \delta TLR_{it-1} + \beta_1 ES_{it} + \beta_2 MS_{it} + \beta_3 FDI_{it} + \beta_4 GDP_{it} + \beta_5 INF_{it} + \varepsilon_{it} \quad (6)$$

where TLR represents timely loss recognition. The TLR represents for accounting quality of a country *i* and t for a year; ES stands for IFRS enforcement strategy; MS is IFRS modification strategy of a country *i* and *t* for a year; FDI represents for foreign direct investment; GDP is economic growth; INF is inflation rate and ε is the error term. The country is represented by i and t stands for time.

Moreover, the paper examines the mediating role of corruption on the relationships between IFRS adoption strategies and accounting quality with a proxy of timely loss recognition. To estimates mediation effect, we follow the literature [7]. In addition, we follow the theoretical model for the mediation effect developed by Baron and Kenny (1986). This model consists of three steps involving in testing mediation. First, regressing the mediator on independent variable, there must be the relationship between the independent variable and the mediator. We establish relationship between corruption and IFRS adoption strategies. In this case, corruption serves the dependent variable. The specification is stated as follows.

$$COR_{it} = \rho COR_{it-1} + \beta_1 ES_{it} + \beta_2 MS_{it} + \beta_3 FDI_{it} + \beta_4 GDP_{it} + \beta_5 INF_{it} + \varepsilon_{it} \quad (7)$$

where COR is control of corruption for, country *i*, in year *t*. ES is IFRS enforcement strategy, MS is IFRS modification, FDI is foreign direct investment, GDP is economic growth, INF is inflation, and ε is error term.

In the second step, we should regress the dependent variables on independent variables; in this case accounting quality for a measure of timely loss recognition serves dependent variable and the IFRS adoption strategies which are explanatory variables. This regression equation must be conducted to test the linkage between them. The specification is stated as follows.

$$TLR_{it} = \delta TLR_{it-1} + \beta_1 ES_{it} + \beta_2 MS_{it} + \beta_3 FDI_{it} + \beta_4 GDP_{it} + \beta_5 INF_{it} + \varepsilon_{it} \quad (8)$$

where TLR represents timely loss recognition which is the dependent variable, ES is IFRS enforcement strategy; MS is IFRS modification strategy; FDI represents for foreign direct investment; GDP is economic growth; INF is inflation rate and ε is the error term.

In the third step, we regress the dependent variable on the mediator and independent variables. In this regression, there must be a significant relationship between IFRS adoption strategies and timely loss recognition through the mediation of control of corruption and coefficient of the independent variables must be less in the third equation than in the second equation with the same predicted direction. This linkage is specified as follows:

$$TLR_{it} = \delta TLR_{it-1} + \beta_1 ES_{it} + \beta_2 MS_{it} + \beta_3 COR_{it} + \beta_4 FDI_{it} + \beta_5 GDP_{it} + \beta_6 INF_{it} + \varepsilon_{it} \quad (9)$$

