THE IMPACT OF IFRS MANDATORY ADOPTION ON KPIS DISCLOSURE QUALITY

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Abstract

The aim of this study is to investigate context, the impact of International Financial Reporting Standards (IFRS) on the Key Performance Indicators' (KPIs) disclosure quality in the United Kingdom (UK). We used the UK listed firms FTSE 350 in the stock exchange market during the pre-IFRS period and the post-IFRS period (2003 to 2004, and 2006 to 2013). In particular, we examine special events such as the emergence of the 2006 UK Accounting Standard Body (ASB) Guidelines for KPIs best practice, the 2010 IFRS Management Commentary, and the phenomenon of the 2008 financial crisis. The results of this paper show that the UK's mandatory adoption of IFRS has had a positive and significant effect on the KPIs' disclosure quality. The results demonstrate, also, that together with the emergence of the 2006 UK ASB Guidelines, the 2008 financial crisis, and the 2010 IFRS Management Commentary have had a positive and significant influence on the quantity and quality of the KPIs' disclosure.

Keywords: IFRS, Key Performance Indicators (KPIs), Disclosure Quality, the UK

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1. INTRODUCTION

Since more and more countries have adopted mandatorily the International Financial Reporting Standards (IFRS), the debate about their impact on disclosure quality has dominated accounting research. At the time of its establishment, the International Accounting Standards Body (IASB) defined its primary objective as the harmonization of various national standards in order to promote foreign direct investment. However, in recent years, the transparency and integrity of financial disclosure has become one of the fundamental pillars of corporate reporting for regulators, stock exchange authorities, and practitioners. Accordingly, the IASB has focused more on restoring investor trust in financial reporting that was shaken greatly by financial scandals. This study aims to investigate the impact of the mandatory adoption of IFRS on disclosure quality within UK firms' annual reports. In this study, we investigate, in relation to corporate disclosure, the Key Performance Indicators (KPIs) which are "factors by reference to which the development, performance or position of the business of the entity can be measured effectively…" (ASB, 2006, p. 8). Several national and international regulations (e.g., Directive 2003/51/EC, the 2003 Securities and Exchange Commission (SEC) Guidance Regarding Management's Discussion and Analysis of Financial Condition and Results of

Operations, the UK Companies Act 2006, and the 2010 IFRS Management Commentary) have required UK firms since 2003 to analyse their performance by using KPIs and to disclose them in their annual reports. Nevertheless, these regulations neither provide a sample set of KPIs, which firms must report, nor provide specific guidelines describing how to present KPIs. This suggests that UK firms disclose KPIs on a voluntary basis and, consequently, this leads to incremental variations in the quantity and quality of KPIs' disclosure within the firms' annual reports. Hence, it is important to identify the factors that may drive such variations.

With regard to the various measurements of disclosure quality, previous studies have examined different aspects of what happens when IFRS are adopted. Some researchers have focused on the IFRS' effect on the properties of earnings that are approximated by earnings management, discretionary accruals, and the timeliness of losses (Iatridis, 2010; Zéghal, Chtourou, & Mnif Sallemi, 2011; Ahmed, Neel, & Wang, 2013; Ayedh, Fatima, & Mohammad, 2019). Other studies have investigated IFRS' impact on investor responsiveness to earnings calculated by the cost of capital, market liquidity, and stock prices. The third stream of research is interested in the relationship between earnings quality and international standards in cases where earnings quality is inferred from the effect on the analysts who are the sophisticated users of financial reports. Researchers of this paper study contribute to this debate by examining the effect that the mandatory adoption of IFRS has had on KPIs' disclosure quality. In addition, we consider Elzahar, Hussainey, Mazzi, and Tsalavoutas's (2015) research instrument which measures the KPIs' qualitative characteristics as an aggregated measure[1] of quality derived from the regulatory frameworks (IASB and ASB). The examination of the literature on KPIs' disclosure shows that numerous studies have investigated the determinants of KPIs' reporting and assessed the economic consequences arising from financial and non-financial KPIs' disclosure quality (Dorestani & Razaee, 2011a, 2011b; Elzahar et al., 2015). However, to the best of our knowledge, few studies have examined the impact of International Accounting Standards (IAS) on the KPIs' disclosure quality. In addition, this study illustrates the extent to which the IFRS influence either similarly or differently the quantity and the quality of KPIs' disclosure. Furthermore, Elzahar et al.'s (2015) evidence indicates a gradually increasing trend of KPIs' disclosure quantity and quality across both industries and the sample period from 2003 to 2013. Such trend analysis shows that the improvement in KPIs reporting practices can be due to numerous factors. Therefore, it is interesting to identify these factors and to investigate their influences. Hence, this study sheds light on some regulatory events that may have affected the KPIs' disclosure quality. These are the emergence of both the 2006 ASB Guidelines and the 2010 IFRS Management Commentary in order to achieve best practices in terms of KPIs reporting. In addition, this study takes into consideration the effect of the 2008 financial crisis. Overall, the results show that the quantity and quality of KPIs disclosure increased in the post-IFRS period. Also, during the sample period, special events and phenomena resulted in positive and significant effects on KPIs' disclosure quality.

The remainder of the paper is organized as follows. Section 2 reviews the literature. Section 3 provides the research methodology. Section 4 outlines the results followed by the discussion in Section 5. Finally, Section 6 concludes the paper.

