Knowledge management practices and sustainability reporting: the mediating role of intellectual capital

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Abstract

Purpose – This study's aim is twofold: First, to establish the relationship between intellectual capital, knowledge management practices and sustainability reporting practices; second, to examine the mediating role of intellectual capital in the relationship between knowledge management practices and sustainability reporting practices.

Design/methodology/approach – This study is cross-sectional and uses a questionnaire survey of accountants in the financial services firms in Uganda. The data were analyzed using Statistical Package for Social Sciences and MediGraph program (Excel version).

Findings – Results indicate that intellectual capital and knowledge management practices are significantly related to the sustainability reporting practices among financial services firms in Uganda. Also, intellectual capital mediates the relationship between knowledge management practices and sustainability reporting practices.

Originality/value – Using perceptions, this study demonstrates how internal resources and capabilities can promote sustainability reporting in financial services firms in developing countries. Specifically, this study provides first time evidence on the mediating role of intellectual capital in the relationship between knowledge management practices and sustainability reporting practices.

Keywords Sustainability reporting practices, Knowledge management practices, Intellectual capital, Financial services firms, Uganda

Paper type Research paper

1. Introduction

Considerable research on sustainability reporting practices is gaining momentum in both developing countries (e.g. Bananuka *et al.*, 2022; Tumwebaze *et al.*, 2022a, b; Thoradeniya *et al.*, 2021; Tauringana, 2021; Injeni *et al.*, 2021) and developed countries (e.g. Buallay, 2019; Orazalin and Mahmood, 2018; Cho *et al.*, 2015). This is because of increased environmental related disasters. For example, in Uganda, air pollution related illness is now second to Malaria (Bananuka *et al.*, 2022; National Environmental Management Authority, 2019a, b). As a result, a number of frameworks have been developed to improve sustainability reporting. For example, the Global Reporting Initiative (GRI) developed the GRI sustainability reporting standards in 2016 and a revised edition was released in 2020. Also, the IFRS foundation

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issued a consultation paper in 2021 and subsequently established the International Sustainability Standards Board to formulate sustainability reporting standards. There have also been directives aimed at improving sustainability reporting such as the European Union Directive on non-financial reporting (2014/95/EU). It can be noted that companies that prepare sustainability reports are profitable because they cut costs of production, are more likely to win contracts and may never pay fines as a result of non-compliance with laws governing the natural environment and society at large (Bananuka *et al.*, 2022).

Literature indicates that firm specific related characteristics such as firm age, control ownership, firm size and auditor type are key for sustainability reporting (e.g. Orazalin and Mahmood, 2018; Orazalin, 2020). Also, corporate governance variables such as board role performance, board size, board gender diversity, internal audit function, audit committee effectiveness, board independence, board meetings and CEO duality are key determinants of sustainability reporting (e.g. Tumwebaze *et al.*, 2021, 2022a, b; Injeni *et al.*, 2021; Cicchiello *et al.*, 2021; Correa-García *et al*, 2020; Girella *et al.*, 2021. There is also evidence that intellectual capital (IC) significantly improves sustainability reporting (e.g. Bananuka *et al.*, 2021, 2022). However, to the authors' knowledge, no study has investigated the mediation role of IC in the relationship between knowledge management practices (KMP) and sustainability reporting.

Whereas IC has been found to be significantly associated with sustainability reporting in previous studies (e.g. Bananuka *et al.*, 2021, 2022; Tauringana, 2021), its mediation role in the relationship between KMP and sustainability reporting remains unknown. However, existing literature on IC show that it can mediate the relationship between board of directors effectiveness and adoption of international financial reporting standards (Tumwebaze *et al.*, 2021). IC is known for promoting competitive advantage of firms and as such, firms with a great amount of IC will utilize the knowledge gained by an entity from various sources and this will ultimately improve sustainability reporting. Firms whose IC include human capital, structural capital, relational capital and renewal capital will appreciate KMP such as supervisory work, strategic knowledge management, knowledge protection, learning mechanisms, information technology practices, work organizing, knowledge based recruiting, knowledge based training and development, knowledge based performance appraisal, knowledge based compensation and strategic knowledge management which will improve sustainability reporting practices.

The purpose of this study is therefore to investigate the mediation role of IC in the relationship between KMP and sustainability reporting. This purpose is achieved through a questionnaire survey of Chief Finance Officers in financial services firms in Uganda. The questionnaire survey is one of the key tools used in perception based studies. Perception based studies are known for explaining the direct motivation for why managers prepare sustainability reports (Tauringana, 2021; Belal and Momin, 2009) unlike the content analysis studies which are known to be objective but explain the indirect managerial motivations for sustainability reporting. Financial services firms are selected in this study because they are the major funders of businesses in most countries. This means that, if they decided to prepare sustainability reports and included in their requirements, a sustainability report before accessing any debt facilities, definitely sustainability reporting will be improved across all entities. This study's results indicate that IC mediates the relationship between KMP and sustainability reporting. Further, both IC and KMP are significantly related to sustainability reporting practices. Surprisingly, the contribution made by KMP to sustainability reporting practices is subsumed in IC.

This study results contribute to existing studies on the role of IC in sustainability reporting (e.g. Tumwebaze *et al.*, 2021, 2022a, b; Bananuka *et al.*, 2021, 2022; Tauringana, 2021) by providing an initial empirical evidence on the mediation role of IC in the association between KMP and sustainability reporting practices. This study further contributes to perception based studies on sustainability reporting practices (e.g. Tumwebaze *et al.*, 2021; Tauringana, 2021).

The reminder of the paper is structured as follows. The next section is literature review. Under this section, the theory informing our study is discussed, empirical literature is examined and hypotheses are developed. Literature review section is followed by materials and methods. This section is followed by results and discussion of results. The last section is summary and conclusion.

2. Literature review

2.1 Theoretical foundation

This study employs the resource based view to explain the relationship between IC, KMP and sustainability reporting practices. Barney (1991) argues that firms derive competitive advantage from the resources and capabilities they control. In his seminal paper, Barney (1995) indicates that the source of a firm's competitive advantage can be best understood through analyzing not only a firm's external environment but also the internal strength and weaknesses. In this study, we argue that firm's sustainability reporting practices can be as a result of those internal resources and capabilities. This is especially so, if such firm's internal resources and capabilities are rare, valuable, inimitable and not substitutable. Such internal resources can be the firm's level of IC and the KMP.