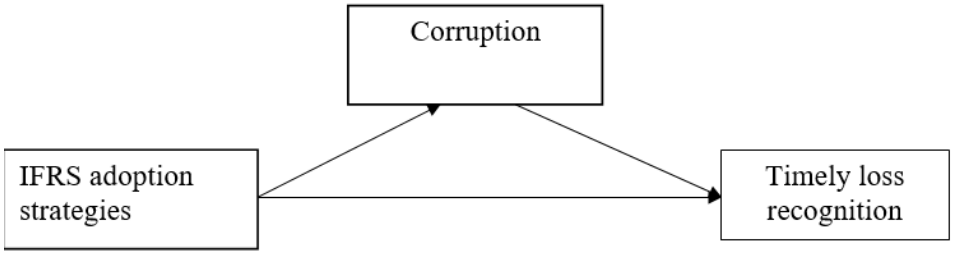

Fig. 1 Econometric specification

For our empirical analyses, we rely on the dynamic panel regression model, in particular the system generalized method of moments (GMM) estimator proposed by [6]. The system GMM estimator has three advantages. First, the system GMM estimator accounts for the problems of endogeneity and simultaneity by using instruments. The instruments are obtained from the lag of outcome variable and other endogenous variables as instruments, but these variables must not have a correlation with fixed effects. Second, the system GMM estimator controls for both individual and time effects. In contrast, the standard panel models, such POLS or fixed-effects models yield biased and inconsistent results. The former suffers from upward biases, while the latter suffers from to suffer downward bias, leading unreliable interpretations. Moreover, the system GMM estimator is a superior alternative of difference GMM estimator. Since the system GMM approach uses additional instruments as compared with difference GMM such as instruments in first differences which are assumed instruments are not correlated with fixed effects, it provides an efficient and consistent estimate. It performs better even if the lag of dependent variable exhibits persistence. Take note that there are three specifications to check the consistency of dynamic system GMM, the validity of instruments, the absence of second-order serial correlation and the number of instruments which should be less than the number of groups. In the case of this study, the number of countries stands for a number of groups. Firstly, Hansen test is used to test the validity of instruments. This should not reject the null hypothesis which suggests that instruments are valid. Secondly, the null hypothesis of absence of first-order serial correlation of differential residuals should not hold, while the null hypothesis of absence of second-order serial correlation of differential residuals should be confirmed. Finally, one should confirm that the number of instruments should be less the number of countries.

3.4 Data description and sample

In this paper, the data ranging from 2013 to 2017 were retrieved from four main sources: First, the data on time loss recognition is DataStream database. Second, the data on IFRS adoption strategies are from IFRS website. Third, the data on corruption is from World Governance Indicators (WGI) and data on macroeconomic variables are from World Development Indicators (WDI). The sample consists of a sample 8836 firms across 35 countries. The collected data were based on availability of data regarding IFRS adoption. We converted firm-level data into country level by averaging yearly firm data of each country to maintain the uniformity of data and avoid different levels of analysis problems [7],[19].

3.5 Description of variables

- **Timely loss recognition (TLR):** It serves dependent variable, referring to the degree of reflection the accounting earnings have on the economic losses (as measured by returns of negative stocks) and economic gains (as measured by returns of positive stock). It is termed as the slope coefficient ratio on positive returns in reverse earning regression on returns. The recognition of loss timely is same as conservatism but it performs tasks with large losses reports when they occur and without postponing them to a future time. This is called quality accounting (Barth, landsman, and Lang, 2008). This variable is a proxy of accounting quality.
- **IFRS enforcement strategy (ES):** It serves independent variable referring to the situation where adoption of IFRS is forced as the only standard. In other words, the countries are enforced to apply IFRS for the presentation of the financial statements. It is hypnotized that IFRS enforcement strategy is positively associated with the timely loss recognition.
- **IFRS modification strategy (MS):** It is also independent variable and refers to a situation where some changes in IFRS standards are made by nations in order to cope with environmental differences. The relationship between IFRS modification strategy and timely loss recognition is expected to positive.
- **Control of corruption (COR):** Corruption is used as mediator which refers to the "extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests" (Kaufmann et al., 2010). In contrast, the control of corruption is intended to eliminate opportunities which one can conceal and explain away questionable activity. In fact, it prevents the dressing up of financial records, concealment of short cuts taken in production or construction, violations of environmental or safety standards, or the improper conveyance of property. Manipulating accounting records for such purposes means reductions in transparency and ensuing increases in ambiguity. To this end, the control of corruption increases timely loss recognition, which, in turn, improves the accounting quality. Thus, it is hypothesized that the control of corruption is positively correlated with timely loss recognition.
- **Economic development (GDP):** It is measured by GDP per capita to control the business cycles. The evidence showed that the GDP per capita is an important indicator that may affect the accounting quality at the country level [11]. The expected sign of GDP per capita is positive, indicating that a higher GDP per capita contributes to timely loss recognition.
- **Foreign direct investment (FDI):** It is assumed as a control variable because it may affect the country decision regarding IFRS adoption strategies [12],[23]. We hypothesize positive relationship between foreign direct investment and timely loss recognition.
- **Inflation rate (INF):** It is defined as a percentage change in GDP deflator designed to control for accounting quality [11],[22]. It is expected that inflation rate is negatively associated with timely loss recognition.

4. Empirical results

4.1 Summary statistics

Table 1 presents descriptive statistics of all variables for the baseline model of the link between IFRS adoption strategies and timely loss recognition. The control of corruption serves the mediating variable in the relationship between IFRS adoption strategies and timely loss recognition.

