
THE EFFECT OF AUDIT QUALITY AND ACCOUNTING VALUES ON EARNINGS MANAGEMENT

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ABSTRACT

Considering that national culture affects the country institutions and, indirectly, transaction costs, accounting records and audit quality, the purpose of this study was to evaluate the moderate effect of accounting value on the relationship between audit quality and earnings management in a sample of 45,216 firms (374,690 observations) from 83 countries, covering the period 2002-2017. Audit quality (auditor reputation and auditor industry specialization) was measured as proposed by Francis and Wang (2008), accounting values (professionalism vs. statutory control, uniformity vs. flexibility, conservatism vs. optimism, and secrecy vs. transparency) were categorized as in Braun and Rodriguez Jr. (2008) and earnings management was quantified with the modified model of Jones (Dechow, Sloan, and Sweeney, 1995). Auditing by highly reputed audit firms (Big 4) was found to inhibit earnings management. Moreover, the interaction between audit quality and accounting values suggests that the positive effect of audit quality on earnings quality is stronger the higher the country level of professionalism, flexibility, optimism and transparency. Our results confirm that institutional factors,

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represented in this study by accounting values, are indeed relevant to earnings and audit quality.

Keywords: Audit quality. Accounting values. Earnings management. Discretionary accruals.

EFEITO DA QUALIDADE DA AUDITORIA E DOS VALORES CONTÁBEIS NO GERENCIAMENTO DE RESULTADOS

RESUMO

Considerando que a cultura nacional afeta as instituições do país e, indiretamente, os custos de transação, registros contábeis e a qualidade de auditoria, o objetivo deste estudo é avaliar o efeito moderador dos valores contábeis na relação entre a qualidade da auditoria e o gerenciamento de resultados em uma amostra de 45.216 empresas (374.690 observações) de 83 países, abrangendo o período 2002-2017. A qualidade da auditoria (reputação e especialização do auditor) foi medida conforme proposto por Francis e Wang (2008), os valores contábeis (profissionalismo versus controle estatutário, uniformidade versus flexibilidade, conservadorismo versus otimismo e sigilo versus transparência) foram categorizados como em Braun e Rodriguez Jr. (2008), e o gerenciamento de resultados foi quantificado com o modelo modificado de Jones (Dechow, Sloan e Sweeney, 1995). A auditoria realizada por firmas de auditoria de alta reputação (Big 4) inibe o gerenciamento de resultados. Além disso, a interação entre a qualidade da auditoria e os valores contábeis sugere que o efeito positivo da qualidade da auditoria na qualidade dos lucros é mais forte quanto maior for o nível de profissionalismo, flexibilidade, otimismo e transparência do país. Os resultados confirmam que os fatores institucionais, representados neste estudo pelos valores contábeis, são de fato valores relevantes para a qualidade da auditoria.

Palavras-Chave: Qualidade da auditoria. Valores contábeis. Gerenciamento de resultados. Accruals discricionários.

1 INTRODUCTION

Information asymmetry creates conflicts of interest between managers and investors, such as when managers engage in opportunistic earnings management through discretionary disclosure of accounting figures (Lin & Hwang, 2010). Asymmetry and earnings management may be reduced by several mechanisms, one of which is auditing—an independent and therefore credible way to validate accounting figures (Kanagaretnam, Lim, & Lobo, 2010). The higher the audit quality, the higher the earnings quality.

Higher audit quality may be defined as “greater assurance that the financial statements faithfully reflect the firm’s underlying economics, conditioned on its financial reporting system and innate characteristics” (DeFond & Zang, 2014, p. 276). Audit quality is not an observable variable but is most often proxied by auditor

reputation, i.e., whether or not the audit firm is one of the so-called “Big 4” (KPMG, EY, PwC and Deloitte) (Francis, 2011; DeFond & Zang, 2014).

Several authors (Francis & Wang, 2008; Francis & Yu, 2009; Kanagaretnam et al., 2010; Alhadab & Clacher, 2018) have shown that firms audited by one of the Big 4 are less prone to engage in earnings management, or at least tend to adopt more conservative practices. This is because Big 4 auditors are “more sensitive to the cost of client misreporting and its effect on auditor reputation and therefore more likely to enforce higher earnings quality” (Francis & Wang, 2008, p. 157).

Moreover, Francis (2011) believes that the institutional environment determines auditors’ behavior and legal responsibilities and affects accounting and audit practices, creating incentives to raise or lower the audit quality, as the case may be. One of the factors shaping the institutional environment, culture—defined by Hofstede (1980, p.25) as “the collective programming of the mind which distinguishes the members of one group or category of people from another” — also has an impact on earnings quality (Nabar & Boonlert-U-Thai, 2007; Braun & Rodriguez Jr., 2008; Douppnik, 2008; Han, Kang, Salter & Yoo, 2010).

Gray (1988) adapted Hofstede’s cultural dimensions (Hofstede, 1980) to Accounting by associating them with accounting values which could be used to explore differences between countries with regard to accounting practices and financial system. These accounting values are professionalism vs. statutory control, uniformity vs. flexibility, conservatism vs. optimism, and secrecy vs. transparency. In an analysis of the relationship between accounting values and earnings management, Braun and Rodriguez Jr. (2008) found statutory control, uniformity, conservatism and secrecy to be positively associated with earnings management. Based on this, Big 4-audited firms headquartered in countries characterized by professionalism, flexibility, optimism and transparency would be expected to engage less, or more conservatively, in earnings management.

In this study, our purpose was to evaluate the moderate effect of accounting value on the relationship between audit quality and earnings management in different institutional scenarios. Our sample consisted of 45,216 firms (374,690 observations) from 83 countries, covering the period 2002-2017. Audit quality was proxied by auditor reputation (Big 4 vs. non-Big 4), accounting values were defined as in Braun and Rodriguez Jr. (2008), and earnings management was quantified with the model of Jones modified by Dechow, Sloan and Sweeney (1995).

Our results confirm that institutional factors, represented in this study by accounting values, are indeed relevant to earnings and audit quality. As expected, auditing by the Big 4 was associated with lower levels of earnings management, and the observed interaction between audit quality and accounting values suggests that the positive effect of audit quality on earnings quality is proportional to the country level of professionalism, flexibility, optimism and transparency.

This study is relevant since, as pointed out by Francis (2011), very little research has been conducted on how institutional factors affect audit quality. Among the few extant studies, Francis and Wang (2008) and Kanagaretnam, Lim and Lobo (2010) focused on investor protection, while Astami, Rusmin, Hartadi and Evans (2017) looked at uncertainty avoidance (a cultural dimension). No study was found which analyzed the combined effect of accounting-related cultural values

(i.e., accounting values) and audit quality on the level of earnings management. Moreover, according to Aggarwal and Goodell (2014), national culture affects a country's institutions and, indirectly, transaction costs, thereby influencing audit quality.