According to Tauringana (2021) resources such as expertise, technology to collect the information and awareness of the importance of sustainability reporting are ideal for sustainability reporting adoption. All the attributes suggested by Tauringana (2021) and be found in either IC or KMP. We therefore believe that firms with a high level of IC such as human, relational, structural, renewal, trust and entrepreneurial capital are more likely to have better sustainability reporting practices than those without. We also believe that firms with better KMP such as supervision of subordinates, strategic knowledge management, knowledge protection, introduction of better learning mechanisms such as transfer of knowledge from one staff to another through trainings, improved information technology practices, having clear work schedules, knowledge based recruitment processes, knowledge based training and development programs, knowledge based compensation schemes and strategic knowledge management will have improved sustainability reporting practices than those without.

2.2 Knowledge management practices (KMP) and sustainability reporting

KMP refer to the purposeful organizational and managerial activities aimed at managing organizational knowledge resources (Hussinki *et al.*, 2017a, b; Foss *et al.*, 2010; Andreeva and Kianto, 2012; Kianto and Andreeva, 2014). Inkinen (2016) defines KMP as the conscious organizational and managerial practices intended to achieve organizational goals through efficient and effective management of the firm's knowledge resources. In this study, we adopt Inkinen's definition because it is elaborate. Recently, Hussinki *et al.* (2017a, b) identified ten KMP and these are; supervisory work, knowledge protection, strategic knowledge management, knowledge based recruitment, knowledge based training development, knowledge based performance appraisals, knowledge based compensation, learning mechanisms, information technology practices and work organizing. Hussinki *et al.* (2017a, b) assessed the universality of the various KMP across countries and found that all the KMP as found in literature are not universal. In this study, we focus on Hussinki *et al.* (2017a, b) KMP and test whether they have any effect on sustainability reporting practices.

Empirical literature on the association between KMP and sustainability reporting is scarce. A few studies have linked KMP with economic performance (Andreeva and Kianto, 2012), firm performance (Inkinen, 2016; Ali *et al.*, 2019), innovation performance (Inkinen *et al.*, 2015; Yusr, 2016). While reviewing literature on KMP and firm performance, Inkinen (2016) suggested that knowledge-based organizational and managerial practices are highly influential factors for non-financial firm performance outcomes. Accordingly, KMP such as

human-oriented, technology-oriented and management process-oriented KM practices were associated with innovation performance of a firm (Inkinen, 2016; Yusr, 2016). Given that KMPs are positively associated with firm performance based on existing literature, we predict that KMPs positively influence sustainability reporting in Uganda. We therefore hypothesize that;

H1. KMPs are positively associated with sustainability reporting practices in Uganda.

2.3 Intellectual capital and sustainability reporting

IC refers to "the sum of all the intangible and knowledge related resources an organization uses to create value" (Kianto *et al.*, 2017). Bontis *et al.* (2000) views IC in terms of human capital, structural capital and relational capital. There are also additional three types of IC and these include, trust capital, renewal capital and entrepreneurial capital (Inkinen *et al.*, 2017).

IC has been linked to sustainability reporting practices. For example, Bananuka *et al.* (2021) found that IC is significantly associated with sustainability reporting practices in Uganda's financial services firms. Using evidence from Uganda's manufacturing firms, IC was found to have a significant impact on sustainability performance disclosures that are based on the GRI sustainability reporting standards. There are also studies that indirectly explore the role of IC in sustainability reporting adoption. For example, Tauringana (2021) found that lack of expertise, lack of training and the negative attitude toward sustainability reporting hinder the adoption or improvement in sustainability reporting practices. Similarly, Bananuka *et al.* (2019) document that lack of resources such as human resources contributes to the slow adoption of integrated reporting practices. The availability of professional accountants is a key in the adoption of new reporting practices such as sustainability/integrated reporting in Sri Lanka (Gunarathne and Senaratne, 2017). Orobia *et al.* (2021) also found that competencies possessed by accountants are significantly associated with improved integrated reporting practices. Given that previous studies have found positive associations of IC with reporting practices, it is likely that IC will predict sustainability reporting practices in Uganda's financial services firms. It can thus be hypothesized that:

H2. IC and sustainability reporting practices are positively related.

Studies that explore the mediation role of IC in the relationship between KMP and sustainability reporting are scant. However, Tumwebaze *et al.* (2021) found that IC mediates the relationship between board of directors' effectiveness and adoption of international financial reporting standards using evidence from Uganda's microfinance institutions. Literature on the relationship between KMP and IC exists though scant and limited to other continents than Africa. For example, in Hussinki *et al.* (2017a) study conducted in Finland, there are high correlations between KMP and IC. Kianto *et al.* (2014) found that IC mediates the relationship between KMP and organizational performance. From the above literature, it can be expected that IC and KMP are significantly associated and the former can mediate the relationship between the latter and sustainability reporting practices. We therefore hypothesize that:

H3. KMP is positively and significantly associated with IC.

H4. IC mediates the relationship between KMP and sustainability reporting practices.

3. Materials and methods

3.1 Design, population and sample

This study took a cross-sectional and quantitative research designs to address the study hypotheses. Data collection started in June 2018 and ended in May 2019. Data collection was

done using a questionnaire which is widely known for enlisting those direct managerial perceptions that shape a given behavior (Tauringana, 2021) unlike content analysis. Data were collected from 62 out of 65 financial services firms in Uganda which include 24 commercial banks, four credit institutions, five micro deposit taking institutions, three development banks and 29 insurance firms. The unit of inquiry was the Chief Finance Officers (CFO) and Accountants in charge of corporate social responsibility reporting, sustainability reporting or integrated reporting. The choice of the CFO and accountant was based on the fact that they have sufficient knowledge on the operations of the firm and preparation of company reports. The respondent characteristics are presented in Table 1. Key among the respondent characteristics is that majority of the respondents are male (58%) which means that more male occupy the offices of Chief Finance Officers in Uganda than the females. In terms of age of the respondent age, majority of the respondents are aged 30 years and above which means that they are mature enough to comprehend the questionnaire. For length of service, majority of the respondents had served between 5 and 10 years which mean that they had the necessary experience to respond to the questionnaire items. Majority of the respondents had professional accounting qualifications such as Certified Public Accountants (CPA) and the ACCA (Association of Chartered Certified Accountants). This means that they had the competence to answer the questionnaire items especially on the dependent variable which required more technical knowledge in accounting. For academic qualifications, majority of the respondents had an undergraduate degree and this means that they were good enough to read and understand all the questionnaire items.

