Managerial accounting practices, HR metrics, and firm performance

Rene Arseneault [a], Jacqueline Gagnon [b],*

[a] Université Laval, Department of Management, Québec, QC, Canada
[b] University of Regina, Faculty of Business Administration, Regina, SK, Canada

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ABSTRACT

This research explores how accounting and HR employees perceive the value of managerial accounting and HR practices in their organizations. Our study was restricted to participants employed in publicly listed organizations allowing us to explore how their perceptions equate with objectively measured firm performance. In total, 186 employees completed a series of measures exploring their perceptions of managerial accounting practices and the value of using HR as a measurement tool. Further, we regressed our accounting and HR measures on financial, non-financial, and market-based aspects of corporate performance. Our findings reveal that compared to accounting employees, HR employees place a higher value on using HR metrics and diagnostic styles of managerial accounting systems. Further, internal accounting and HR systems impact firm performance and corporate information environment. Our research has practical implications for strategic policy makers within publicly listed corporations that influence accounting and HR organizational cultures.

1. Introduction

For large organizations to operate efficiently, optimize performance, and move as an integrated unit, policies and practices need to be aligned across departments. The presence of such alignment denotes strong organizational cultures, consistent with the view of culture as "patterns of values and ideas in organizations that shape human behaviour and its artefacts" (Bhimani, 2003; Zammuto & Krakower, 1991). The link between organizational culture and performance has received much attention among researchers in the field of organizational culture (e.g., Henri, 2006; Lim, 1995; Ogbonna & Harris, 2000). The main argument is that if an organisation maintains a strong culture by demonstrating a well-integrated and effective set of specific values, beliefs, and behaviors, then it will perform at a higher level of productivity (Sørensen, 2002).

However, integrating employee values, beliefs, and behaviors across departments can be challenging due to the formation of subcultures (Sackmann, 1992). Subcultures within HR and accounting departments may view organizational practices differently. Further, if organizational departments prioritize and value different objectives, this misalignment can lead to organizational inefficiencies and reduced performance (Lewis & Heckman, 2006). Surprisingly, very little research has examined how similar organizational practices could be viewed (and valued) differently by employees across departments. Accordingly, this paper examines perceived cultural alignment by surveying human resource (HR) and accounting employees regarding their views on similar organizational practices, and subsequently explores the relationship(s) between these views and firm performance.

To do this, we extend measures of human resource accounting (Toulson & Dewe, 2004) and managerial accounting systems (Novas, Alves, & Sousa, 2017) to employees working in publicly listed companies. We explore organizational practices in the framework of management accounting systems (MAS) and HR implementation, where MAS is defined as processes of information synthesis and dissemination that augment organizational practices and enhance firm performance (Simons, 1995 p.5; Gomez-Conde, Lunkes, & Rosa, 2019; Cleary, 2015). We conceptualize MAS on two dimensions: style of use (i.e., information synthesis) and information provided (i.e., dissemination) (Novas et al., 2017). Human resource accounting (HRA) scales used in this study include the constructs of measuring 'HR priorities' and the 'importance of measuring HR' (Toulson & Dewe, 2004). This design allows us to explore three research questions:

1) *What is the degree of alignment in perceptions of MAS and HRA policies across HR and accounting employees?*
2) *How is firm performance affected by employee perceptions of MAS and HRA policies?*

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* Corresponding author.
E-mail address: jacqui.gagnon@uregina.ca (J. Gagnon).

Table 1
Managerial accounting systems.

Type of MAS	Information perspective	Focus	Intended outcome
Diagnostic (style of use)	Historical	Traditional feedback role (monitoring for patterns and deviations), and communication between departments. (Gomez-Conde et al., 2019). Focus on performance which allows for management autonomy in methods used to achieve goals (Novas et al., 2017)	Continuous improvement. Improve workflow, set priorities, optimize resource allocation. (Journeault, De Rongé, & Henri, 2016; Lopez-Valeiras, Gomez-Conde, & Naranjo-Gil, 2015).
Interactive (style of use)	Forward-looking	Employee involvement, dialogue and debate in firm strategy and uncertainties. (Simons, 1995; Bisbe, Batista-Foguet, & Chenhall, 2007 p.797)	Innovative approaches to environmental uncertainty and firm strategy. (Bisbe et al., 2007).
Aggregation (type of information provided)	Information transfer to management	Information transfer to management for high-level consideration of business alternatives.	Supports high-level consideration of business alternatives and helps management evaluate the corporate business model. (Bouwens & Abernethy, 2000; Novas et al., 2017)
Integration (type of information provided)	Information transfer between sub-units	Co-ordinating sub-units of an organisation. This is particularly important as interdependencies increase (Novas et al., 2017)	Support decision making and ex-post control (Chia, 1995; Novas et al., 2017). Provides context to understand cause-effect relationships which support strategy creation.