2 REVIEW OF THE LITERATURE

Earnings management is an international phenomenon. It occurs when managers use discretion to manipulate accounting figures to their personal advantage, thereby misleading stakeholders (Healy & Wahlen, 1999). On the other hand, auditing by independent external parties tends to inhibit opportunistic practices such as earnings management and reduce the information asymmetry between managers and stakeholders.

Several studies have shown a positive relationship between audit quality and earnings quality. Thus, the higher the audit quality, the lower the incidence of aggressive accruals-based earnings management (Francis, 2011; DeFond & Zang, 2014).

When examining the association between audit quality and earnings quality on the US market, Becker, DeFond, Jiambalvo and Subramanyam (1998) found that firms not audited by the Big 4 (or "Big N") were more likely to engage in accruals-based earnings management. In their analysis of seasoned equity offering firms, Zhou and Elder (2004) also found a negative association between earnings management and audit quality. Likewise, Francis and Yu (2009) observed that the clients of major auditing firms (Big N) adopted less aggressive practices of earnings management.

In a study on Belgian firms, Bauwhede, Willekens and Gaeremynck (2003) investigated the correlation between audit firm size, ownership structure and discretionary accruals and found lower levels of earnings management in companies audited by highly reputed audit firms. Also, in Europe, Van Tendeloo and Vanstraelen (2008) observed an association between discretionary accruals-based earnings management and audit quality, supporting the notion that good quality auditing inhibits earnings management.

On the Asian side, Chen, Lin and Zhou (2005) evaluated the association between audit quality and discretionary accruals-based earnings management in Taiwanese firms making initial public offering and found high-quality auditing to reduce the level of earnings management. In a study on firms in Singapore, Rusmin (2010) confirmed earlier studies showing that audit quality is negatively associated with the level of earnings management. More recently, Alhadab and Clacher (2018) expanded on the analysis of Chen et al. (2005) by demonstrating that high-quality auditing inhibits both accruals-based earnings management and real earnings management (done through discretionary expenses).

Globally, Kanagaretnam et al. (2010) found that high-quality auditing discourages aggressive earnings management among bank managers, while Francis and Wang (2008) observed higher earnings quality in countries with better investor protection but only for firms audited by one of the Big 4. In addition, Astami et al. (2017) reported that firms in countries with high levels of uncertainty avoidance tend to adopt more conservative accounting practices and that firms audited by one of the Big 4 are less prone to earnings management.

Thus, regardless of context, high audit quality is synonymous with lower levels of discretionary accruals-based earnings management. On the other hand, since institutional factors affect accounting and audit practices (Francis & Wang, 2008), auditor behavior depends on country culture.

National culture has been shown to define corporate behavior, at least to some extent. To better understand the influence of national culture, Hofstede (1980) divided it into four dimensions: i) power distance index (PDI) (how people not in power deal with the problem of inequality), ii) individualism vs. collectivism (IND) (balance between the individual and larger social groups), iii) masculinity vs. femininity (MAS) (division of emotional and social roles between men and women), and iv) uncertainty avoidance (UAI) (stress induced by concerns about the future and the unknown in general).

Gray (1988) adapted these dimensions (Hofstede, 1980) to the study of accounting, introducing the notion of 'accounting values', in order to explain differences between countries with regard to accounting practices and financial system. Table 1 shows the correspondences between cultural dimensions and accounting values.

Table 1
Correspondences between cultural dimensions and accounting values.

	PDI	IND	MAS	UAI
Professionalism vs. statutory control	-	+	?	-
Uniformity vs. flexibility	+	-	?	+
Conservatism vs. optimism	?	-	-	+
Secrecy vs. transparency	+	-	-	+

Notes: Adapted from Gray (1988). PDI=power distance index; IND=individualism vs. collectivism; MAS=masculinity vs. femininity; UAI=uncertainty avoidance.

'Professionalism vs. statutory control' refers "to a preference for the exercise of individual professional judgment and the maintenance of professional self-regulation as opposed to compliance with prescriptive legal requirements and statutory control" (Gray, 1988, p. 8), while 'uniformity vs. flexibility' corresponds "to a preference for the enforcement of uniform accounting practices between companies and for the consistent use of such practices over time as opposed to flexibility in accordance with the perceived circumstances of individual companies" (Gray, 1988, p. 8). 'Conservatism vs. optimism' represents "a preference for a cautious approach to measurement so as to cope with the uncertainty of future events as opposed to a more optimistic, laissez-faire, risk-taking approach" (Gray, 1988, p. 8), whereas 'secrecy vs. transparency' expresses "a preference for confidentiality and the restriction of disclosure of information about the business only to those who are closely involved with its management and financing as opposed to a more transparent, open and publicly accountable approach" (Gray, 1988, p. 8).

Guan, Pourjalali, Sengupta and Teruya (2005), Nabar and Boonlert-U-Thai (2007), Braun and Rodriguez Jr. (2008), Doupnik (2008), Han et al. (2010) and Gray and Keeney (2015) all concluded that national culture can help explain patterns of earnings management in different countries. Thus, Braun and Rodriguez Jr. (2008) believe that while professional judgment precedes earnings management,

in countries with high levels of professionalism judgment is expected to be used to disclose the firm's economic situation. Firms headquartered in such countries and audited by highly reputed audit firms (Francis, 2011; DeFond & Zang, 2014) would be less likely to engage in earnings management. Based on this, the following hypothesis was formulated:

H₁: The higher the level of professionalism and the better the audit quality, the lower the level of earnings management.

According to Braun and Rodriguez Jr. (2008), earnings management is possible due to the innate flexibility of accounting regulations. However, while flexibility helps show the firm's economic situation, uniformity induces managers to develop strategies to improve results. In other words, firms headquartered in countries with high levels of flexibility and audited by highly reputed audit firms (Francis, 2011; DeFond & Zang, 2014) would be less likely to engage in earnings management. This allows us to formulate a second hypothesis.

H₂: The higher the level of flexibility and the better the audit quality, the lower the level of earnings management.

Guan et al. (2005) observed that in countries with high levels of conservatism, firms tend to adopt practices of earnings management which reduce reported profits. On the other hand, Braun and Rodriguez Jr. (2008) showed conservatism to be positively associated with earnings management. Thus, following Guan et al. (2005), firms headquartered in countries with high levels of conservatism and audited by highly reputed audit firms (Francis, 2011; DeFond & Zang, 2014) would be less likely to engage in earnings management. This was expressed in the following hypothesis:

H₃: The higher the level of conservatism and the better the audit quality, the lower the level of earnings management.

In countries with high levels of secrecy, less corporate information gets disclosed, facilitating earnings management (Guan et al., 2005), a notion supported by Braun and Rodriguez Jr. (2008). Thus, firms headquartered in countries with high levels of transparency and audited by highly reputed audit firms would be less likely to engage in earnings management, leading to our fourth hypothesis:

H₄: The higher the level of transparency and the better the audit quality, the lower the level of earnings management.