2. LITERATURE REVIEW

We found several theories in the literature to explain voluntary disclosure practices and, more especially, the variations between firms in terms of their levels and quality of disclosure. Voluntary disclosure by insiders is proposed often as a means to reduce information asymmetry and to indicate that managers are acting in the stakeholders' interests (Healey & Palepu, 2001). Accordingly, agency and signalling theories are suggested commonly as the theoretical framework in studies relating to financial and accounting disclosure. Since the IASB conceptual framework recognises that investors are the privileged financial users, it incites firms to enhance the transparency and the quantity of disclosed financial information with the aim of limiting the managers' discretionary power. This seems to arise from an implicit acceptance of the agency theory principles (Colasse, 2006). In addition, Watson, Shrives, and Marston (2002) argue that, under the auspices of signalling theory, firms, which wish to highlight better aspects of their performance, are strongly encouraged to disclose certain types of ratios such as profitability, efficiency ratios, and investment. Furthermore, firms, which make voluntary disclosure such as environmental reports, corporate social responsibility (CSR), or KPIs, try to legitimise their businesses and strive to ensure their survival and competitiveness in a system that constitutes a social control tool (Russo & Perrini, 2010).

This analysis considers, also, the impact of the above-mentioned important events and phenomena that occurred within the sample period of study. Besides, according to the accounting literature, numerous studies have assessed the influence of firm characteristics such as company size, profitability, liquidity, gearing, dividend yield, cross-listing, and industry on financial reporting.

2.1. The impact of IFRS on KPIs' disclosure quality

It is widely recognised that the EU's purpose of mandating a single set of high-quality accounting standards was to improve the function of the capital market since the IFRS would lead to more relevant and reliable annual reports. However, the effect of the IFRS implementation remains controversial. By using earnings management and timeliness of losses to approximate disclosure quality, some studies' findings show that the adoption of IFRS results in a reduction in earnings management and more timely loss recognition which increase the relevance and reliability of financial disclosure (Barth, Landsman, & Lang, 2008; Iatridis, 2010). Nevertheless, other studies, which have focused on earnings management and timeliness of losses,

[1] The proposed aggregated measure considers all qualitative characteristics: namely, reliability, value relevance, comparability, and understandability.

report a reduction in accounting quality after the adoption of IFRS (Chen, Tang, Jiang, & Lin, 2010; Rudra & Bhattacharjee, 2012; Ahmed et al., 2013). More particularly, Cai, Rahman, and Courtenay's (2014) findings show an increase in earnings management in the first year of IFRS adoption relative to the last year before the IFRS were adopted. However, there were reductions in the first two, three, four, and five years following IFRS adoption relative to the last two, three, four, and five years respectively before their adoption. Another stream of research, which has examined the effect of IFRS adoption on analysts' earnings forecasts, demonstrates mixed results. Some studies' findings show that, when compared to the pre-IFRS period, there are significantly lower errors and dispersions in the analysts' forecasts in the post-IFRS period (Wang, Sewon, & Claiborne, 2008; Horton & Serafeim, 2010; Armstrong, Barth, Jagolinzer, & Riedl, 2010; Byard, Li, & Yu, 2011; Tan, Wang, & Welker, 2011; Jiao, Koning, Mertens, & Roosenboom, 2012; Choi, Peasnell, & Toniato, 2013). The significance of this reduction is more pronounced in countries that have mandatorily adopted IFRS because their local Generally Accepted Accounting Principles (GAAP) are widely different from those of the IASB conceptual framework. Similarly, Neel's (2016) findings show that the improvements in the accuracy of forecasts and dispersion are restricted to firms that both mandatorily adopted IFRS and experienced an improvement in comparability. Based on investors' responses to earnings, some previous studies argue, also, that IFRS adoption has numerous capital benefits such as reduced cost of capital and improved liquidity (Daske, Hail, Leuz, & Verdi, 2008; Li, 2010). Given that the IASB's important mission is to reduce the diversity of intra-country financial reporting, another approach to the effective analysis of IFRS is to consider their effect on comparability. In this sense, Jones and Finley's (2011) findings show that the mandatory adoption of IFRS has resulted in a significant statistical reduction in the diversity of financial reporting across all sampled countries and industries. In addition, Cascino and Gassen's (2015) findings show that, after IFRS adoption, there is a significant increase in comparability only for firms with high compliance incentives (external audit type, board independence, and government ownership).

The examination of the previous literature indicates that few academic studies have focused on KPIs in annual reports. By using non-linear regression and deflating forecast error by the stock price for a sample of American firms, Dorestani and Rezaee (2011a) have investigated the association between the extent of change in non-financial KPIs disclosure and the accuracy of analysts' forecasts. Their results suggest that the change in KPIs' quantity[2] has had a significant effect on the accuracy of analysts' forecasts. Similarly, the findings of Dorestani and Rezaee's (2011b) second study about the KPIs' effect on investors' perceptions[3] relating to earnings quality show a positive association between non-financial KPIs' disclosure and the quality of earnings. Tauringana and Mangena's (2009) findings show that the introduction of a business review has resulted in an increase in the quantity and quality of media-listed firms' KPI disclosure. However, their findings show a low level of compliance with the statutory requirement. In fact, 25% of firms are still not disclosing any KPIs. Moreover, Tauringana and Mangena's (2009) findings indicate, also, that firm's characteristics may affect the extent of KPIs.