Table 1. Summary statistics

Variable	Obs	Expected signs	Mean	Std. Dev.	Min	Max
Dependent variable						
TLR	175		0.010	0.169	-0.628	0.636
Independent variables						
ES	175	+	0.554	0.498	0.000	1.000
MS	175	+	0.714	0.453	0.000	1.000
Mediating variable						
COR	175	+	0.882	1.042	-1.270	2.400
Control variables						
INF	175	_	2.320	3.009	-1.736	16.524
FDI	175	+	5.544	10.981	-7.663	80.985
GDP	175	+	4.349	0.484	2.562	4.946

The above table shows that the mean of IFRS enforcement strategy (ES) is 0.554 which ranges from 0 to 1and, the mean of IFRS modification strategy (MS) is0.714 with the same range reflecting the benefits with which adopting accounting strategies capture the broader arrays of IFRS. The mean value of control of corruption (COC) is 0.882. The mean value of control of corruption (COC) is highest among the variables of interest.

4.2. Correlation matrix analysis

Table 2 shows the Pearson correlation matrix analysis that normally is designed to assess the regressions and/or control variables that have higher relationships with one another in order to avoid the multicollinearity. Since the multicollinearity which signifies high correlations among variables is a serious econometric issue and leads to wrong inferences. With respect to

institutional variables, there is high positive and significant correlation among them.

Table 2. Correlation matrix analysis

	TLR	ES	MS	COC	FDI	LGDP	INF
TLR	1						
ES	-0.2244*	1					
MS	-0.0663	0.12	1				
COC	-0.0833	0.1219	0.4517*	1			
FDI	0.067	-0.0884	0.1540*	0.2288*	1		
GDP	-0.1029	0.2262*	0.2903*	0.7627*	0.1591*	1	
INF	0.0712	-0.0948	-0.5431*	-0.5936*	-0.0601	-0.6319*	1

Note * *represents 5*% level of significance

4.3 IFSR enforcement and modification strategies and timely loss recognition

Table 3 reports the results of the baseline model that examines the impacts of IFRS adoption strategies on timely loss recognition by applying the dynamic system Generalized Method of Moments (GMM) estimator. We also report static panel estimations, such as pooled ordinary least square regression model (POLS), random effects estimator (RE) and fixed effects model (FE) in columns 1-3 for comparison purpose. Columns 4-5 represent one-step and two-step difference generalized method of moments (DGMM1 and DGMM2) estimators and columns 6-7 signifies one-step system and two-step system GMM (SGMM1 andSGMM1), respectively.

Table 3. Baseline model

	(1) POLS	(2) RE	(3) FE	(4) DGMM1	(5) DGMM2	(6) SGMM1	(7) SGMM2
Lag TLR	0.674***	0.659***	0.146	0.430**	0.377**	0.348**	0.243***
	[0.06]	[0.07]	[0.11]	[0.17]	[0.17]	[0.14]	[0.08]
ES	-0.032	-0.033	-0.009	-0.007	1.566	-0.053**	0.190***
	[0.02]	[0.02]	[0.13]	[0.13]	[9.87]	[0.02]	[0.07]
MS	0.032	0.032	0.000	0.000	0.000	0.025	0.189***
	[0.03]	[0.03]	[0.000]	[0.000]	[0.000]	[0.02]	[0.04]
INF	-0.000	0.000	0.000	0.003	0.009	0.001	-0.015***
	[0.00]	[0.00]	[0.01]	[0.01]	[0.03]	[0.00]	[0.01]
GDP	0.003	0.003	0.252	0.221	0.676	0.006	0.055
	[0.03]	[0.03]	[0.27]	[0.27]	[2.96]	[0.02]	[0.05]
FDI	-0.000	-0.000	0.001	0.001	0.002	0.000	0.002***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Constant	0.019	0.018	-1.082			0.046	-0.536**
	[0.13]	[0.14]	[1.17]			[0.11]	[0.27]
R-square	0.4873	0.0177	0.0286				
Observations	140	140	140	105	105	140	140
BP test		97.58***					
Hausman test			35.35***				
Heteroscedasticity (Modified Wald test)			1.4e+05***				
Autocorrelation (Wooldridge test)			8.965***				
No. of instruments				7	7	12	26
No. of countries		35	35	35	35	35	35
P-value (AR1)				0.002	0.063	0.003	0.013
P-value (AR2)				0.105	0.143	0.106	0.378
Hansen test p-value					0.076		0.502

Note this table represents results of the panel regressions of effects of IFRS enforcement (ES) and modification (MS) strategies on timely loss recognition (TLR). The country controls represent foreign direct investment (FDI) and GDP and inflation (INF).BP test is Breach-Pagan LM test. Standard errors are brackets and * $p< 0.1$, $^{**}p< 0.05$, $^{***}p< 0.01$ present 10%, 5% and 1% significance levels respectively.