3.2 The research instrument and variables measurement

The questionnaire was used to collect data on all the study variables. Reliability (internal consistency and stability) of the instrument was tested using Cronbach's alpha coefficient (Cronbach, 1951). Cronbach (1951) recommends Cronbach's α coefficient of 0.75.

Background information		Frequency	Percentage
Gender	Male	41	58
	Female	29	42
	Total	70	100
Age of the respondent	Less than 30 years	13	19
	30 years and above	57	81
	Total	70	100
Length of service	Less than 5 years	23	33
	5–10 years	26	37
	10–15 years	10	14
	15 years and above	11	16
	Total	70	100
Professional qualification	CPA	35	50
	ACCA	27	39
	Others	8	11
	Total	70	100
Education	Diploma	01	01
	Bachelor's degree	42	60
	Master's degree	20	29
	PhD	03	04
	Others	04	06
	Total	70	100

Source(s): Primary data

Table 1. Respondent characteristics

The Cronbach's alpha coefficients for IC and KMP were 0.991 and 0.982, respectively. This means that the scales used in this study were reliable since their coefficients were above the recommended 0.75. Factor analysis for IC and KMP were also conducted. KMP, as identified by Hussinki *et al.* (2017a, b) include supervisory work, strategic knowledge management, knowledge protection, learning mechanisms, information technology practices, work organizing, knowledge based recruiting, knowledge based training and development, knowledge based performance appraisal and knowledge based compensation. However, on performing factor analysis (see Appendix 1), the 10 manifest variables were reduced to five manifest variables which include learning mechanisms and information technology practices, supervisory work, human resource management practices, work organizing and strategic knowledge management. IC as conceptualized in terms of human capital, structural capital, internal relational capital, external relational capital, entrepreneurial capital, trust capital and renewal capital and this is based on the previous scholars (Bontis, 2000; Inkinen *et al.*, 2017; Kianto *et al.*, 2010) were subjected to factor analysis (see Appendix 2). The various item scales loaded on to five manifest variables. These variables include human capital, structural capital, external relational capital, internal relational capital and renewal capital. Measures such as trust capital and entrepreneurial capital were dropped.

The GRI standards (2016) acted as a source for our questionnaire in form of a checklist which is indicated in Appendix 3. The CFO of the respective institution would then tick YES if the given disclosure item is indicated in their report or tick NO if it is not indicated in their report. The disclosure index captures issues on environmental, social and economic performance indicators. The disclosure index captures all standards on the three performance indicators. Those items that were not applicable for financial services firms such as disclosure on the amount of significant hazardous waste spills for oil were eliminated from the disclosure index. If an item from the GRI standards is disclosed in an annual or sustainability or integrated report (ticked YES), a weight of 1 was given and if not, weight of 0 was given. After scoring, a percentage level of disclosure on any of the GRI 2016 sustainability reporting standards was computed, where number of items disclosed was divided by the total number of required disclosures on a given standard. After obtaining the percentage level of disclosures on a given standard, the percentage was put on a Likert scale of 1–6 to match the scale of the predictor variables (IC and KMP). In this case 0–16.7% = 1; 16.8–33.4% = 2; 33.5–50.1% = 3; 50.2–66.8% = 4; 66.9–83.5% = 5 and 83.4–100% = 6. This method has been used in previous studies (such as Bananuka *et al.*, 2022; Orobia *et al.*, 2021). We also control for auditor type, firm age, profitability and capital structure since according to Bartov, failure to control for confounding factors may lead to falsely rejecting a hypothesis when in fact it should have been accepted.

3.3 Common method variance/bias

According to Podsakoff *et al.* (2003), common methods variance/bias is common in self-reported surveys like ours. However, we undertook the following procedures to control it. First, our questionnaire was given to experts to check whether it measures what it is intended to measure. This helped to improve the questionnaire in terms of clarity, relevance and correctness. We assured our respondents that the information supplied in the questionnaire will not be shared with any third party. Other than the procedural remedies, we statistically tested for common method variance using Harman's single factor test. The Harman's single factor test was recommended by Podsakoff *et al.* (2003). All questionnaire items on KMP and IC loaded to one factor in each case and the variance explained was less than 50%. For example, the variance explained for KMP was 38.4% while for IC was 39.1% which is below 50% and thus acceptable.

3.4 The model

We used the linear regression to establish the relationship between IC, knowledge management and sustainability reporting practices. We tested two panel regressions. One set of regressions relate to testing the contribution of KMPs and IC to sustainability reporting practices using the hierarchical regressions and the other set of regressions were aimed at testing the mediating role of IC.

Panel A: Hierarchical regressions

$$Model\ 1:\ SUSR = \beta_0 + \beta_1 AGE + \beta_2 CAP + \beta_3 AUD + \beta_4 PROF + \varepsilon_j$$

$$Model\ 2:\ SUSR = \beta_0 + \beta_1 AGE + \beta_2 CAP + \beta_3 AUD + \beta_4 PROF + \beta_5 KMP + \varepsilon_j$$

$$Model\ 3:\ SUSR = \beta_0 + \beta_1 AGE + \beta_2 CAP + \beta_3 AUD + \beta_4 PROF + \beta_5 KMP + \beta_6 IC + \varepsilon_j$$

Panel B: Testing for mediation

$$Model\ 4:\ IC = \beta_0 + \beta_1 KMP + \varepsilon_j$$

$$Model\ 5:\ SUSR = \beta_0 + \beta_1 KMP + \varepsilon_j$$

$$Model\ 6:\ SUSR = \beta_0 + \beta_1 IC + \varepsilon_j$$

$$Model\ 7:\ SUSR = \beta_0 + \beta_1 KMP + \beta_2 IC + \varepsilon_j$$

Where: *SUSR* is sustainability reporting practices, β_0 is a constant, εj is the error term, *IC* is IC, *KMP* is KMP, *AGE* is firm age, *CAP* is capital structure, *AUD* is auditor type and PROF for profitability.