3 METHODS

Our sample consisted of 45,216 non-financial public firms from 83 countries (374,690 observations) (Appendix A) for which information on the adopted accounting and audit quality variables was available in the Thomson Reuters Worldscope database, covering the fiscal years 2002-2017, and for which the cultural dimensions of Hofstede (1980) could be determined. A minimum of 10 observations for each industry and year was deemed necessary to measure earnings management (observations not meeting this criterion were excluded). Moreover, the problem of outliers was minimized by winsorizing the continuous variables at the 1st and 99th percentile.

A common procedure in financial studies, winsorization does not exclude discrepant data from the sample but reduces their influence on the results on regressions. According to Brownen-Trinh (2019), the impact of the procedure is multifaceted and depends on three major factors: the level of data errors in the tails, the characteristics of the firms affected by the procedure, and scaling. In the absence of data entry errors, winsorization alters the data set in a non-systematic manner and makes regression-based predictions more accurate, especially if the ordinary least-squares method is employed.

To test our hypotheses, we performed four ordinary least squares (OLS) regressions (one for each hypothesis), while controlling for fixed effects (year and industry), as shown in Equation 1.

$$DACC_{it} = \beta_0 + \beta_1 AUD_{it} + \beta_2 CULT + \beta_3 (AUD_{it} \times CULT) + \Sigma Control + \varepsilon_{it} \quad (1)$$

The main coefficients of interest are β_2 and β_3 . The former captures the effect of the accounting values in firms audited by one of the Big 4, while the coefficient of the term of interest (β_3) measures the incremental effect of the accounting values on the accruals of firms audited by one of the Big 4 vs. firms not audited by one of the Big 4. A negative and significant β_3 is evidence that firms audited by highly reputed audit firms have better earnings quality than firms not audited by highly reputed audit firms in association with higher levels of professionalism, flexibility, optimism and transparency. The coefficient β_1 tests whether accruals differ between firms audited by one of the Big 4 and firms not audited by one of the Big 4 when accounting values are effectively zero; thus, no prediction is made with regard to this coefficient. Hence, β_3 was expected to be negative for professionalism (*PROA*) and positive for uniformity (*UNIA*), conservatism (*CONS*) and secrecy (*SECR*).

Discretionary accruals (*DACC*), as defined in the model of Jones modified by Dechow et al. (1995), are represented by the absolute value of the residuals (ε) of Equation 2. This is the model most widely used to measure earnings management (the greater the discretionary accruals, the higher the level of earnings management). Equation 2 was estimated by OLS regression for each sector and year.

$$TA_{it} = \beta_1 \frac{1}{AT_{it-1}} + \beta_2 (\Delta REV - \Delta REC)_{it} + \beta_3 PPE_{it} + \varepsilon_{it} \quad (2)$$

Where *TA* is total accruals ($\Delta ACT - \Delta LCT - \Delta CHE + \Delta DLC - DP$), *ACT* is current assets, *LCT* is current liabilities, *CHE* is cash and cash equivalents, *DLC* is debt included in current liabilities, *DP* is depreciation, *AT* is total assets, *REV* is net revenues, *REC* is accounts receivable, *PPE* is property, plant and equipment. *TA*, *REV*, *REC* and *PPE* are divided by lagged total assets.

Audit quality (*AUD*) was proxied by audit firm reputation (Francis & Wang, 2008) and scored with a dummy variable: 1 if audited by one of the Big 4 (KPMG, EY, PwC or Deloitte), 0 otherwise.

Accounting values (*CULT*) were measured as in Braun and Rodriguez Jr. (2008), using a modification of the culture metrics of Hofstede (1980) and the accounting values of Gray (1988). Based on Gray's observation that some of Hofstede's cultural dimensions are negatively associated with accounting values (Gray, 1988), we started by converting the values using Equation 3.

$$NEG_CULT = [(X - \bar{X}) \times (-1)] + \bar{X} \quad (3)$$

Where *NEG_CULT* is the converted value of a cultural dimension, *X* is the value of a cultural dimension, and \bar{X} is the average of a cultural dimension (Hofstede, 1980), considering the countries in the sample. Accounting values were measured with Equations 4 to 7.

$$PROF = (IND + NEG_PDI + NEG_UAI)/3 \quad (4)$$

$$UNIF = (UAI + PDI + NEG_IND)/3 \quad (5)$$

$$CONS = (UAI + NEG_IND + NEG_MAS)/3 \quad (6)$$

$$SECR = (UAI + PDI + NEG_IND + NEG_MAS)/4 \quad (7)$$

Where *PROF* is professionalism vs. statutory control, *UNIF* is uniformity vs. flexibility, *CONS* is conservatism vs. optimism, *SECR* is secrecy vs. transparency, *IND* is individualism vs. collectivism, *NEG_IND* is individualism vs. collectivism converted with Equation 3, *PDI* is power distance index, *NEG_PDI* is power distance index converted with Equation 3, *UAI* is uncertainty avoidance, *NEG_UAI* is uncertainty avoidance converted with Equation 3, and *NEG_MAS* is masculinity vs. femininity converted with Equation 3.

The control variables included company size (*SIZE*) expressed as the natural logarithm of total assets, leverage (*LEV*) expressed as the ratio between total debt and total assets, economic performance (*ROA*) expressed as the ratio between earnings before extraordinary items and total assets, market-to-book ratio (*MTB*) expressed as the ratio between market value and equity, losses (*LOSS*) scored as a dummy variable where 1 represents losses in *t-1*, and 0 otherwise, IFRS adoption (*IFRS*) scored as a dummy variable where 1 represents years following IFRS adoption (according to the IFRS Foundation, 2018) and 0 represents years prior to IFRS adoption, and financial crisis (*CRISIS*) scored as a dummy variable where 1 represents the period between 2007 and 2009 (Scott, 2012), and 0 otherwise.

According to Dechow, Ge and Schrand (2010), measures based on discretionary accruals are compromised by noise. Thus, to evaluate the robustness and consistency of our findings, we replaced discretionary accruals with abnormal accruals (Francis and Wang, 2008). Likewise, we replaced auditor firm reputation (*AUD*) with auditor industry specialization (*SPEC*) (Zhou and Elder, 2004), according to which auditors with >30% market share are specialists (Reichelt & Wang, 2010).

To test the sensitivity of our results, we created three subsamples: one which excluded countries representing less than 2% of the total sample, one including

only firms headquartered in common law countries, and one excluding only the US.

4 ANALYSIS OF RESULTS

Initially, the behavior of the variables was analyzed by determining minimum and maximum values and mean values \pm standard deviations (Table 2).