The above table shows that POLS is upward biased, while the fixed effects model is downward biased. Thus, biases render these models inappropriate. A battery of diagnostics is conducted to select the appropriate model. With the presence of significant p-value of Breach-Pagan LM test, random effect model would be more appropriate than POLS. Further, Hausman test is shown with low p-value suggesting that the fixed effect estimator becomes suitable. However, fixed effect model suffers two main issues. First, the evidence shows that Modified Wald test is statistically significant at 5% level, indicating that the fixed effect suffers from the issue of heteroscedasticity.

Second, the model suffers from first-order serial correlation since Woolridge test is statistically significant, confirming presence of autocorrelation. Therefore, fixed method provides biased and inconsistent parameter estimates which result in wrong conclusion. In order to circumvent the above-discussed issues, system GMM estimator is applied. Moreover, the statistical significance in lag of timely loss recognition confirms the appropriateness and applicability of dynamic estimation, especially system GMM estimator.

Take note the column 7 is only interpreted. Table 3 reports the findings on the relationship between enforcement and timely loss recognition as well as modification and timely loss recognition. Interestingly, both measures of IFRS adoption strategies are positively associated with timely loss recognition ($\beta1 = 0.190$, $p < 0.001$) and ($\beta2 = 0.189$, $p < 0.001$), respectively. A unit increase in enforcement is associated with an increase of timely loss recognition by 0.190. In terms of economic magnitude, one-standard deviation increase in the estimated coefficient for modification increases the timely loss recognition by 8.6[1]. These findings broadly support the predictions that posit higher enforcement and modification enhance timely loss recognition. These findings are consistent with the prior studies [10],[17],[22]. Interestingly, the finding on the adoption of IFRS with modification is positively associated with timely loss recognition suggests that the efforts of countries to the adoption of IFRS with modification increases the usefulness of accounting quality. The result also reflects the paramount importance of IFRS enforcement and modification.

Considering the control variables, the coefficients of FDI is positive and statistically significant at 1% level. An increase in FDI has a positive impact on timely loss recognition. The estimated coefficient of INF is statistically significant and is negative. However, the coefficient of GDP is positive but insignificant. Thus, this implies that rise in GDP has no significance on timely loss recognition.

4.4 Mediating effect of corruption on the relation between IFSR adoption strategies and supply chain management

The study follows a mediation theory which posits three estimation processes of mediation model. First, this model estimates the effect of IFRS adoption strategies on corruption as shown in column 1-6 in Table 4. Second, the model estimates IFRS adoption strategies and timely loss recognition. Finally, the model estimates IFRS adoption along with corruption and timely loss recognition.

Table 4. Mediating effect of corruption

	Step 1	Step 2	Step 3
Lag COC	0.987***		
	[0.01]		
Lag TLR		0.243***	0.366***
		[0.08]	[0.05]
ES	0.021***	0.190***	0.101***
	[0.01]	[0.07]	[0.03]
MS	0.074***	0.189***	0.027**
	[0.02]	[0.04]	[0.01]
COR			0.017**
			[0.01]
INF	-0.003	0.015***	-0.000
	[0.00]	[0.01]	[0.00]
GDP	0.068**	0.055	0.024
	[0.03]	[0.05]	[0.02]
FDI	0.001***	0.002***	0.001*
	[0.00]	[0.00]	[0.00]
Constant	0.222	-0.536**	-0.053
	[0.14]	[0.27]	[0.10]
Observations	140	140	140
No. of instruments	27	26	27
No. of countries	35	35	35
P-value (AR1)	0.000	0.013	0.005
P-value (AR2)	0.110	0.378	0.392
Hansen test p-value	0.362	0.502	0.160

Note this table represents results of the panel regressions of effects of IFRS enforcement (ES) and modification (MS) strategies on institutional variables (INS). The country controls represent foreign direct investment (FDI) and GDP and inflation (INF). Standard errors are brackets and * $p< 0.1$, ** $p< 0.05$, *** $p< 0.01$ present 10%, 5% and 1% significance levels respectively.