4. Results

4.1 Descriptive statistics

We present descriptive statistics for the study variables in Table 2. The means and standard deviations for sustainability reporting practices, IC and KMP were 4.18 and 1.10, 4.99 and 0.86, 4.80 and 0.71, respectively. For firm characteristics, the means and standard deviations for firm age, capital structure, auditor type and profitability are 2.00 and 1.15, 0.39 and 0.49, 0.34 and 0.57, 0.92 and 0.27, respectively. We report the means and standard deviations for the global variables and the specific dimensions of the study variables. According to (Field, 2009) the calculated means represent the data while standard deviations show how well the means represent the data. We also present the skewness and kurtosis values whose values lie between −3 and 3 which indicate that the data are normal.

4.2 Correlation analysis

To examine the associations between IC, KMP and sustainability reporting practices, we ran the Pearson correlation analysis. Table 3 shows that there is a positive significant relationship between IC and sustainability reporting practices ($r = 0.536^{**}$, $p < 0.01$). This means that a positive change in the level of IC will lead to a positive change in the level of sustainability reporting practices. There is a positive significant relationship between KMP and sustainability reporting practices ($r = 0.439^{**}$, $p < 0.01$). This means that a unit change in KMP leads to 0.439 change in sustainability reporting practices. For control variables, only capital structure is positively and significantly associated with sustainability reporting practices ($r = 0.464^{**}$, $p < 0.01$). For firm age, a negative non-significant association with sustainability reporting practices exits. Auditor type and profitability are also not significantly associated with sustainability reporting practices. We note that the correlation

Table 2.
Descriptive statistics

Statement	*n* Statistic	Min Statistic	Max Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
Sustainability reporting practices	62	1.07	5.94	4.18	1.10	−0.61	0.30	−0.27	0.60
Environmental indicators	62	1.00	5.83	3.43	1.62	−0.13	0.30	−1.34	0.60
Social indicators	62	1.00	6.00	3.79	1.58	−0.53	0.30	−1.24	0.60
Economic indicators	62	1.00	6.00	5.32	0.85	−2.62	0.30	2.12	0.60
Intellectual capital	62	1.90	5.91	4.99	0.86	−2.01	0.30	1.46	0.60
Knowledge management practices	62	2.86	5.86	4.80	0.71	−0.83	0.30	0.12	0.60
Firm age	62	0.00	3.00	2.00	1.15	−0.68	0.30	−0.80	0.60
Capital structure	62	0.00	1.00	0.39	0.49	0.48	0.30	−1.83	0.60
Auditor type	62	0.00	2.00	0.34	0.57	1.49	0.30	1.32	0.60
Profitability	62	0.00	1.00	0.92	0.27	−2.16	0.30	3.23	0.60

Source(s): Primary data

Variable (s)	1	2	3	4	5	11	17	18	19	20
Sustainability reporting practices (1)	1									
Environmental (2)	0.922**	1								
Social indicators (3)	0.924**	0.825**	1							
Economic indicators(4)	0.393**	0.128	0.146	1						
Intellectual capital(5)	0.536**	0.440**	0.553**	0.205	1					
Knowledge management (6)	0.439**	0.342**	0.482**	0.150	0.703**	1				
Firm age (7)	−0.01	−0.104	0.005	0.151	−0.009	0.108	1			
Capital structure (8)	0.464**	0.331**	0.494**	0.244	0.409**	0.438**	0.350**	1		
Auditor type (9)	0.147	0.231	0.203	−0.244	0.026	−0.002	−0.251*	−0.066	1	
Profitability(10)	0.094	0.02	0.153	0.043	0.086	−0.138	0.156	0.235	0.177	1

Note(s): **Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)
Source(s): Primary data

Table 3.
Correlation analysis results

coefficients for economic, social, environmental and sustainability reporting practices are high. This is expected because in the computation of the global variable (sustainability reporting practices), the dimensions (economic, social and environmental) were included. According to Hair *et al.* (2019), conceptually similar variables can have higher correlations of above 0.9. However, in terms of the main study variables (IC, KMP and sustainability reporting practices), none of the correlation coefficients was above 0.6 which is acceptable.

4.3 Hierarchical regressions

To further confirm our hypotheses, we run the hierarchical regression analysis which we present in Table 4. We are aware that correlation analysis results only provide preliminary evidence on the association between predictor and outcome variables. In Model 1, we enter firm level characteristics. These are firm age, capital structure, auditor type and profitability. We find that only capital structure is significant and this is consistent with the correlation analysis results. The model predicts 21.8% (Adjusted $R^2 = 0.218$). In model 2, we add KMP to firm characteristics. We find that KMP is significant and this provides support for H1. Model 2 predicts 27.3% ((Adjusted $R^2 = 0.273$). Model 3 is our final model. We add IC to firm control variables and KMP and find that, IC is significant thus providing support for H2 while KMP is not. This means that the contribution of KMP is subsumed in IC. It therefore follows that KMP affects sustainability reporting practices through IC. Our final model predicts 32.6% (Adjusted $R^2 = 0.326$).

We also tested for the presence of multicolinearity and whether there are any serial correlations among errors. We used the variance inflation factors and the tolerance values. We found that the Variance Inflation factors for all the main study variables were below 10 while the tolerance values were above 0.2. This is acceptable as recommended by Field (2009) who recommended variance inflation factors of below 10 and tolerance values of above 0.2 to indicate that there is no multicollinearity. We also use the Durbin–Watson statistic to test for serial correlations among the errors and find that the Durbin–Watson value is closer to 2 which indicates there are no serial correlations. This is also recommended by Field (2009). Multicolinearity and the Durbin–Watson test results are indicated in Table 4.