Table 2
Descriptive statistics

Variable	N	Mean	Standard deviation	Minimum	Maximum
<i>DACC</i>	374,690	0.1353	0.2720	0.0005	3.2902
<i>AUD</i>	374,690	0.5801	0.4935	0.0000	1.0000
<i>PROF</i>	374,690	54.9829	17.0839	18.7739	86.4406
<i>UNIF</i>	374,690	55.5277	17.0839	24.0701	91.7367
<i>CONS</i>	374,690	56.2671	14.2654	34.2848	90.9515
<i>SECR</i>	374,690	56.2914	13.6220	34.4636	89.4636
<i>SIZE</i>	374,690	19.0722	2.1031	12.4645	24.7203
<i>LEV</i>	374,690	0.2434	0.2549	0.0000	2.2041
<i>ROA</i>	374,690	-0.0515	0.4040	-5.6608	0.3304
<i>MTB</i>	374,690	2.1813	3.7052	-15.6983	30.6827
<i>LOSS</i>	374,690	0.2780	0.4480	0.0000	1.0000
<i>IFRS</i>	374,690	0.3191	0.4661	0.0000	1.0000
<i>CRISIS</i>	374,690	0.2038	0.4028	0.0000	1.0000

Notes: *DACC*=absolute value of discretionary accruals; *AUD*=audit quality; *PROF*=professionalism vs. statutory control; *UNIF*=uniformity vs. flexibility; *CONS*=conservatism vs. optimism; *SECR*=secrecy vs. transparency; *SIZE*=company size; *LEV*=leverage; *ROA*=performance; *MTB*=market-to-book ratio; *LOSS*=losses; *IFRS*=IFRS adoption; *CRISIS*=financial crisis.

Source: The authors.

The mean and median *DACC* (0.135 and 0.056, respectively) matched the figures published by Becker et al. (1998), but the value was significantly smaller in firms audited by one of the Big 4 (0.106) than otherwise (0.175) (t -test=77.01; p -value=0.000). When signed discretionary accruals were analyzed (data not shown), the mean and median *DACC* was -0.0012 and -0.005, respectively, indicating a preference for conservative practices of earnings management among the sampled firms.

Nearly three fifths of the sampled firms (58.01%) were audited by one of the Big 4. In a study by Astami et al. (2017), the corresponding figure for the Asian and Pacific region was 45.62%. Kanagarethnam et al. (2010), who sampled banks from 48 countries, reported that 74% were audited by one of the Big 5.

The mean *PROF* value was 54.98, ranging between 18.77 (Panama) and 84.44 (Denmark). The mean *UNIF* value was 55.52, with a minimum of 24.07 (Denmark) and a maximum of 91.73 (Panama). The mean *CONS* value was 56.26, ranging between 34.28 (UK) and 90.95 (Costa Rica). Finally, the mean *SECR* value was 56.29, with a minimum of 34.46 (UK) and a maximum of 89.46 (Ukraine). The proximity of these mean values to 50 indicates uniformity of accounting values across the board, although most countries displayed less professionalism and more

uniformity, conservatism and secrecy. In other words, the sampled firms tended to behave according to legal prescriptions and statutes, employ uniform and constant accounting practices and make only mandatory (conservative) disclosure—a pattern suggestive of low earnings quality (Braun & Rodriguez Jr., 2008).

The mean *SIZE* value was 19.07, corresponding to mean total assets of USD 2,060,000,000, matching figures published by Rusmin (2010). The mean *LEV* value was 0.24, which is lower than the values reported by Alhadab et al. (2018) and Astamani et al. (2017), whereas the negative mean *ROA* value observed (-0.05) was compatible with Becker et al. (1998) and Alhadab et al. (2018).

The mean *MTB* value was 2.18. Likewise, in Zhou and Elder (2004), Francis and Wang (2008) and Francis and Yu (2009), market value was greater than equity. As for *LOSS*, 27.8% of the firms sustained losses in the preceding year, matching findings by Zhou and Elder (2004), Francis and Wang (2008) and Francis and Yu (2009). Nearly one third (31.9%) of the firms were headquartered in countries adopting IFRS. By 2017, 70 of the 83 sampled countries had adopted IFRS; therefore, most firms disclosed financial information in non-IFRS accounting formats.

Before the regression analysis, we calculated Pearson coefficients to identify the associations between the study variables (Table 3).

Table 3
Pearson correlations

	<i>DACC</i>	<i>AUD</i>	<i>PROF</i>	<i>UNIF</i>	<i>CONS</i>	<i>SECR</i>	<i>SIZE</i>	<i>LEV</i>	<i>ROA</i>	<i>MTB</i>	<i>LOSS</i>	<i>IFRS</i>	<i>CRISIS</i>
<i>DACC</i>	1												
<i>AUD</i>	-0.12†	1											
<i>PROF</i>	0.09†	0.06†	1										
<i>UNIF</i>	-0.09†	-0.06†	-1.00†	1									
<i>CONS</i>	-0.08†	0.02†	-0.87†	0.87†	1								
<i>SECR</i>	-0.07†	-0.05†	-0.94†	0.94†	0.95†	1							
<i>SIZE</i>	-0.24†	0.39†	-0.08†	0.08†	0.03†	0.03†	1						
<i>LEV</i>	0.14†	-0.07†	0.03†	-0.03†	-0.02†	-0.02†	0.00†	1					
<i>ROA</i>	-0.26†	0.15†	-0.20†	0.20†	0.18†	0.19†	0.37†	-0.35†	1				
<i>MTB</i>	0.01†	-0.00	0.08†	-0.08†	-0.08†	-0.07†	0.01†	-0.12†	0.07†	1			
<i>LOSS</i>	0.14†	-0.12†	0.21†	-0.21†	-0.16†	-0.18†	-0.32†	0.17†	-0.36†	-0.00†	1		
<i>IFRS</i>	-0.02†	0.09†	0.01†	-0.01†	0.17†	0.09†	-0.00†	-0.07†	0.04†	-0.00†	0.02†	1	
<i>CRISIS</i>	0.07†	-0.03†	-0.00†	0.00†	0.01†	0.01†	-0.06†	0.01†	-0.02†	-0.02†	-0.00†	-0.00*	1

Note: †=significant at the level of 1%; *=significant at the level of 10%; *DACC*=absolute value of discretionary accruals; *AUD*=audit quality; *PROF*=professionalism vs. statutory control; *UNIF*=uniformity vs. flexibility; *CONS*=conservatism vs. optimism; *SECR*=secrecy vs. transparency; *SIZE*=company size; *LEV*=leverage; *ROA*=economic performance; *MTB*=market-to-book ratio; *LOSS*=losses; *IFRS*=adoption of IFRS; *CRISIS*=financial crisis.

Source: The authors.