A few studies have investigated the relationship between IFRS and financial ratios. Their results demonstrate that the adoption of IFRS has a significant influence on the financial ratios (Goodwin, Ahmed, & Heaney, 2008; Stent, Bradbury, & Hooks, 2010; Voulgaris, Stathopoulos, & Walker, 2014; Lueg, Punda, & Burkert, 2014). More recently, a large number of studies have focused on non-financial KPIs' CSR disclosure. This set of information is disclosed particularly in a KPI section of the firm's annual report. Alotaibi and Hussainey's (2016) findings provide an analysis of the determinants of the quantity and quality of CSR disclosure. Their results show that Saudi Arabian firms disclose higher quantities of CSR but with lower quality. In addition, Alotaibi and Hussainey (2016) argue that CSR disclosure depends on some specific corporate governance attributes. Furthermore, from their exploratory analysis of the effect of IFRS implementation on corporate social disclosure (CSD), van der Laan Smith, Gouldman, and Tondkar's (2014) findings show that, when compared to firms from shareholder countries (the UK and Australia) which experienced a significantly higher level of CSD after IFRS adoption, there are no significant changes in the quantity and quality of CSD following the mandatory adoption of IFRS by firms in the stakeholder countries (France, Germany, Italy, and the Netherlands). The UK Companies Act 2006 requires firms to report the KPIs that aim to improve both the usefulness and the relevance of their annual reports. The Act states, also, that KPIs have special interest to a broad range of shareholders because they rely on them when making their investment decisions. Moreover, it is possible to deduce the crucial role of KPIs in improving transparency from the recommendations on the extensive use of KPIs in the Advisory Committee on Improvements to Financial Reporting Final Report to the United States Securities and Exchange Commission (ACIFR, 2008). Despite these concerns, no academic studies have investigated the association between the mandatory adoption of IFRS and the quality of KPIs' reporting. When considering this gap in the literature, this study refers largely to the studies which examined the effect of IFRS on financial disclosure. On balance, previous studies and the theoretical framework[4] lead to the expectation of a positive association between IFRS and the KPIs' disclosure quality. Therefore, our hypothesis is:

H_0: The UK's mandatory adoption of IFRS has improved the KPIs' disclosure quality.

[2] The quantity of KPIs is measured by the ratio of the total number of KPIs keywords disclosed to total words contained in the management discussion and analysis.

[3] The authors approximated investors' perceptions by e-loading. This is a factor that captures the sensitivity of the firm's return to earnings quality.

[4] Mainly agency theory and signalling theory assume that IFRS, as standards of high quality, have a positive effect on disclosure quality.

2.2. The effects of specific events on KPIs' disclosure quality

A wide variety of literature has addressed the issue of the effect of the financial crisis on the value relevance of accounting information. The findings of most studies provide evidence that the value relevance of accounting and financial information may be sensitive to a financial crisis (Devalle, 2012; Beisland, 2013). However, there are mixed empirical results. Some studies' findings show that significantly accounting information had lower value relevance during the period of the 2008 financial crisis (Persakis & Iatridis, 2015). In contrast, other studies' findings indicate that the financial crisis has a positive impact on the disclosure quality generally and, in particular, on the value relevance of accounting information (Beltratti, Spear, & Szabob, 2013; Bepari, Rahman, & Mollik, 2013; Arthur, Tang, & Lin, 2015). The findings of these studies have resulted in the argument that a financial crisis has a severe effect on investor trust and constitutes a strong incentive for the firm's management and the accounting standards bodies (IASB-FASB) to enhance disclosure quality. Therefore, it is considered to be worthwhile to further investigate this matter in order to attempt to control financial crisis events and support the findings of previous studies.

In the UK, the Companies Act 2006 is the principal regulatory framework that requires all firms, except for small ones, to review their business activities by using financial KPIs and, where appropriate, non-financial KPIs relating to employees, environmental, and energy aspects. In addition, in 2006, the ASB issued the reporting statement "Operating and Financial Review". This statement contains the guidelines on achieving best practices regarding KPIs' disclosure quality (ASB, 2006). As Elzahar et al. (2015) stated, these events contribute to the trend of KPIs' reporting to both increase and improve their quality. Therefore, we added a dummy variable to control the effect of the emergence of the 2006 ASB Guidelines.

In addition to the national regulation on KPIs (The UK Companies Act 2006; ASB, 2006), many international regulatory bodies require firms to provide the KPIs relating to their businesses. Among others, the IASB adopted the KPIs' reporting requirement as defined in IASB (2010). It constitutes a broad framework for the preparation and presentation of a management commentary that relates to a financial statement prepared under the IFRS. According to this framework, the management commentary should include performance indicators and measures that enable assessments to be made on the firm's progress with regard to its stated objectives. By issuing the 2010 IFRS Management Commentary, the IASB's ultimate purpose is to help users and, in particular, investors to evaluate the firm's exposures to risk and its strategies to manage such risks. Thus, the firm's management commentary should include either narrative or quantified forward-looking information so that an assessment can be made on whether or not the firm's management is making progress towards the achievement of its targets. Furthermore, the 2010 IFRS Management Commentary requires that the information, disclosed in the management commentary, should respond to the fundamental qualitative characteristics such as relevance, comparability, verifiability, ability to be understood, and faithful representation. Therefore, it is expected that the emergence and implementation of the practice statement requirements may influence the KPIs' disclosure quality.

2.3. The impact of firm's characteristics

This paper controls the five firm's characteristics widely used in prior studies. First, company size is the most common and important variable in determining the extent and the quality of corporate disclosure (Ahmed & Courtis, 1999; Hassanein & Hussainey, 2015). The findings of the majority of previous studies argue that large companies are incited to disclose a high level of relevant information in order to comply with disclosure requirements because they are politically visible and, therefore, are followed widely by different stakeholders (Wang & Hussainey, 2013). The proxy for firm size is the natural logarithm of total assets (*Ln assets*) (Godard, 2002; Fernández & Arrondo, 2005; Gull, Nekhili, Nagati, & Chtioui, 2018; Zalata, Ntim, Choudhry, Hassanein, & Elzahar, 2019). Second, the level of profitability is an important factor that influences the extent and the quality of corporate disclosure. Signalling and agency theories suggest that, in order to signal their performance quality and to distinguish themselves from lower-performing firms, highly profitable firms show greater incentives to disclose more relevant information. The findings of previous studies by such as Wallace and Nasser (1995), Wang et al. (2008), Nurunnabi and Hossain (2012) support the view that the firm's profitability has a positive effect on the quantity of disclosure quality researches. Third, liquidity, which is measured by a ratio of current assets out of current liabilities, is another determinant of the quality of KPIs' disclosure. There have been contrasting views on its impact on disclosure practices. The first stream of study findings shows that highly liquid firms are more willing to disclose more information in their annual reports in order to reveal their ability to meet short-term creditors out of their total cash without having to liquidate other assets (Graham, Harvey, & Rajgopal, 2005; Abdelsalam & Weetman, 2007). However, other studies' findings argue that less liquid firms have incentives to provide more information in order to justify their weak performance (Wallace, Nasser, & Mora, 1994; Al-Akra, Eddie, & Ali, 2010).