Item	Model 1	Model 2	Model 3	Tolerance	VIF
Constant	4.040	1.738	1.465	na	na
Independent variables					
Knowledge management practices		0.292**	0.038	0.741	1.350
Intellectual capital			0.366**	0.448	2.234
Control variables					
Firm age	0.154	−0.151	−0.092	0.810	1.234
Capital structure	0.536**	0.387**	0.345**	0.651	1.536
Auditor type	0.150	0.127	0.142	0.882	1.133
Profitability	−0.034	0.045	−0.024	0.818	1.222
Model summary					
Model F	5.242**	5.572**	5.913**		
R Square	0.269	0.332	0.392		
Adjusted R Square	0.218	0.273	0.326		
F change	5.242**	5.572**	5.422**		
Durbin–Watson			1.854		

Source(s): Primary data

Table 4. Hierarchical Regression Analysis results

4.4 Mediation path analysis

Tests for mediation were conducted to establish the nature of mediation and the extent to which IC mediates in the relationship between KMP and sustainability reporting practices. Suggested conditions by Baron and Kenny (1986) were tested. That is, first, the independent variable must significantly account for variance in the presumed mediator; second, variations in the mediator significantly account for variance in the dependent variable; third, the independent variable must be shown to significantly affect the dependent variable; and lastly, the effect of the independent variable on the dependent variable significantly reduces when the mediator is included in the third equation. Results indicate that KMP account for a significant variance in IC (standardized beta = 0.703**) as shown in Table 5 and thus providing support for H3; IC significantly accounts for a variance in sustainability reporting practices (standardized beta = 0.536**) and this is shown in Table 5; KMP significantly affect sustainability reporting practices (standardized beta = 0.439**) as shown in Table 5. Lastly, when IC is included in the equation, the effect of KMP on sustainability reporting practices reduces from 0.439 to 0.246. Also, from model 7, when IC is introduced, the predictive potential of KMPs reduces (see Table 5).

We test the significance of the mediation by conducting the Sobel test using Jose's MedGraph (see Figure 1). We find that IC mediates the link between KMP and sustainability reporting practices ($Z = 7.724$) and thus H4 which states that IC mediates the relationship between KMP and sustainability reporting practices is supported. We also conclude that the type of mediation of IC in the link between KMP and sustainability reporting practices is full because the association between KMP and sustainability reporting practices reduced from 0.439 to 0.246 but became insignificant. The model indicates that 85% (0.374/0.439) of the effect of KMP to sustainability reporting practices is through IC while 15% is the direct effect. In accounting literature, it has previously been argued that when the indirect effect is above 50% and the correlation between the predictor variable and outcome variable reduces and becomes insignificant, it is an indicator of a full mediation. The finding that IC fully mediates the relationship between KMP and SUSR means that, for a company to have a high level of IC it should have better KMPs and once this happens, then there will be improvements in SUSR.

5. Discussion

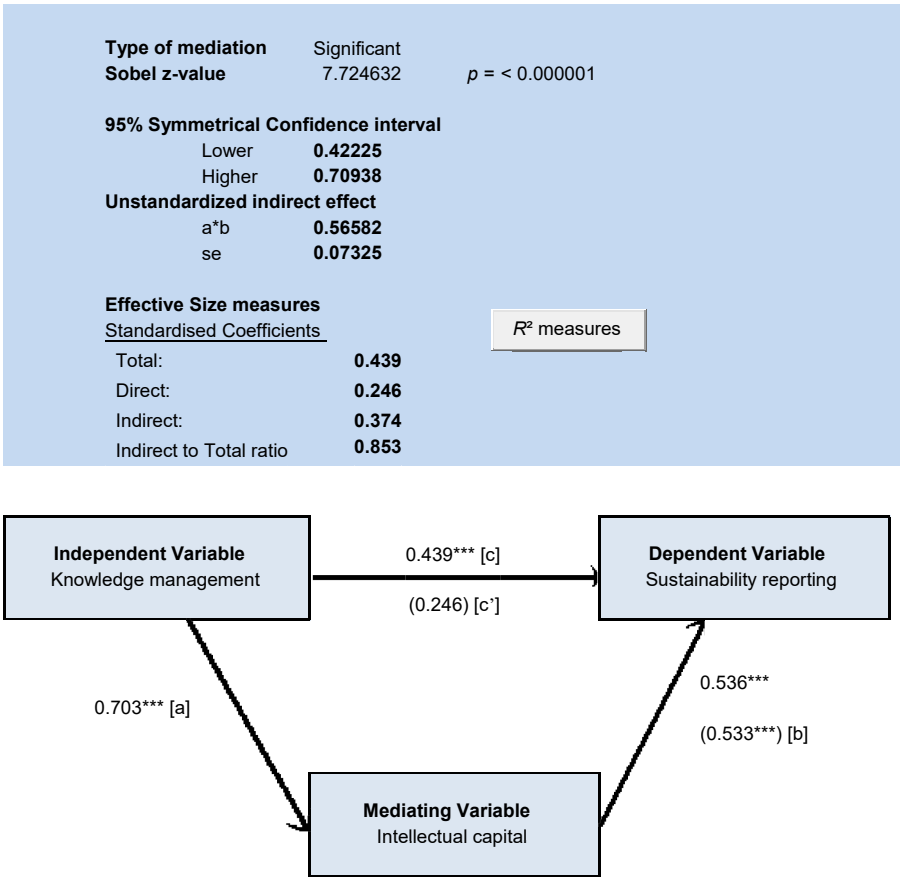
Underpinned by the resource based view, this study results indicate that internal resources and capabilities such as IC and KMP are vital for improved sustainability reporting practices. Results also indicate that IC mediates the relationship between KMP and sustainability reporting practices. Whereas Hussinki *et al.* (2017a, b) assesses the universality of KMP and categorizes them into 10 components, this study only confirms five components of KMP as key for our setting. These five include; learning mechanisms and information technology practices, supervisory work, human resource management practices, work organizing and strategic knowledge management. This means that, companies whose top management is able to supervise effectively the activities of subordinates and encourages senior staff to share knowledge especially that knowledge related to sustainability reporting, it is likely that such firms will have sustainability reports prepared. As earlier indicated, there are minimal studies that link KMP with corporate reporting or voluntary reporting/disclosures. This makes comparison of this study results with previous studies rather difficult.