To test whether corruption mediates the association between IFRS adoption strategies and timely loss recognition, one must ensure the following three caveats. First caveat posits that enforcement (ES) and modification (MS) (independent variable) must have significant effects on institutional variables (mediator). In fact, the coefficients of enforcement (ES) and modification (MS) are statistically significant, implying that both enforcement (ES) and modification (MS) strategies confirm the first caveat. This implies that, IFRS adoption strategies have substantial impacts on control of corruption (mediator):

The second caveat highlights that IFRS enforcement (ES) and modification (MS) strategies must affect timely loss recognition. To this end, the effects of IFRS adoption strategies on timely loss recognition were confirmed as shown in column 1 in Table 5. The coefficients of control for corruption (COR) which serve as the mediator is statistically significant at 1% significance level and is consistent with the third caveat. Since the mediation theory which posits that mediator along with independent variable must statistically and significantly affect the dependent variable, timely loss recognition. As aforementioned caveats hold, the control of corruption is confirmed that it mediates the relationships between enforcement (ES) and modification (MS) strategies and timely loss recognition.

4.5 Supply chain analysis

Table 5 presents the result for Wilcoxon test for mean and median to investigate whether IFRS enforcement and modification strategies are less likely affect timely loss recognition. In other words, Wilcoxon test is used to test the effectiveness of IFRS enforcement and modification strategies. The evidence shows that both IFRS enforcement and modification strategies have significant effects on timely loss recognition. Given the Wilcoxon test, the hypothesis which states that there is no significant change in accounting quality measured by timely loss recognition based on different IFRS adoption strategies is rejected, suggesting that both IFRS enforcement and modification have substantial impacts on timely loss recognition.

Table 5. IFRS enforcement and supply chain strategies differences in Wilcoxon test

	Timely loss recognition
Enforcement	
Median	4.83
Wilcoxon rank sum z-test	3.026***
Modification	
Median	1.106
Wilcoxon rank sum z-test	1.754**

5. Conclusion and policy implications

With the advent of supply chain management, it is not possible to disentangle merchandise trade from services trade because the efficient provision of services plays an important role in facilitating the international production of goods. The current paper applies the system GMM technique to investigate the relations between different IFRS adoption strategies and timely loss recognition across countries. In addition, the mediating effect of control of corruption on the effects of IFRS adoption strategies on timely loss recognition. Yearly data is considered from 2013 to 2017. To the best of researcher's knowledge, this is one of little empirical work aiming to investigate connection between IFRS adoption strategies and timely loss recognition across countries using country-level data and through control of corruption as mediation. In addition, this is the pioneer empirical study aiming to examine the IFRS modification strategy and the timely loss recognition.

Initially, the results show the impacts of IFRS enforcement and modification strategies on timely loss recognition are statistically significant at 5% significance level, indicating that IFRS adoption improves the accounting quality. Moreover, we reveal evidence of the mediating effect of control of corruption on the relations between different IFRS adoption strategies and timely loss recognition over the period 2013-2017. The findings of this study offer insightful information for policymakers and investors.

References

[1] Abdullah, A. A., & Mohd-Saleh, N, *"Impact of Firms' Life-cycle on Conservatism: The Malaysian Evidence",* Procedia - Social and Behavioral Sciences, Vol 145, pp. 18–28, 2014.

[2] Ahmed, A. S., Neel, M., & Wang, D, "*Does Mandatory Adoption of IFRS Improve Accounting Quality ? Preliminary Evidence*", Contemporary Accounting Research, Vol 30, No. 4, pp. 1344–1372, 2013.

[3] Arturo, A., Paredes, P., & Wheatley, C, "*The influence of culture on real earnings management"* International Journal of Emerging Markets, Vol 12, No. 1, pp. 58–78, 2017.

[4] Basu, S, "The conservatism principle and the asymmetric timeliness of earnings", Journal of Accounting and Economics, Vol 24, No. 1, pp. 3–37, 1997.

[5] Cai, L., Rahman, A., & Courtenay, S, *"The Effect of IFRS Adoption Conditional Upon the Level of Pre-adoption Divergence*", International Journal of Accounting, Vol 49, No. 2, pp. 147–178, 2014.

[6] Chen, H., Tang, Q., Jiang, Y., & Lin, Z, "*The role of international financial reporting standards in accounting quality: evidence from the European Union",* Journal of International Financial Management Accounting, Vol 21, No. 3, pp. 220–278, 2010.