According to agency theory and stakeholder theory, highly leveraged firms have higher monitoring costs (Jensen & Meckling, 1976; Tauringana & Mangena, 2009; Alqatan, Chbib, & Hussainey, 2019, 2021). Such firms may have greater incentives to disclose more information in their annual report in order to reduce agency costs and to assure creditors about the firm's ability to protect their interest (Al-Shammari, Brown, & Tarca, 2008).

Finally, previous studies' findings have identified industry type as a determinant of a firm's characteristics that may affect the level of disclosure quality (Cooke, 1992; Wallace et al., 1994; Beretta & Bozzolan, 2004; Elzahar & Hussainey, 2012). The majority of these studies' findings show a significant relationship between these two

variables. According to political cost theory, certain industries, such as those which are vulnerable, are highly regulated and followed by the public because of their importance and their higher visibility. These firms demonstrate voluntary disclosure in order to reduce the political costs arising from their activities (Oyelere, Laswad, & Fisher, 2003).

3. RESEARCH METHODOLOGY

Based upon the multivariate analysis, this section investigates the effect of IFRS on KPIs' disclosure quality. As mentioned above, quantity is a dimension of disclosure quality. Hence, the following investigation focuses on the level of quantity of the KPIs' disclosure quality.

3.1. Sample

This paper drew the sample from the population of UK groups listed on the UK Stock Exchange during the pre-IFRS period from 2003 to 2004 and the post-IFRS period from 2006 to 2013. We obtained the principal sources of data from the FTSE 350 annual reports and the firms' homepages. We downloaded the firms' characteristics from either Datastream or collected them manually from the firms' annual reports. Following previous studies (Zéghal et al., 2011; Elzahar et al., 2015), we excluded financial firms because of their specific characteristics and their special regulations and accounting frameworks. Following Elshandidy, Fraser, and Hussainey's (2013) and Elzahar et al.'s (2015) examples, we excluded firms with missing financial data are excluded. Finally, we excluded, also, firms that had published their financial statements under IFRS before 2005. Moving on from non-financial firms (225 firms), we selected the final sample of 40 firms randomly and proportionally from all possible sectors (basic materials, consumer goods and services, oil and gas, industrials, technology).

3.2. The measure of KPIs' disclosure quality

In order to avoid the drawbacks[5] of disclosure quality proxies provided by previous studies, we used Elzahar et al.'s (2015) method to measure KPIs' disclosure quality. Our choice of this method is explained by the fact that it is derived from the regulatory frameworks (IASB and ASB) that provide the qualitative characteristics. Hence, this method does not require a great deal of subjective judgement. In addition and contrary to previous studies which examined the impact of IFRS on only one dimension of disclosure quality (i.e., reliability, value relevance, comparability, forward-looking, comprehensiveness), this study employs an aggregated index in which KPIs' disclosure quality is a function of all the above-mentioned dimensions. Based on a manual content analysis of the whole annual reports and using the qualitative attributes identified by the ASB (2006), we measure the quantity and the quality of the KPIs' disclosure by applying a binary score. Hence, we coded a KPI as 1 if it met a required dimension or 0 otherwise. We determined the quality score for each KPI as the ratio of the total quality dimension of that KPI's maximum score[6]. Once we had calculated each KPI quality score, we measured each firm's overall KPI quality score as the average of its KPI quality score.

4. RESULTS

4.1. Comparison of KPIs' disclosure quality before and after specific events

We began this analysis by checking the normality of variables. Our tests supported the normality of variable distribution. Since we accepted the assumption of normality for all KPIs' variables, we used a parametric test (t-test) of mean equality to compare KPIs disclosure practices in the pre- and post-IFRS periods before and after the emergence of the 2006 UK ASB Guidelines and the 2010 IFRS Management Commentary. In addition, this study examines the quality and quantity KPIs' disclosure before and after the 2007–2008 financial crisis.

The main hypothesis to be tested is that the UK's mandatory adoption of IFRS has improved the KPIs disclosure quality. Therefore, it is necessary to proceed by comparing the level of KPIs' disclosure[7] in the pre- and post-IFRS periods.

Table 1 Panel A illustrates the test of mean equality for all variables with regard to KPIs' disclosure quality. It shows that the means of all variables for the post-IFRS period are significantly higher than for the pre-IFRS period. Therefore, on average, the KPIs disclosure quality and quantity increase following the UK firms' mandatory adoption of IFRS. These results support the findings discussed in Elzahar et al.'s (2015) research relating to the variation of KPIs reporting practices in the pre- and post-IFRS periods.

This subsection highlights, also, the effect of the 2006 ASB Guidelines on KPIs' disclosure quality. As expected, the findings, presented in Table 1 Panel B, show that the mean of *OVFQKPIS* and *OVNFQKPIS* for the period following the implementation of the 2006 ASB Guidelines is significantly higher than in the previous period. Therefore, on average, the implementation of these guidelines has improved the best practice and quality of financial and non-financial KPIs. Moreover, these results support the call to regulate KPIs' disclosure practices and to encourage firms to be more compliant with this regulation. Finally, these findings are in line with the purpose of the ASB's reporting statement "Operating and Financial Review" which contains guidance relating to the content and the quality of KPIs disclosure as required by the international standards and the majority of regulatory bodies (IASB, FASB, SEC, etc.). Furthermore, these findings confirm the same results with respect to the quantity of KPIs disclosed by UK firms.