DACC was negatively associated with *AUD*, supporting the conclusions of Francis (2011) and DeFond and Zang (2014). However, contrary to our expectations, *PROF* was positively associated and *UNIF*, *CONS* and *SECR* were negatively associated with *DACC*. Our analysis of the relationship between *AUD* and accounting values revealed that being audited by one of the Big 4 was

positively associated with *PROF* and *CONS* and negatively associated with *UNIF* and *SECR*.

On the other hand, disregarding the interaction term $AUD \times CULT$, the regression analysis based on Equation 1 (not tabulated) revealed a negative association between *AUD* and *DACC*, i.e., firms audited by one of the Big 4 engaged less in earnings management, as reported by Kanagaretnam et al. (2010), Francis and Wang (2008) and Astami et al. (2017). In our analysis, *PROF* was negatively associated and *UNIF*, *CONS* and *SECR* were positively associated with *DACC*, confirming the findings of Guan et al. (2005) and Braun and Rodriguez Jr. (2008). The results remained unchanged when *AUD* (auditor reputation) was replaced with *SPEC* (auditor industry specialization) (not tabulated).

Table 4 shows the results of the regression performed to test our hypotheses. The variable of interest is the interaction term $AUD \times CULT$, which expresses the incremental effect of auditor reputation (Big 4 vs. non-Big 4) on discretionary accruals.

Table 4
Regression analysis

	Professionalism	Uniformity	Conservatism	Secrecy
<i>AUD</i>	0.030*** (0.00)	-0.064*** (0.00)	-0.066*** (0.00)	-0.069*** (0.00)
<i>CULT</i>	0.001*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	-0.001*** (0.00)
$AUD \times CULT$	-0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
<i>SIZE</i>	-0.018*** (0.00)	-0.018*** (0.00)	-0.019*** (0.00)	-0.019*** (0.00)
<i>LEV</i>	0.110*** (0.00)	0.110*** (0.00)	0.110*** (0.00)	0.110*** (0.00)
<i>ROA</i>	-0.094*** (0.00)	-0.094*** (0.00)	-0.095*** (0.00)	-0.095*** (0.00)
<i>MTB</i>	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)
<i>LOSS</i>	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)
<i>IFRS</i>	-0.008*** (0.00)	-0.008*** (0.00)	-0.006*** (0.00)	-0.008*** (0.00)
<i>CRISIS</i>	0.027*** (0.00)	0.027*** (0.00)	0.026*** (0.00)	0.026*** (0.00)
Intercept	0.350*** (0.01)	0.450*** (0.01)	0.458*** (0.01)	0.454*** (0.01)

Fixed effect - Year	Yes	Yes	Yes	Yes
Fixed effect - Industry	Yes	Yes	Yes	Yes
R2	0.171	0.171	0.171	0.171
F test	300.198***	300.198***	299.038***	300.397***
N	374,690	374,690	374,690	374,690

Notes: ***=significant at the level of 1%; **=significant at the level of 5%; *=significant at the level of 10%. Values in parentheses are robust standard errors. *DACC*=absolute value of discretionary accruals; *AUD*=audit quality; *CULT*=accounting values (*PROF*, *UNIF*, *CONS* and *SECR*); *PROF*=professionalism vs. statutory control; *UNIF*=uniformity vs. flexibility; *CONS*=conservatism vs. optimism; *SECR*=secrecy vs. transparency; *SIZE*=company size; *LEV*=leverage; *ROA*=economic performance; *MTB*=market-to-book ratio; *LOSS*=losses; *IFRS*=adoption of IFRS; *CRISIS*=financial crisis.

Source: The authors.

As shown in Table 4, the interaction term was significant in all models. In the first model (*PROF*), the interaction term was negatively associated with *DACC*. Thus, in firms audited by one of the Big 4, the higher the level of professionalism, the lower the level of earnings management, matching the results of Braun and Rodriguez Jr. (2008) and making it impossible to reject H_1 .

In the second model (*UNIF*), the interaction term was positively associated with *DACC*. In other words, in firms audited by one of the Big 4, the higher the level of flexibility, the lower the level of earnings management, matching the results of Braun and Rodriguez Jr. (2008) and making it impossible to reject H_2 .

In the third model (*CONS*), the interaction term was also positively associated with *DACC*. This means that, in firms audited by one of the Big 4, the lower the level of conservatism (i.e., the higher the level of optimism), the lower the level of earnings management, matching the results of Braun and Rodriguez Jr. (2008) and making it impossible to reject H_3 .

In the last model (*SECR*), the interaction term was again positively associated with *DACC*. Thus, in firms audited by one of the Big 4, the lower the level of secrecy (i.e., the higher the level of transparency), the lower the level of earnings management, matching the results of Braun and Rodriguez Jr. (2008) and making it impossible to reject H_4 .

As for the explanatory power of the control variables, *SIZE*, *ROA* and *IFRS* had a negative effect on *DACC*, suggesting that larger and more profitable firms in countries mandating IFRS adoption engage less in earnings management, while *LEV*, *MTB*, *LOSS* and *CRISIS* had a positive effect on *DACC*, indicating that more heavily indebted firms with bigger growth opportunities and losses in the previous period or during the financial crisis are more likely to engage in earnings management.

When discretionary accruals (Dechow et al., 1995) were replaced by abnormal accruals (Francis and Wang, 2008), the results remained unchanged (not tabulated). The substitution of *SPEC* for *AUD* showed that the presence of specialist auditors reduced discretionary accruals; thus, the higher the audit quality, the lower the level of earnings management.

Due to the large size and heterogeneity of our sample, we tested our results for sensitivity on two subsamples. The first subsample excluded all firms

headquartered in the US (Table 5), while the second subsample consisted of firms from common law countries only (Table 6).

Table 5
Regression analysis - excluded all firms headquartered the US

	Professionalism	Uniformity	Conservatism	Secrecy
<i>AUD</i>	0.016*** (0.00)	-0.033*** (0.00)	-0.023*** (0.00)	-0.025*** (0.00)
<i>CULT</i>	-0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
<i>AUD</i> × <i>CULT</i>	-0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
<i>SIZE</i>	-0.014*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)
<i>LEV</i>	0.069*** (0.00)	0.069*** (0.00)	0.069*** (0.00)	0.069*** (0.00)
<i>ROA</i>	-0.057*** (0.00)	-0.057*** (0.00)	-0.057*** (0.00)	-0.057*** (0.00)
<i>MTB</i>	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)
<i>LOSS</i>	0.015*** (0.00)	0.015*** (0.00)	0.015*** (0.00)	0.015*** (0.00)
<i>IFRS</i>	-0.011*** (0.00)	-0.011*** (0.00)	-0.011*** (0.00)	-0.011*** (0.00)
<i>CRISIS</i>	0.019*** (0.00)	0.019*** (0.00)	0.019*** (0.00)	0.019*** (0.00)
Intercept	0.374*** (0.01)	0.360*** (0.01)	0.347*** (0.01)	0.339*** (0.01)
Fixed effect - Year	Yes	Yes	Yes	Yes
Fixed effect - Industry	Yes	Yes	Yes	Yes
Fixed effect - Country	Yes	Yes	Yes	Yes
R2	0.127	0.127	0.127	0.127
F test	118.271***	118.271***	118.155***	118.175***
N	310,261	310,261	310,261	310,261