[7] Cieslewicz, J. K, "*Critical Perspectives on Accounting Relationships between national economic culture, institutions, and accounting: Implications for IFRS*", Critical Perspectives on Accounting, Vol 25, No. 6, pp. 511–528, 2014.

[8] De George, E. T., Li, X., & Shivakumar, L, "*A review of the IFRS adoption literature",* Review

of Accounting Studies, Vol 21, No. 3, pp. 898–1004, 2016.

[9] Defond, M., Gao, X., Zhen, O., & Xia, L, "*IFRS adoption in China and foreign institutional investments",* China Journal of Accounting Research, 2018.

[10] Dimitropoulos, P. E., Asteriou, D., Kousenidis, D., & Leventis, S, *"The impact of IFRS on accounting quality: Evidence from Greece",* Advances in Accounting, Vol 29, No. 1, pp. 108–123, 2013.

[11] Elbakry, A. E., Nwachukwu, J. C., Abdou, H. A., & Elshandidy, T, "*Comparative evidence on the value relevance of IFRS-based accounting information in Germany and the UK",* Journal of International Accounting, Auditing and Taxation, Vol 28, pp. 10–30, 2017.

[12] Felski, E, "*How Does Local Adoption of IFRS for Those Countries That Modified IFRS by Design, Impair Comparability with Countries That Have Not Adapted IFRS?",* Journal of International Accounting Research, Vol 16, No. 3, pp. 59–90, 2017.

[13] Hao, J., Sun, M., & Yin, J, "*Convergence to IFRS, accounting quality, and the role of regional institutions: evidence from China*", Asian Review of Accounting, 2019.

[14] Horton, J., Serafeim, G., & Serafeim, I, *"Does Mandatory IFRS Adoption Improve the Information Environment?",* Contemporary Accounting Research, Vol 30, No. 1, pp. 388–423, 2013.

[15] Houqe, M. N., & Monem, R. M, "*IFRS Adoption, Extent of Disclosure, and Perceived Corruption: A Cross-Country Study*", International Journal of Accounting, Vol 51, No. 3), pp. 363–378, 2016.

[16] Iatridis, G, "*International Financial Reporting Standards and the quality of financial statement information",* International Review of Financial Analysis, Vol 19, No. 3, pp. 193–204, 2010.

[17] Jayaraman, S, "The effect of enforcement on timely loss recognition: Evidence from insider trading laws", Journal of Accounting and Economics, Vol 53, No. 1–2), pp. 77–97, 2012.

[18] Khan, M., & Watts, L. R, "*Estimation and Empirical Properties of a Firm-Year Measure of Accounting Conservatism",* Journal of Accounting and Economics, Vol 48, No. 2-3, pp. 132–150, 2009.

[19] Lewellyn, K. B., & Bao, S, "*The role of national culture and corruption on managing earnings around the world",* Journal of World Business, Vol 52, No. 6, pp. 798–808, 2017.

[20] Lopes, C., Cerqueira, A., & Brandão, E, "*quality in European firms",* Journal of Modern Accounting and Auditing, Vol 6, No. 9, pp. 20–31, 2010.

[21] Nurunnabi, M, "*Advances in Accounting , incorporating Advances in International Accounting The impact of cultural factors on the implementation of global accounting standards (IFRS) in a developing country",* International Journal of Cardiology, Vol 31, No. 1, pp. 136–149, 2015.

[22] Othman, H. Ben, & Kossentini, A, *"IFRS adoption strategies and theories of economic development:Effects on the development of emerging stock markets",* Journal of Accounting in Emerging Economies, Vol 5, No. 1, pp. 70–121, 2015.

[23] Owusu, G. M., Saat, N. A. M., Suppiah, S. D. K., & Siong, H. L, "*IFRS Adoption , Institutional Quality and Foreign Direct Investment Inflows : A Dynamic Panel Analysis",* Asian Journal of Business and Accounting, Vol 10, No. 2, pp. 43–76, 2017.

[24] Riahi-Belkaoui, A, "*Effects of Corruption on Earnings Opacity Internationally*", Advances in International Accounting, Vol 17, No. 04, pp. 73–84, 2004.

[25] Samaha, K., & Khlif, H, "*Adoption of and compliance with IFRS in developing countries A synthesis of theories and directions for*", Journal of Accounting in Emerging Economies, Vol 6, No. 1, pp. 33–49, 2016.