[5] Subjectivity is when the index is weighted. There is no reference to any theoretical framework (Dorestani & Rezaee, 2011a, 2011b).

[6] For financial KPIs, each KPI's maximum score is 8 as defined by the ASB (2006). Nevertheless, the dimension related to the "disclosure of the adjustment for any financial statement information used" cannot be applied to non-financial KPIs. Thus, the maximum number of applicable disclosure dimension is 7 instead of 8.

[7] Both the level of quality and the level of quantity are as the dimension of quality.

Table 1. KPIs disclosure quality: A test of the difference between two periods

Panel A						
	Mean PRE.IFRS	***Mean POST.IFRS***	***t-test***	***Mean PRE.FIN CRISIS***	***Mean POST.FIN CRISIS***	***t-test***
OVFQKPIS	0.3032	0.4762	-15.1937***	0.3545	0.4997	-15.8814***
OVNFQKPIS	0.1163	0.4243	-13.5734***	0.2134	0.4622	-13.3606***
FKPIQT	5.4875	8.8843	-8.8975***	6.375	9.425	-9.9946***
NFKPIQT	0.9375	4.525	-9.6362***	1.8875	5.0875	-10.7731***
TKPIQT	6.425	13.4093	-11.7690***	8.2625	14.5125	-13.3751***
Panel B						
	Mean PRE.ASB GUID	***Mean POST.ASB GUID***	***t-test***	***Mean PRE.IFRS MC***	***Mean POST.IFRS MC***	***t-test***
OVFQKPIS	0.33	0.4895	-16.6114***	0.4000	0.5385	-13.3365
OVNFQKPIS	0.1690	0.4457	-14.1660***	0.3012	0.5063	-9.4788
FKPIQT	5.9333	9.1785	-9.9358***	7.3464	10.2083	-8.5302
NFKPIQT	1.4333	4.825	-10.6544***	2.875	5.9833	-9.5488
TKPIQT	7.3666	14.00357	-13.2462***	10.2214	16.1916	-11.4440

*Notes: OVQFKPIS is the overall quality score of financial KPIs; OVQNFKPIS is the overall quality score of non-financial KPIs; FKPIQT is the number of financial KPIs disclosed; NFKPIQT is the number of non-financial KPIs disclosed; TKPIQT is the total number of financial and non-financial KPIs disclosed. The *, ** and *** denote significance at the 10%, 5% and 1% levels respectively.*

Table 1 Panel B shows that the IFRS practice statement contributes largely to the improvement of the KPIs' disclosure quality. In fact, on average, the means of all variables are higher in the period after the introduction of the IFRS practice statement. As mentioned earlier, the 2010 IFRS Management Commentary aims to provide useful information that helps in understanding the KPIs used by the firm's management to assess the performance against the previously determined targets.

Finally, the assumption to be tested is that the 2008 financial crisis has contributed to the improvement of KPIs' disclosure quality. Therefore, in order to control this event, it is necessary to compare the level of KPIs' disclosure quality before (2003–2007) and after (2008–2013) the financial crisis. As illustrated in Table 1 Panel A, the findings show that, on average, the quantity of KPIs disclosure quality improved after the financial crisis. These findings are in line with some of the previous literature on this topic (Filip & Raffournier, 2014; Arthur, Tang, & Lin, 2015). As mentioned above, after the financial crisis, both firms' management and regulatory bodies show greater motivation to increase the transparency and reliability of information disclosed in the firms' annual reports in order to restore investor confidence[8]. For instance, thereafter, the IASB used fair value accounting standards and, at the beginning of the global financial crisis in late 2008, the SEC conducted a study on market-to-market accounting (Lin, Kang, Morris, & Tang, 2013).

4.2. Descriptive statistics

Table 2 displays the descriptive statistics for the dependent and explanatory variables. As evidenced by Elzahar et al. (2015), on average, the UK firms disclose more financial KPIs than non-financial KPIs. Generally, descriptive statistics show that the quantity and quality of KPIs' disclosure vary widely across the sample firms. In fact, the mean (median) of financial KPIs disclosed (*FKPISQT*) is about 8.205 (8), while the mean (median) of the non-financial KPIs reported (*NFKPISQT*) is only 3.807 (3). The high level of SD value indicates a high variation in KPIs' disclosure quantity. More particularly, the results show that *FKPISQT* ranges from a minimum of 3 to a maximum of 21, while *NFKPISQT* varies from 0 to 16.

4.3. Correlation analysis

Table 3 illustrates the Pearson correlation matrix and indicates that multicollinearity does not constitute a problem in this study. In fact, all correlations among the explanatory variables are below 0.8 (Tabachnik & Fidell, 2007). We performed an additional check for multicollinearity by calculating the variance inflation factor (VIF) after carrying out each regression model. All VIF test values are under five; this shows that there is no multicollinearity problem (Belsley, Kuh, & Welsch, 1980). The tabulated correlation matrix shows, also, that there is a positive and significant association between the variables measuring the quantity of KPIs' disclosure quality. For instance, there is a positive and statistically significant association between non-financial quantity (*NFKPIQT*) and non-financial quality (*OVNFQKPIS*) ($p = 0.70$). Moreover, there is, also, a significant correlation between the total number of disclosed KPIs (*TKPIQT*) and the number of disclosed financial and non-financial KPIs ($p = 0.83$ and $p = 0.82$ respectively). This indicates that the same explanatory variables can explain these proxies. Furthermore, there is a positive and significant correlation between each KPIs proxy (for either quantity or quality) and those that are used to measure specific events such as a financial crisis, (*FIN CRISIS*), IFRS mandatory adoption (*IFRS*), the emergence of IFRS Management Commentary (*IFRS MC*) and ASB guidelines for the KPIs best practice (*ASB GUID*). In contrast, there is no significant correlation between the quantity and quality of KPIs reporting quality and the variables of firms' characteristics. In this sense, there is a need for further analysis to obtain strong evidence on the effect of these explanatory variables on the KPIs' disclosure quality.