Financial services firms with high level of IC such as human resources with expertise in sustainability reporting will have such sustainability reports prepared especially those that comply with the GRI. However, to be able to prepare sustainability reports that fully comply with GRI standards, it is important that the company maintains a high level of IC in terms of human capital, relational capital, structural capital, renewal capital, trust capital and entrepreneurial capital. The result that IC is significantly associated with sustainability

Table 5.
Testing for mediation

	Dependent variables											
	Model 4 Intellectual capital			Model 5 Sustainability reporting			Model 6 Sustainability reporting			Model 7 Sustainability reporting		
Predictor	β	SE	Beta	β	SE	Beta	β	SE	Beta	β	SE	Beta
Intercept (constant)	0.906	0.539		0.952	0.863		0.796	0.699		0.436	0.832	
Knowledge management practices	0.850	0.111	0.703**	0.673	0.178	0.439**				0.189	0.236	0.123
Intellectual capital							0.679	0.138	0.536**	0.569	0.195	0.449**

Note(s): **Significant at the 0.01 level
Key: β = Unstandardized beta coefficients; SE = Standard error; Beta = Standardized beta coefficients
Source(s): Primary data



Note(s): The numerical values in parentheses are beta weights taken from the second regression and other values are zero order correlations

Figure 1.
MedGraph - PC: Mediation effect of intellectual capital on the link between knowledge management practices and sustainability reporting practices

reporting mean that financial firms services need to train staff to equip them with knowledge of the GRI standards, recruit or promote staff with expertise in modern corporate reporting practices, motivate staff to prepare sustainability reports and have systems in place that guide the preparation of sustainability reports. Such systems may include policies on preparation of annual reports/sustainability reports since several departments are allocated tasks/roles. Systems may also include databases or manuals such as the GRI 2016 sustainability reporting standards and the subsequent updates on those standards such as the recently introduced GRI (2020) sustainability reporting standards. Financial services firms can improve relationships among employees, departments and other stakeholders such as ICPAU Employees who are good at identifying business opportunities while minimizing risks improve an entity's reporting practices given that clients are informed of business activities through reports such as sustainability reports. The finding that IC is significantly associated with sustainability reporting is consistent with the findings of Tauringana (2021) who found that lack of training, expertise and negative attitude on sustainability reporting stifles sustainability reporting adoption. This study's findings are also consistent with

Bananuka *et al.* (2021) who found that IC is significantly associated with sustainability reporting practices.

In terms of the mediation role of IC in the relationship between KMP and sustainability reporting practices, this result mean that KMP may not ably influence the preparation of sustainability reports unless there is a great amount of IC. However, in the absence of IC as conceptualized in this study, still there can be some level of sustainability reporting practices. For example, if there are information systems in place to capture information on sustainability performance, then it is likely that such information can be included in the report. In the presence of knowledge sharing among employees especially from experienced to inexperienced staff, then improved sustainability reporting practices are expected. So, KMP is a strategic issue but can only be achieved for purposes of improved sustainability reporting practices only if there is a great amount of IC. These study results on the mediation role of IC in the relationship between KMP and sustainability reporting practices agree with previous studies such as Tumwebaze *et al.* (2021) who found that IC mediates the relationship between board of directors' effectiveness and adoption of international financial reporting standards using evidence from Uganda's microfinance institutions.

Therefore, financial services firms need to invest greatly in IC and improve their KMP so that they are able to prepare sustainability reports that comply with the GRI standards or any other applicable reporting framework as the country's legal system may dictate. However, it can be noted that the GRI sustainability reporting standards is currently a widely known framework that flexible, balanced and appropriate for all sectors.

6. Summary and conclusion

This study aimed to test whether IC mediates the link between KMP and sustainability reporting practices. We achieved our aim through a questionnaire survey of 62 financial services firms in Uganda where Chief Finance Officers and Accountants were the unit of inquiry. Results suggest that IC and KMP significantly contribute 32.6% of the variance in sustainability reporting practices. Also, results indicate that IC fully mediates the relationship between KMP and sustainability reporting practices.

This study's implications are as follows. This study adds to the already existing literature on the role of IC in improving sustainability reporting (e.g. Tumwebaze *et al.*, 2021, 2022a, b; Bananuka *et al.*, 2021, 2022; Tauringana, 2021). The academic community is now aware that IC mediates the link between KMP and sustainability reporting practices. This study also contributes to the resource based view by documenting that internal resources and capabilities such as IC and KMP are the key for sustainability reporting in developing countries like Uganda. The study further contributes to perceptions based studies (e.g. Bananuka *et al.*, 2021, 2022; Tumwebaze *et al.*, 2022a, b) on sustainability reporting practices in developing countries. In terms of managerial implications, it is a known fact that, for firms to manage the various stakeholder needs, managers and those charged with governance of such firms have to maintain a high level of IC through recruiting qualified and competent human resources, building rapport among employees and continuously training employees to ensure they are up to date. The regulators and accountancy bodies need to continue to promote sustainability reporting by encouraging firms to continuously engage in the awards like those of Financial Reporting awards organized by the Institute of Certified Public Accountants of Uganda. The regulators such as Bank of Uganda and Insurance Regulatory Authority may encourage firms to prepare sustainability reports and where possible mandate it.

Like any other study, our study has got limitations which we discuss alongside areas for further research. First, this study was conducted on a small sample size. Studies on few firms have problems with generalization of results though we used adjusted R square to interpret results. Future studies may consider extending this study to other national settings with a

vibrant financial services sector with stable economies. Second, the study also focuses on financial services firms on the argument that they provide funding to other forms of businesses. This means that this study results may be generalized to financial services firms in Uganda and other countries with similar environment to that for Uganda. Future studies may consider manufacturing firms using the same predictor variables or with more predictor variables especially in the context of developing countries. All in all, this study's results are useful for improving sustainability reporting among firms in African developing countries and beyond.

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Further reading

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(The Appendix follows overleaf)

Appendix 1

Statement	Component 1	2	3	4	5
Our institution uses confidentiality, employee guidance and other informal means to protect its strategic knowledge regarding sustainability reporting practices	0.918				
Our institution uses information technology in internal communication throughout especially on matters related to sustainability reporting	0.917				
Our institution has a career plan for employees that encourages continuous learning in the area of corporate reporting especially sustainability reporting	0.917				
Our institution transfers sustainability reporting knowledge from experienced to inexperienced employees through mentoring	0.911				
Our institution has systems that capture and deal with information about sustainability reporting processes	0.907				
Our institution uses information technology to communicate with external stakeholders sustainability information	0.906				
Our institution makes systematic use of best practices and lessons learned in corporate reporting such as sustainability reporting practices	0.902				
Our institution encourages formal mentoring practices where best sustainability reporting practices are shared	0.900				
Our institution uses information technology to collect sustainability information from various departments	0.894				
Our institution systematically collects best practices and lessons learned in the field of sustainability reporting	0.893				
Our institution informs clients, suppliers and employees about overall institution's performance through a sustainability report	0.893				
Our institution systematically compares its strategic knowledge in corporate reporting and competence to that of its competitors	0.889				
Our institution uses information technology to enable efficient information search and discovery especially on better and modern corporate reporting practices	0.887				
Our institution best practices in one department are shared with other departments	0.879				
Our institution team work is encouraged especially when it comes to reporting	0.876				
Our institution uses information technology to develop new reporting practices with external stakeholders such as the Institute of Certified Public Accountants of Uganda	0.871				
Our institution gives incentives when its aims are achieved and efficiently communicated to all stakeholders	0.862				
Our institution uses information technology to analyze knowledge acquired in the field of sustainability reporting in order to make better decisions	0.861				
Our institution databases are frequently accessed and updated to include new reporting standards such as the GRI 2016 sustainability reporting standards	0.845				