Notes: ***=significant at the level of 1%; **=significant at the level of 5%; *=significant at the level of 10%. Values in parentheses are robust standard errors. *DACC*=absolute value of discretionary accruals; *AUD*=audit quality; *CULT*=accounting values (*PROF*, *UNIF*, *CONS* and *SECR*); *PROF*=professionalism vs. statutory control; *UNIF*=uniformity vs. flexibility; *CONS*=conservatism vs. optimism; *SECR*=secrecy vs. transparency; *SIZE*=company size; *LEV*=leverage; *ROA*=economic performance; *MTB*=market-to-book ratio; *LOSS*=losses; *IFRS*=adoption of IFRS; *CRISIS*=financial crisis.

Source: The authors.

The results remained unchanged for the first subsample but were opposite for the second one (Table 6), possibly because common law countries provide better investor protection and national governance, misrepresenting the

combined effect of cultural values and audit quality on the level of earnings management. In contrast, when the test was repeated on a subsample consisted of firms from civil law countries only (not tabulated), the results remained unchanged.

Table 6
Regression analysis – Country Common Law

	Professionalism	Uniformity	Conservatism	Secrecy
<i>AUD</i>	-0.473* (0.07)	0.197** (0.03)	0.082*** (0.03)	0.186*** (0.03)
<i>CULT</i>	-0.006*** (0.00)	0.006*** (0.00)	0.004*** (0.00)	0.005*** (0.00)
<i>AUD</i> × <i>CULT</i>	0.006*** (0.00)	-0.006*** (0.00)	-0.002*** (0.00)	-0.005*** (0.00)
<i>SIZE</i>	-0.032*** (0.00)	-0.032*** (0.00)	-0.032*** (0.00)	-0.032*** (0.00)
<i>LEV</i>	0.159*** (0.00)	0.159*** (0.00)	0.160*** (0.00)	0.159*** (0.00)
<i>ROA</i>	-0.073*** (0.00)	-0.073*** (0.00)	-0.073*** (0.00)	-0.073*** (0.00)
<i>MTB</i>	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
<i>LOSS</i>	-0.009*** (0.00)	-0.009*** (0.00)	-0.009*** (0.00)	-0.009*** (0.00)
<i>IFRS</i>	-0.013*** (0.00)	-0.013*** (0.00)	-0.014*** (0.00)	-0.013*** (0.00)
<i>CRISIS</i>	0.044*** (0.00)	0.044*** (0.00)	0.044*** (0.00)	0.044*** (0.00)
Intercept	1.046** (0.02)	0.373*** (0.01)	0.428*** (0.01)	0.369*** (0.01)
Fixed effect - Year	Yes	Yes	Yes	Yes
Fixed effect - Industry	Yes	Yes	Yes	Yes
Fixed effect - Country	Yes	Yes	Yes	Yes
R2	0.225	0.225	0.225	0.225
F test	249.000***	249.000***	248.676***	248.916***
N	111,614	111,614	111,614	111,614

Notes: ***=significant at the level of 1%; **=significant at the level of 5%; *=significant at the level of 10%. Values in parentheses are robust standard errors. *DACC*=absolute value of discretionary accruals; *AUD*=audit quality; *CULT*=accounting values (*PROF*, *UNIF*, *CONS* and *SECR*); *PROF*=professionalism vs. statutory control; *UNIF*=uniformity vs. flexibility; *CONS*=conservatism vs. optimism; *SECR*=secrecy vs. transparency; *SIZE*=company size; *LEV*=leverage; *ROA*=economic performance; *MTB*=market-to-book ratio; *LOSS*=losses; *IFRS*=adoption of IFRS; *CRISIS*=financial crisis.

Source: The authors.

Our results allow to affirm that national culture, an institutional factor proxied in this study by accounting values (professionalism vs. statutory control, uniformity vs. flexibility, conservatism vs. optimism, and secrecy vs. transparency), is indeed a

determinant of earnings management and as such modulates the effect of audit quality on earnings management. As expected, higher levels of professionalism, flexibility, optimism and transparency were found to encourage accountants and managers to present a more realistic picture of the firm's economic situation and, by the same token, abstain from misreporting earnings in detriment to shareholder interests.

5 CONCLUSIONS

Our purpose in this study was to evaluate the effect of the interaction between audit quality and accounting values on earnings management in a sample of 45,216 firms (374,690 observations) from 83 countries, covering the period 2002-2017. Audit quality was proxied by auditor reputation (Big 4 vs. non-Big 4) (Francis and Wang, 2008), accounting values were categorized as proposed by Braun and Rodriguez Jr. (2008), and earnings management was quantified as absolute discretionary accruals (Dechow et al., 1995).

The sampled firms tended to practice earnings management conservatively, as shown by the fact that accruals were used to reduce profits. Moreover, firms audited by one of the Big 4 were less likely to engage in earnings management and displayed less information asymmetry between managers and stakeholders. Since highly reputed audit firms are more sensitive to the cost of client misreporting, they are more likely to enforce high earnings quality (Francis & Wang, 2008).

Our study also revealed that firms in countries favoring individual professional judgment (professionalism), allowing greater flexibility with regard to accounting regulations (flexibility), encouraging risk taking in the assessment of assets and liabilities (optimism) and promoting transparency of accounting information (transparency) are less likely to engage in discretionary accruals-based earnings management.

The interaction between audit quality and accounting values showed that the effect of the former on earnings quality was stronger the higher the level of professionalism, flexibility, optimism and transparency. Thus, none of the four study hypotheses could be rejected. Based on our analysis of the interaction between audit quality and accounting values in firms from 83 countries, the findings of the present study reinforce the conclusions of Guan et al. (2005), Braun and Rodriguez Jr. (2008), Francis and Wang (2008), Kanagaretnam et al. (2010) and Astami et al. (2017).

The present results suggest that the variation in earnings quality observed between countries may be explained by the institutional environment, expressed in terms of accounting values. Furthermore, audit quality does not produce the same effect on earnings quality in all countries but depends on a set of institutional factors. The latter may therefore be said to play an important role in accounting and audit practices, among other things by modulating information asymmetry. This represents a significant contribution to the discussion on the quality of accounting information and auditing.