[8] Previous literature provides evidence that the quality of financial reporting relates to investor confidence and decision-making (Ball & Brown, 1968).

Table 2. Descriptive statistics of variables

Variable	*N*	*Proportion*	*Mean*	*Median*	*Min*	*Max*	*SD*
OVQFKPIS	400	n/a	0.441	0.438	0.167	0.729	0.114
OVQNFKPIS	400	n/a	0.362	0.429	0	0.75	0.219
FKPISQT	400	n/a	8.205	8	3	21	3.340
NFKPISQT	400	n/a	3.807	3	0	16	3.303
TKPISQT	400	n/a	12.012	11	3	33	5.505
Ln assets	400	n/a	13.4325	12.7361	7.3696	22.570	3.3028
PROFIT	400	n/a	0.1365	0.1631	-4.7572	2.184	0.4858
LIQUID	400	n/a	1.7457	1.2170	0.4070	17.140	1.7286
GEAR	400	n/a	0.6500	0.4288	0	5.620	0.7408

Notes: OVQFKPIS is the overall quality score of financial KPIs; OVQNFKPIS is the overall quality score of non-financial KPIs; FKPISQT is the number of financial KPIs disclosed; NFKPISQT is the number of non-financial KPIs disclosed; TKPISQT is the total number of financial and non-financial KPIs disclosed; Ln assets is the proxy for firm size is the natural logarithm of total assets; PROFIT is the profitability measured by return on equity (ROE = Net income/equity); LIQUID is the liquidity measured by the ratio of current assets out of current liabilities; GEAR is the gearing calculated by the debt to equity ratio.

Table 3. The Pearson correlation matrix

	OVFQKPIS	***OVNFQKPIS***	***FKPIQT***	***NFKPIQT***	***TKPIQT***	***FIN CRISIS***	***IFRS MC***	***ASB GUID***	***IFRS***	***Ln assets***	***LIQUID***	***PROFIT***	***GEAR***
OVFQKPIS	1.0000												
OVNFQKPIS	0.6994***	1.0000											
FKPIQT	0.2025***	0.3439***	1.0000										
NFKPIQT	0.6059***	0.7007***	0.3734***	1.0000									
TKPIQT	0.4864***	0.6291***	0.8307***	0.8266***	1.0000								
FIN CRISIS	0.6228***	0.5564***	0.4479***	0.4752***	0.5569***	1.0000							
IFRS MC	0.5558***	0.4292***	0.3931***	0.4317***	0.4976***	0.5345***	1.0000						
ASB GUID	0.6399***	0.5790***	0.4458***	0.4711***	0.5531***	0.6018***	0.4286***	1.0000					
IFRS	0.6059***	0.5625***	0.4073***	0.4349***	0.5081***	0.6124***	0.3273***	0.7638***	1.0000				
Ln assets	0.0202	0.2827***	0.1148**	0.2303***	0.2078***	0.0913*	0.0652	0.0975*	0.1008**	1.0000			
LIQUID	0.0514	-0.1285**	-0.0996**	-0.1069**	-0.1246**	0.0340	0.0310	0.0436	0.0401	-0.0573	1.0000		
PROFIT	0.0892*	0.0655	-0.1403***	0.0330	-0.0653	-0.0291	0.0556	-0.0198	-0.0267	-0.0166	0.1060**	1.0000	
GEAR	-0.0212	0.0497	0.1191**	0.0878*	0.1249**	0.0470	-0.0231	0.0379	0.0735	0.2644***	-0.2146***	-0.3730***	1.0000

Notes: ASB GUID is a dummy variable that equals 1 for the period after the emergence of ASB guidelines (2007–2013) and 0 otherwise; FIN CRISIS is a binary variable that takes 1 for the period after the financial crisis (2008–2013) and 0 otherwise; IFRS is a dummy variable that takes 1 for the period post IFRS (2006–2013) and 0 otherwise; IFRS MC is a binary variable that equals 1 for the period after the emergence of the IFRS practice statement (2011–2013) and 0 otherwise; Ln assets is the proxy for firm size is the natural logarithm of total assets; PROFIT is the profitability measured by return on equity (ROE = Net income/equity); LIQUID is the liquidity measured by the ratio of current assets out of current liabilities; GEAR is the gearing calculated by the debt to equity ratio.

4.4. Regression analysis

In order to test empirically the impact of IFRS mandatory adoption on KPIs disclosure quality, we employed the following four models that differ in terms of the dependent variables:

Model 1

$$OVFQKPIS_{t,i} = \beta_0 + \beta_1 IFRS_{t,i} + \beta_2 Ln\ assets_{t,i} + \beta_3 Cross_{t,i} + \beta_4 PROFIT_{t,i} + \beta_5 LIQUID_{t,i} + \beta_6 GEAR_{t,i} + \\ + \beta_7 DIVYIELD_{t,i} + \beta_8 ASB\ GUID_{t,i} + \beta_9 FIN\ CRISIS_{t,i} + \beta_{10} IFRS\ MC_{t,i} + \beta_{11} INDUS\ DUMMIES_{t,i} + \varepsilon_{t,i} \quad (1)$$