Table A1. Rotated component matrix for knowledge management practices

(*continued*)

Statement	Component 1	2	3	4	5
In our institution, the responsibility for strategic knowledge management has been clearly assigned to a specific person	0.839				
Our institution encourages knowledge transfer through instruments such as inter-functional teams, quality circles and improvement groups	0.835				
Our institution research and development projects are provided with control mechanisms to monitor them	0.834				
The management information System of this institution contains all knowledge, including its strategic direction on sustainability reporting	0.800				
Our institution uses patents, agreements, legislation and other formal means to protect its strategic knowledge especially on sustainability reporting	0.775				
We offer our employees opportunities to deepen and expand their expertise in corporate reporting practices such as sustainability reporting	0.771				
Our institution strategic knowledge is protected from those stakeholders to whom it is not intended	0.721				
Our institution invests in technology, research and development projects to enhance its corporate reporting	0.695				
Our institution information is easily accessed without any limitation through a sustainability report	0.686				
Our institution obtains feedback from finished research and development projects especially those aimed at improving our reporting practices that is used in developing new projects	0.631				
In our institution, inter-departmental projects are carried out especially those related to improved corporate reporting	0.575				
In our institution, supervisors encourage employees to question existing knowledge on sustainability reporting to improve practice		0.906			
In our institution, supervisors allow employees to make mistakes, and they see mistakes as learning opportunities		0.904			
In our institution, supervisors encourage employees to share sustainability reporting knowledge at the work place		0.903			
In our institution, supervisors share sustainability reporting knowledge in an open and equal manner		0.794			
Our institution provides formal training to employees in personal skills such as corporate reporting skills			0.885		
Our institution provides formal training to employees in work-related subjects such as sustainability reporting			0.866		
The creation of new knowledge especially sustainability reporting knowledge is one of our criteria for work performance assessment			0.817		
The ability to apply knowledge acquired from others is one of our criteria for work performance assessment			0.737		
Our employees have an opportunity to develop their competence through training tailored to their specific needs especially those related to sustainability reporting			0.589		
Our institution organizes face-to-face meetings to discuss corporate reporting practices when necessary				0.845	
We enable informal interaction between members of our financial institution				0.818	

(*continued*)

Table A1.

Statement	Component 1	2	3	4	5
Our institution work duties are defined in a manner that allows for independent decision making				0.772	
Our institution strategy addresses the development of knowledge and competences related to modern corporate reporting practices					0.829
Our knowledge and competence management strategy is communicated to employees clearly and comprehensively					0.683
Eigen values	25.963	3.472	2.986	2.171	1.346
Percentage of variance	50.065	10.741	8.905	5.483	4.667
Cumulative percentage	50.065	60.805	69.711	75.194	79.861

Note(s): Kaiser–Meyer–Olkin Measure of Sampling Adequacy = 0.807; Approx. Chi square = 4150.712; df = 990; Sig = 0.000
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization
Key: 1 – Learning mechanisms and information technology practices; 2 – Supervisory work; 3 – Human resource management practices; 4 – Work organizing; 5 – Strategic knowledge management
Source(s): Primary data

Table A1.

Appendix 2

Statement	Component 1	2	3	4	5
Things that we have learned have improved the reporting practices of this organization	0.885				
The financial institution has learned and acquired a lot of new and important information that is relevant for corporate reporting	0.877				
We honor our other stakeholders demands on time	0.847				
The expertise of our financial institution inspires trust in stakeholders	0.845				
In this financial institution, we have learned how to use technologies to improve our reporting	0.841				
We keep our promises and agreements	0.837				
Our financial institution seeks to take the interests of its stakeholders into account in its operations	0.831				
We honor our clients demands on time	0.826				
We have a well-defined organizational structure	0.814				
The way our financial institution operations are characterized by an atmosphere of trust	0.802				
Our financial institution displays her services nearer to our customers	0.763				
Our financial institution has a great deal of useful knowledge in documents and databases	0.744				
This financial institution promotes a culture of team work	0.736				
This financial institution has clear values that guide its employees	0.732				
Our employees are quick at adopting technologies that improve the image of this financial institution	0.722				

Table A2. Rotated component matrix for intellectual capital

(*continued*)

Statement	Component 1	2	3	4	5
Our financial institution has developed information technology facilities to support transparency	0.704				
Our financial institution has developed team working contexts	0.693				
We have improved our online processing systems and are now very fast	0.689				
Employees in this financial institution are result oriented because of the systems that are in place	0.677				
Our employees are fast at adopting new technologies aimed at improving this financial institution's legitimacy	0.675				
Our employees enhance their capabilities through interactions	0.667				
Our systems make it easy to access relevant information	0.656				
Our institution's culture supports the sharing of information from sector associations	0.621				
Our employees are found of minimizing costs while adopting new technologies that aim at upgrading the financial institution's image	0.605				
We have self-driven employees		0.840			
Our employees can with stand pressure from work		0.828			
Our employees have a high level of expertise especially in corporate reporting		0.822			
This financial institution's employees are knowledgeable about their work		0.813			
Employees in this financial institution voice their opinions		0.798			
Our employees are highly skilled at their jobs		0.795			
Our employees are highly motivated in their work		0.776			
This financial institution usually employs staff who are highly qualified		0.771			
Our employees are bright		0.742			
Our employees are satisfied with our working conditions		0.730			
Our employees always come up with new ideas on how to improve corporate reporting		0.726			
Our employees are the best in the industry		0.708			
Our employees perform their best to achieve financial institution goals		0.700			
We always upgrade employees' skills especially in the modern reporting practices		0.694			
We have a succession training program designed for our employees		0.690			
We strive to build our employees to others' level in other institutions in the same industry		0.690			
We do not have a big trouble if individuals left since all our systems are documented		0.687			
Our employees have the ideal competence in sustainability reporting		0.687			
Our employees provide technical skills to our customers		0.685			
Our employees learn from their colleagues		0.682			
Employees in this financial institution are socially competent		0.678			
Our employees are good at problem handling		0.663			
We get the most out of our employees		0.662			
Most of our employees are more creative		0.649			
We have a clear recruitment program		0.604			
Level of commitment of our staff to work is very high		0.579			
Our employees always think actions through		0.576			

(*continued*)

Table A2.