To address the natural limitations of the study, we performed robustness and sensitivity tests, with satisfactory results. Since auditor reputation and specialization are indirect measures of audit quality, it may be relevant to test or develop

alternative metrics. The study was also limited by considering the financial crisis from the global perspective only: conceivably, financial crises at country level may also have an impact on the level of earnings management engaged in by individual firms. In addition, future studies might analyze other forms of earnings management which are more likely to escape detection by auditors (McVay, 2006), such as classification shifting and real earnings management. Regardless of the method, accounting values can help shed light on such practices.

REFERENCES

- Aggarwal, R., & Goodell, J. W. (2014). National cultural dimensions in finance and accounting scholarship: An important gap in the literatures? *Journal of Behavioral and Experimental Finance*, 1, 1-12. <https://doi.org/10.1016/j.jbef.2013.11.002>
- Alhadab, M., & Clacher, I. (2018). The impact of audit quality on real and accrual earnings management around IPOs. *The British Accounting Review*, 50(4), 442-461. <https://doi.org/10.1016/j.bar.2017.12.003>
- Astami, E. W., Rusmin, R., Hartadi, B., & Evans, J. (2017). The role of audit quality and culture influence on earnings management in companies with excessive free cash flow: Evidence from the Asia-Pacific region. *International Journal of Accounting & Information Management*, 25(1), 21-42. <https://doi.org/10.1108/IJAIM-05-2016-0059>
- Bauwhede, H. V., Willekens, M., & Gaeremynck, A. (2003). Audit firm size, public ownership, and firms' discretionary accruals management. *The International Journal of Accounting*, 38(1), 1-22. [https://doi.org/10.1016/S0020-7063\(03\)00004-9](https://doi.org/10.1016/S0020-7063(03)00004-9)
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. R. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*, 15(1), 1-24. <https://doi.org/10.1111/j.1911-3846.1998.tb00547.x>
- Braun, G. P., & Rodriguez Jr, R. P. (2008). Earnings management and accounting values: a test of Gray (1988). *Journal of International Accounting Research*, 7(2), 1-23. <https://doi.org/10.2308/jiar.2008.7.2.1>
- Brownen-Trinh, R. (2019). Effects of winsorization: The cases of forecasting non-GAAP and GAAP earnings. *Journal of Business Finance & Accounting*, 46(1-2), 105-135. <https://doi.org/10.1111/jbfa.12365>
- Chen, K. Y., Lin, K. L., & Zhou, J. (2005). Audit quality and earnings management for Taiwan IPO firms. *Managerial Auditing Journal*, 20(1), 86-104. <https://doi.org/10.1108/02686900510570722>
- Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of*

- Accounting and Economics*, 50(2-3), 344-401.
<https://doi.org/10.1016/j.jacceco.2010.09.001>
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, 70(2), 193-225.
<https://www.jstor.org/stable/248303>
- DeFond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics*, 58(2-3), 275-326.
<https://doi.org/10.1016/j.jacceco.2014.09.002>
- Doupnik, T. S. (2008). Influence of culture on earnings management: A note. *Abacus*, 44(3), 317-340. <https://doi.org/10.1111/j.1467-6281.2008.00265.x>
- Francis, J. R. (2011). A framework for understanding and researching audit quality. *Auditing: A journal of Practice & Theory*, 30(2), 125-152.
<https://doi.org/10.2308/ajpt-50006>
- Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research*, 25(1), 157-191. <https://doi.org/10.1506/car.25.1.6>
- Francis, J. R., & Yu, M. D. (2009). Big 4 office size and audit quality. *The Accounting Review*, 84(5), 1521-1552. <https://doi.org/10.2308/accr.2009.84.5.1521>
- Gray, S. J. (1988). Towards a theory of cultural influence on the development of accounting systems internationally. *Abacus*, 24(1), 1-15.
<https://doi.org/10.1111/j.1467-6281.1988.tb00200.x>
- Gray, K., & Keeney, J. E. (2015). Impure or just weird? Scenario sampling bias raises questions about the foundation of morality. *Social Psychological and Personality Science*, 6(8), 859-868. <https://doi.org/10.1177/1948550615592241>
- Guan, L., Pourjalali, H., Sengupta, P., & Teruya, J. (2005). Effect of cultural environment on earnings manipulation: A five Asia-Pacific country analysis. *Multinational Business Review*, 13(2), 23-41.
<https://doi.org/10.1108/1525383X200500007>
- Han, S., Kang, T., Salter, S., & Yoo, Y. K. (2010). A cross-country study on the effects of national culture on earnings management. *Journal of International Business Studies*, 41(1), 123-141. <https://doi.org/10.1057/jibs.2008.78>
- Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365-383. <https://doi.org/10.2308/acch.1999.13.4.365>
- Hofstede, G. (1980). *Culture's Consequences: International differences in work-related values*. Integral edition. Beverly Hills, CA: Sage.

- IFRS Foundation. (2018). The use of IFRS® Standards around the world. Retrieved from <https://www.ifrs.org/use-around-the-world/>.
- Kanagaretnam, K., Lim, C. Y., & Lobo, G. J. (2010). Auditor reputation and earnings management: International evidence from the banking industry. *Journal of Banking & Finance*, 34(10), 2318-2327. <https://doi.org/10.1016/j.jbankfin.2010.02.020>
- Lin, J. W., & Hwang, M. I. (2010). Audit quality, corporate governance, and earnings management: A meta-analysis. *International Journal of Auditing*, 14(1), 57-77. <https://doi.org/10.1111/j.1099-1123.2009.00403.x>
- McVay, S. E. (2006). Earnings management using classification shifting: An examination of core earnings and special items. *The Accounting Review*, 81(3), 501-531. <https://doi.org/10.2308/accr.2006.81.3.501>
- Nabar, S., & Boonlert-U-Thai, K. K. (2007). Earnings management, investor protection, and national culture. *Journal of International Accounting Research*, 6(2), 35-54. <https://doi.org/10.2308/jiar.2007.6.2.35>
- Reichelt, K. J., & Wang, D. (2010). National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research*, 48(3), 647-686. <https://doi.org/10.1111/j.1475-679X.2009.00363.x>
- Rusmin, R. (2010). Auditor quality and earnings management: Singaporean evidence. *Managerial Auditing Journal*, 25(7), 618-638. <https://doi.org/10.1108/02686901011061324>
- Scott, W. R. (2012). *Financial accounting theory*. Toronto: Prentice Hall.
- Van Tendeloo, B., & Vanstraelen, A. (2008). Earnings management and audit quality in Europe: Evidence from the private client segment market. *European Accounting Review*, 17(3), 447-469. <https://doi.org/10.1080/09638180802016684>
- Zhou, J., & Elder, R. (2004). Audit quality and earnings management by seasoned equity offering firms. *Asia-Pacific Journal of Accounting & Economics*, 11(2), 95-120. <https://doi.org/10.1080/16081625.2004.10510638>