Model 2

$$OVNFQKPIS_{t,i} = \beta_0 + \beta_1 IFRS_{t,i} + \beta_2 Ln\ assets_{t,i} + \beta_3 Cross_{t,i} + \beta_4 PROFIT_{t,i} + \beta_5 LIQUID_{t,i} + \beta_6 GEAR_{t,i} + \\ + \beta_7 DIVYIELD_{t,i} + \beta_8 ASB\ GUID_{t,i} + \beta_9 FIN\ CRISIS_{t,i} + \beta_{10} IFRS\ MC_{t,i} + \beta_{11} INDUS\ DUMMIES_{t,i} + \varepsilon_{t,i} \quad (2)$$

Model 3

$$FKPIQT_{t,i} = \beta_0 + \beta_1 IFRS_{t,i} + \beta_2 Ln\ assets_{t,i} + \beta_3 Cross_{t,i} + \beta_4 PROFIT_{t,i} + \beta_5 LIQUID_{t,i} + \beta_6 GEAR_{t,i} + \\ + \beta_7 DIVYIELD_{t,i} + \beta_8 ASB\ GUID_{t,i} + \beta_9 FIN\ CRISIS_{t,i} + \beta_{10} IFRS\ MC_{t,i} + \beta_{11} INDUS\ DUMMIES_{t,i} + \varepsilon_{t,i} \quad (3)$$

Model 4

$$NFKPIQT_{t,i} = \beta_0 + \beta_1 IFRS_{t,i} + \beta_2 Ln\ assets_{t,i} + \beta_3 Cross_{t,i} + \beta_4 PROFIT_{t,i} + \beta_5 LIQUID_{t,i} + \beta_6 GEAR_{t,i} + \\ + \beta_7 DIVYIELD_{t,i} + \beta_8 ASB\ GUID_{t,i} + \beta_9 FIN\ CRISIS_{t,i} + \beta_{10} IFRS\ MC_{t,i} + \beta_{11} INDUS\ DUMMIES_{t,i} + \varepsilon_{t,i} \quad (4)$$

where, *OVFQKPIS* is the overall quality score of financial KPIs in Model 1; *OVNFQKPIS* is the overall quality score of non-financial KPIs in Model 2; *FKPIQT* is the number of financial KPIs in Model 3; *NFKPIQT* is the number of non-financial KPIs in Model 4; ε is error term.

We used Breusch-Pagan tests to test all the regression models for heteroscedasticity. The test results support the assumption of heterogeneity. We also performed White's General test to check for heterscedasticity. The results of this test are not tabulated. In order to deal with this heterogeneity, we performed the Hausman specification test to decide between a fixed effect and a random effect model. This test's results indicate that, while it is inconsistent for Model 1 random effects estimation is more appropriate for the panel data dealing with Model 2, Model 3, and Model 4 regression models. This study focuses mainly on special events and investigates their effect on KPIs' reporting practices such as the emergence of the 2006 ASB Guidelines for KPI best practice, the 2008 financial crisis, and the 2010 IFRS Management Commentary and their controls, also, for firm's characteristics.

Table 4 shows that IFRS is positive and significant at the 5% level in Model 1, Model 2, Model 3, and Model 4. This implies that the quantity and quality of KPIs' disclosure improve after the mandatory adoption of IFRS. Overall, the results are consistent with the mean equality test findings which show that the mandatory adoption of IFRS improves the quantity and quality of KPIs' disclosure. These findings are, also, in line with previous findings that argue the positive effect of IFRS implementation on KPIs' disclosure in firms' annual reports (Iatridis, 2010; Zéghal et al., 2011; Byard et al., 2011; Choi et al., 2013; Cheikh Rouhou, Ben Mrad Douagi, & Hussainey, 2015).

Table 4. Regression results

Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*
IFRS	0.0888086 **	0.1432389**	1.432979**	1.79566**
Ln assets	-0.013664 ***	0.0224897***	-0.5101013***	0.0230618**
Cross	-0.0031273	0.0153482	0.628702	-0.4522702
PROFIT	-0.0010847	0.0094042	0.0657452	-0.1509377
LIQUID	0.0005943***	0.0119746***	0.1085086*	0.1435574*
GEAR	-0.0008782	-0.0088686	-0.4588732***	-0.6443666***
DIVYIELD	0.0000132	0.1044856	-0.8522192	-1.13879
ASB GUID	0.0466431***	0.0670745***	0.8411066**	0.8112685**
FIN CRISIS	0.035545***	0.06639***	0.9868293***	1.073657***
IFR SMC	0.0801691***	0.0791812***	1.590936***	1.80449***
Constant	0.4776626***	-0.1040521	9.393633***	1.801355
Adjusted R^2	0.3192	0.5360	0.4476	0.3372
N	400	400	400	400

5. DISCUSSION

In addition, this study's findings can be interpreted by several theories. Mainly, both agency and signalling theories suggest that the improvement of disclosure quality in the firms' annual report after the mandatory adoption of IFRS contributes to less information asymmetry and, in turn, better disclosure quality and forecasts of the firm's performance. Therefore, the hypothesis (H_0), which expects the mandatory adoption of IFRS to have a positive effect on KPIs' disclosure quality in the UK firms' annual reports, is accepted. Furthermore, from regression Model 1 to regression Model 4, there