Statement	Component 1	2	3	4	5
Our employees cooperate in teams		0.561			
Our employees cannot do anything without thinking about its repercussions		0.531			
Our clients appreciate the use of sustainability reports			0.750		
We have a good network system with our customers			0.727		
Our clients are knowledgeable in interpreting sustainability reports			0.709		
Our employees have the courage to make bold and difficult decisions regarding our clients welfare			0.662		
This financial institution has many clear openings to its customers			0.638		
We usually get new ideas on compliance through our customers			0.627		
Our employees assist one another in job related activities				0.756	
Our employees frequently collaborate to solve problems				0.735	
Internal cooperation in our financial institution runs smoothly				0.708	
Our employees once in a while have an outing together as a group				0.693	
In this financial institution, we help one another when it comes to social activities				0.689	
In this financial institution, we share internally knowledge regarding new innovations				0.624	
The operations of our financial institution can be described as creative and inventive					0.807
In this financial institution, we have started to share knowledge with financial institutions that are ahead of us in reporting practices					0.637
Eigen values	39.137	5.568	3.410	2.479	1.743
Percentage of variance	27.153	26.818	9.646	9.534	4.963
Cumulative percentage	27.153	53.971	63.617	73.151	78.114

Note(s): Kaiser–Meyer–Olkin Measure of Sampling Adequacy = 0.796; Approx. Chi square = 4242.133; df = 1081; Sig = 0.000

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization

Key: *1* – Structural capital, 2 – Human capital, 3 – External relational capital, 4 – Internal relational capital, 5 – Renewal capital

Source(s): Primary data

Table A2.

Appendix 3

Environmental performance disclosures
The amount of materials used
The amount of recycled input materials used
The amount of energy consumed within the organization from renewable sources such as solar, wind, geothermal and hydropower energy among others
The amount of energy consumed within the organization from non-renewable sources such as coal, oil, natural gas and nuclear energy among others
The amount of energy consumed outside the organization from renewable sources
The amount of energy consumed outside the organization from non-renewable sources
The amount of the reduction in energy consumption
The amount of the reductions in energy requirements of production processes
The amount of water withdrawn from all sources
The amount of water recycled
The amount of (in carbon dioxide equivalent) direct greenhouse gas emissions
The amount of (in carbon dioxide equivalent) energy indirect greenhouse gas emissions
The amount of (in carbon dioxide equivalent) other indirect greenhouse gas emissions
The amount of reduction of greenhouse gas emissions
The amount of emissions of ozone-depleting substances
The amount of water discharge by quality and destination
The greenhouse gas emissions intensity
The water sources significantly affected by withdrawal of water
The operational sites owned in protected areas
The operational sites adjacent to areas of high biodiversity value
Significant impacts of our activities on biodiversity
Habitats protected
Habitats restored
The number of water bodies affected by the used water discharges
The number of cases of non-compliance with environmental laws
The number of new suppliers that were screened using environmental criteria set by NEMA
The negative environmental impacts in the supply chain and actions taken
Social performance disclosures
The number of new employee hires
The number of employee turnover
The amount of benefits provided to full-time employees that are not provided to temporary or part-time employees
Matters of parental leave of our staff
The minimum number of weeks' notice provided to employees prior to the implementation of significant operational changes
The number of workers representation in formal joint management–worker health and safety committees
The types of injury that occurred to the employees during the year
The rate at which employees are injured during our production processes
Any occupational diseases that affect employees
The lost days of employees due to injuries sustained at work
The number of employees who were absent during the year
The employees who were injured during the production process
The number of workers with high incidence or high risk of diseases related to their occupation
The health and safety topics covered in formal agreements with trade unions
The number of workers representation in formal joint management–worker health and safety committees
The average hours of training per year per employee
The programs for upgrading employee skills
The percentage of employees receiving regular career development reviews
The number of females and males on the board
The number of females and males on the management team

(*continued*)

Table A3.
GRI standards based disclosure index

The number of males and females in the organization
The ratio of basic salary of women to men
The number of incidents of discrimination
The corrective actions taken in the event of any discrimination
The operations in which the right to freedom of association may be at risk
The operations in which the collective bargaining may be at risk
The operations at significant risk for incidents of child labor
The operations at significant risk for incidents of forced or compulsory labor
The security personnel trained in human rights policies
The incidents of violations of rights of indigenous peoples
The operations that have been subject to human rights reviews or impact assessments
The employee training on human rights policies undertaken by this firm
Significant investment agreements that include human rights clauses or that underwent human rights screening
The operations with local community engagements
The operations with local community development programs
The operations with significant impacts on local communities
New suppliers that were screened based on our sensitivity on societal issues
The negative social impacts in the supply chain
Any political contributions to various political parties or politicians
Incidents of non-compliance concerning the health and safety guidelines
Incidents of non-compliance with marketing communications guidelines
The complaints concerning breaches of customer privacy
The complaints concerning losses of customer data
Any non-compliance with laws and regulations in the social area
Economic performance disclosures
The profit (loss) made
The revenues made
The operating costs of the firm
The dividends paid
Payments to government (taxes and penalties)
The financial implications due to climate change
The retirement plans for our employees
The financial assistance received from government
Ratios of standard entry level wage by gender
The proportion of senior management hired from the local community
The infrastructure investments supported
The significant indirect economic impacts
The proportion of total expenditures on local suppliers
The operations assessed for risks related to corruption
Communications about anti-corruption policies and procedures
Training about anti-corruption policies and procedures
The confirmed incidents of corruption and actions taken
Legal actions for anti-competitive behavior the firm was involved in
Legal actions for anti-trust practices the firm was involved in
Legal actions for monopoly practices the firm was involved in

Table A3.

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