Appendix A: Accounting values according to country

País	PROF	UNIF	CONS	SECR	Frequency	Percentage
Argentina	45.8	64.7	69.0	64.0	726	0.19
Australia	76.4	34.1	41.0	39.7	14,342	3.83
Austria	66.8	43.7	53.0	42.5	970	0.26
Bangladesh	35.4	75.1	69.3	72.0	236	0.06
Belgium	47.4	63.1	62.6	63.2	1,235	0.33
Brazil	39.8	70.7	70.6	70.2	3,281	0.88
Bulgaria	33.8	76.7	79.3	77.0	1,037	0.28
Canada	73.1	37.4	46.3	44.5	13,077	3.49
Chile	33.4	77.1	86.0	80.2	1,929	0.51
China	45.4	65.1	55.6	61.7	33,014	8.81
Colombia	30.8	79.7	75.3	73.2	336	0.09
Costa Rica	40.1	70.4	91.0	77.0	23	0.01
Croatia	35.4	75.1	76.6	75.7	270	0.07
Czech Republic	51.1	59.4	60.6	59.7	188	0.05
Denmark	86.4	24.1	52.0	43.5	1,470	0.39
Egypt	33.8	76.7	77.6	75.7	1,096	0.29
Estonia	62.1	48.4	64.3	58.2	118	0.03
Finland	65.8	44.7	64.3	56.5	1,597	0.43
France	47.8	62.7	65.0	65.7	8,202	2.19
Germany	64.4	46.1	51.6	47.5	7,252	1.94
Ghana	32.1	78.4	77.6	78.2	80	0.02
Greece	33.8	76.7	77.0	72.7	2,604	0.69
Hong Kong	51.4	59.1	56.6	59.5	12,517	3.34
Hungary	59.4	51.1	45.6	45.7	285	0.08
Iceland	68.8	41.7	67.6	58.2	108	0.03
India	52.4	58.1	53.0	59.0	17,879	4.77
Indonesia	38.1	72.4	70.3	72.2	3,856	1.03
Ireland	77.8	32.7	40.0	37.0	876	0.23
Israel	62.1	48.4	67.6	54.0	3,745	1.00
Italy	59.1	51.4	50.6	50.5	2,669	0.71
Jamaica	69.1	41.4	43.0	43.5	61	0.02
Japan	42.1	68.4	58.0	57.0	48,569	12.96
Jordan	40.4	70.1	71.0	70.7	1,075	0.29
Kenya	43.8	66.7	62.6	64.5	232	0.06
Kuwait	27.1	83.4	79.3	82.0	769	0.21
Latvia	63.1	47.4	69.0	62.7	264	0.07
Lebanon	47.1	63.4	56.0	60.7	4	0.00
Lithuania	59.8	50.7	69.6	62.7	271	0.07
Luxembourg	58.8	51.7	61.0	55.7	429	0.11
Malawi	45.4	65.1	67.6	68.2	24	0.01
Malaysia	38.8	71.7	61.0	70.7	11,271	3.01
Malta	44.4	66.1	71.0	67.2	112	0.03
Mexico	31.1	79.4	68.6	71.7	1,365	0.36
Morocco	44.8	65.7	64.0	65.5	428	0.11
Namibia	48.8	61.7	66.0	65.7	34	0.01
Netherlands	71.8	38.7	60.6	55.0	1,879	0.50
New Zealand	78.1	32.4	45.0	39.2	1,212	0.32
Nigeria	40.4	70.1	62.6	67.0	413	0.11

País	PROF	UNIF	CONS	SECR	Frequency	Percentage
Norway	71.4	39.1	65.3	56.7	1,774	0.47
Pakistan	38.4	72.1	76.3	71.0	2,146	0.57
Panama	18.8	91.7	84.6	87.2	19	0.01
Peru	30.4	80.1	84.0	79.0	932	0.25
Philippines	40.1	70.4	57.0	66.2	1,912	0.51
Poland	41.8	68.7	64.0	65.0	3,124	0.83
Portugal	30.4	80.1	88.0	81.7	630	0.17
Puerto Rico	49.1	61.4	59.3	61.5	28	0.01
Romania	25.4	85.1	80.3	82.7	896	0.24
Russia	25.8	84.7	81.0	84.0	2,129	0.57
Saudi Arabia	25.4	85.1	72.6	78.2	1,080	0.29
Senegal	42.1	68.4	69.3	69.5	12	0.00
Serbia	24.4	86.1	82.3	83.2	113	0.03
Sierra Leone	42.1	68.4	71.0	70.7	10	0.00
Singapore	54.8	55.7	54.3	59.2	6,965	1.86
Slovakia	42.4	68.1	40.6	55.5	100	0.03
Slovenia	31.4	79.1	88.3	84.0	329	0.09
South Africa	64.4	46.1	48.0	48.2	3,056	0.82
South Korea	33.1	77.4	83.6	77.7	18,817	5.02
Spain	44.8	65.7	72.0	68.2	1,684	0.45
Sri Lanka	45.4	65.1	74.3	75.7	1,767	0.47
Sweden	79.1	31.4	58.6	51.7	4,050	1.08
Switzerland	67.4	43.1	47.6	44.2	2,842	0.76
Syria	40.4	70.1	65.3	69.0	7	0.00
Taiwan	38.8	71.7	76.6	72.0	19,770	5.28
Tanzania	43.8	66.7	69.3	69.5	67	0.02
Thailand	39.4	71.1	77.6	74.2	5,867	1.57
Turkey	37.4	73.1	75.3	73.0	3,226	0.86
Ukraine	21.4	89.1	88.6	89.5	380	0.10
United Arab Emirates	27.1	83.4	76.0	79.5	447	0.12
United Kingdom	81.8	28.7	34.3	34.5	17,618	4.70
United States	77.1	33.4	38.6	39.0	64,429	17.2
Venezuela	27.1	83.4	71.3	73.7	149	0.04
Vietnam	48.8	61.7	64.3	65.7	4,794	1.28
Zambia	50.4	60.1	66.0	64.5	91	0.02
Total	47.6	62.9	65.7	64.7	374,690	100

AUTHORS' CONTRIBUTIONS

Contributions	Márcia Martins Mendes De Luca	Alan Diógenes Góis	Gerlando Augusto Sampaio Franco de Lima	Jislene Trindade Medeiros
1. Idealization and conception of the research subject and theme	✓	✓	✓	
2. Definition of the research problem	✓	✓	✓	
3. Development of Theoretical Platform	✓	✓	✓	✓
4. Design of the research methodological approach	✓	✓	✓	✓
5. Data collection	✓	✓	✓	✓
6. Analyses and interpretations of collected data	✓	✓	✓	✓
7. Research conclusions	✓	✓	✓	✓
8. Critical review of the manuscript	✓	✓	✓	✓
9. Final writing of the manuscript, according to the rules established by the Journal.	✓			✓
10. Research supervision	✓	✓		