is a significant increase in the coefficients. This implies that the mandatory adoption of IFRS has a more important effect on the quantity of KPIs' disclosure than on their quality. Besides, it appears that the mandatory adoption of IFRS is more likely to influence non-financial KPIs. These findings are expected since the revised IFRS encourage firms to disclose non-financial information in their annual reports. In fact, the increased quantity of KPIs' disclosure contributes to the reduction in information asymmetry. In addition, this study provides insights into the impact of some specific events that occurred during the sample period. Most notably, the emergence of the 2006 ASB Guidelines for KPIs' best practice (*ASB GUID*) has had a positive and significant effect on the quantity and quality of KPIs' disclosure. In fact, the coefficients of the four regressions are positive and significant at the 1% level. These results are consistent with the 2006 ASB Guidelines. With regard to the 2010 IFRS Management Commentary, the results indicate that there is a positive and statistically significant association between the 2010 IFRS Management Commentary (*IFRS MC*) and both the quantity and quality of KPIs' disclosure (*OVFQKPIS, OVNFQKPIS, FKPIQT, NFKPIQT*). These results are expected since the IASB issued the 2010 IFRS Management Commentary to help users to understand the KPIs used by a firm's directors to assess the level of achievement of targets against the firm's objectives. As far as the 2008 financial crisis is concerned, this event has had a positive and significant impact on the quantity and quality of KPIs' disclosure. As can be seen from regression Model 1 to regression Model 4 results, the coefficients of this variable are positive and significant at the 1% level. This is in line with Arthur et al.'s (2015) findings that the 2008 financial crisis has contributed to the improvement in the quality of financial reporting which requires better KPIs disclosure quality. This result may be explained by the lack of investor confidence and market liquidity during an economic recession. On the other hand, during the 2008 financial crisis, both regulators and ASBs showed great motivation to improve reporting policy (Lin et al., 2013; Filip & Raffournier, 2014; Arthur et al., 2015). Overall, it can be seen from regression Model 1 to regression Model 4 results that there are significant increases in the coefficients of *IFRS MC, ASB GUID*, and *FIN CRISIS*. Thus, it can be argued that these specific events have influenced more the quantity rather than the quality of KPIs' disclosure.

As far as firm characteristics are concerned, Model 2 and Model 4 demonstrate that firm size has a positive and significant effect on the quantity and quality of non-financial KPIs' disclosure. Since large companies are politically visible, they are encouraged to disclose more and better quality non-financial KPIs[10] in order to legitimise their activities. This result is consistent with the findings of previous studies (Wang & Hussainey, 2013; Alotaibi & Hussainey, 2016). However, the results of Model 1 and Model 3 indicate that there is a negative and significant relationship between firm size (in terms of assets) and the quantity and quality of financial KPIs' disclosure. In contrast to the majority of previous studies (Jiao et al., 2012; Wang & Hussainey, 2013), the results show that large firms disclose low-quality financial KPIs. These results are in line with political cost theory which suggests that large firms reduce the level of disclosure in order to avoid political pressures and costs. The negative association between firm size and the quality of financial KPIs' disclosure can be explained by the fact that large firms focus not only on their annual reports to disclose KPIs but use, also, other means, such as websites, conference calls, press, and papers, to transmit information. Moreover, it is documented that highly liquid firms are encouraged to disclose greater quantities and qualities of financial and non-financial KPIs' disclosure in order to inform others of their abilities to satisfy their short-term obligations. This is in line with agency theory and previous findings (Graham et al., 2005). Finally, according to previous studies (Mangena & Pike, 2005; Alotaibi & Hussainey, 2016), there is shown to be an insignificant association between all other firm characteristics (profit-gearing) and KPIs' disclosure quality. Similar results are documented in previous studies (Elzahar et al., 2015). It is worthwhile mentioning that industry dummies have no significant influence on the quantity and quality of KPIs' disclosure.

Furthermore, Table 4 shows that, in general, adjusted R^2 is important for all regressions[11].

6. CONCLUSION

This study's main objective was to investigate the impact of the mandatory adoption of IFRS on UK firm KPIs' disclosure quality. It examined, also, the extent to which some specific events (the emergence of the 2006 ASB Guidelines, the 2008 financial crisis, and the 2010 IFRS Management Commentary) influenced KPIs' disclosure quality in firms' annual reports. Our main findings show that the quantity and quality of KPIs' disclosure increased after the UK's mandatory adoption of IFRS in the UK. It is noteworthy, also, that the 2006 UK ASB Guidelines and the 2010 IFRS Management Commentary had a positive and significant influence on the quality of the KPIs' disclosure. On the other hand, it is argued that the 2008 financial crisis contributed to the improvement in the quantity and quality of KPIs' disclosure. In conclusion, this study's findings provide strong evidence that with regard to KPIs international accounting standards and the regulatory frameworks are crucial drivers towards the improved quantity and quality of KPIs' disclosure. Based on these findings, our study has extended previous studies in two main ways. First, we have attempted to fill the gap in the disclosure literature by examining the impact of IFRS on the quantity and quality of KPIs which provide crucial disclosure information in the firms' annual reports. Second, while previous studies examined the impact and the economic consequences of KPIs' disclosure, this study focused on investigating the effect of specific regulatory events, such as the emergence of the 2006 UK ASB Guidelines and the 2010 IFRS Management Commentary, that were linked closely to KPIs' disclosure practices. In addition, this study considered the 2008 financial crisis to be a crucial phenomenon that influenced the extent and the quality of KPIs' disclosure.

[10] In general, non-financial KPIs are those related to corporate social disclosure such as information about environment protection, energy use, health and safety.

[11] R^2 is 31.92% for Model 1; 53.60% for Model 2; 44.76% for Model 3 and 33.72% for Model 4.

These findings should be of interest, also, to international regulatory authorities and institutions involved in the international standardisation process (e.g., securities markets, IASB, European Commission). In addition, these findings may help the IASB with its efforts to encourage the worldwide adoption of IFRS. More specifically, they could be relevant to several countries that have still to decide on whether or not to adopt IFRS. Notwithstanding, it should be pointed out that this study suffered from a number of limitations and these could be considered to provide good opportunities for future research. The first limitation was the relatively small size of the sample which is a common limitation of using manual content analysis. Second, this study focused only on firms' annual reports as crucial sources of information about their financial and non-financial KPIs. It is important to bear in mind that the firms' financial and non-financial disclosure can be obtained from several other sources such as their press releases, web-based disclosures, and interim reports.

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