3) *How is a firm's information environment (measured as timeliness of market price discovery) affected by employee perceptions of MAS and HRA policies?*

In response to the first research question, we find that HR employees rate HR and accounting items higher relative to their accounting counterparts, a result that may be explained by job role personality differences, cultural differences across departments, and a higher HR involvement in policy creation. In response to the second question, we find that MAS style of use impacts ROA, sales growth and one-year abnormal stock growth. Results on HR priorities signal that the HR function is associated with higher innovation and lower priority on resource allocation. In response to the third question, MAS style affects the timeliness of price disclosure to the capital market.

This study contributes to the discussion on whether managerial accounting and HRA practices are still perceived as important, by whom, and their relationship to financial performance. Our findings are valuable for HR and financial managers conducting employee pulse surveys aimed at understanding perceptions of organizational practices. We also contribute to the MAS and HRA literatures by introducing objectively measured financial, non-financial and market-based performance measures. Additionally, we respond to a call for research investigating impacts of management accounting on the financial reporting environment (Hemmer & Labro, 2008), and to a call for increased use of non-financial performance metrics (Kaplan & Norton, 1992; Novas et al., 2017). To our knowledge, timeliness of price discovery (Beekes & Brown, 2006), a market-based metric that we use to capture the effect of company disclosure on the financial reporting environment, has not been utilized in the management accounting or HR literatures.

2. Literature review and hypothesis development

This section draws upon accounting and HR literatures to develop hypotheses predicting how employees will attribute importance to items within our study's measures. Further we review the literature linking accounting and HR practices to organizational performance.

2.1. Integration of accounting and HR cultures

Given that HRA policies are typically created by HR personnel, one might wonder how well HRA policies are influenced by management accounting systems. Conversely, MAS design and implementation is the responsibility of accounting personnel, therefore one might expect the style of MAS and information provided by MAS to be highly influenced by the accounting function. *Style of use* refers to the diagnostic (i.e., traditional monitoring for patterns and deviation to optimize performance) versus interactive (i.e., facilitating employee dialogue and debate as part of a strategy of innovation) roles of MAS, and *type of*

information provided by MAS refers to aggregation (i.e., transfer of information to top management) versus integration (i.e., information transfer between sub-units to foster co-ordination) roles. See Table 1 for additional information on the perspective, focus, and intended outcomes of MAS types. Whether MAS and HR employees have common or divergent perceptions of MAS and HR functions is an empirical question. This question warrants investigation given that alternative factors beyond subculture homogeneity (Sackmann, 1992), such as individual and job-role personality differences (see Cooper & Robson, 2006; Hibbing, Cawvey, Deol, Bloeser, & Mondak, 2019) may also influence outcomes.

The literature on cognitive biases provides three insights to suggest that accounting (HR) professionals will attribute greater importance to accounting (HR) than to other organizational functions. First, individuals have greater capacity for attention and information processing when content is relevant to them (self-reference effect; Rogers, Kuiper, & Kirker, 1977). Second, "mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of his attitude toward it" (familiarity effect; Zajonc, 1986: p.1), indicating that individuals may attribute greater importance to familiar work functions (e.g., accountants may value information systems higher than less-familiar functions such as HR). Third, in-group bias causes individuals to favour those within their in-group (Tajfel, Flament, Billig, & Bundy, 1971). If we define groups consistent with organizational functions (e.g., accounting and HR), it follows that respondents may (consciously or sub-consciously) attribute greater importance to in-group values and priorities to elevate the in-group status and legitimacy (Bettencourt, Charlton, Dorr, & Hume, 2001). Taken together, these three cognitive biases: self-reference effect, familiarity effect, and in-group bias collectively predict that accounting and HR professionals will attribute greater value to their own function than to other organizational functions. We acknowledge, however, that this theory assumes homogeneity between HR and accounting subsamples. Specifically, it ignores individual selection into accounting or HR careers on the basis of personal characteristics such as personality that may systematically impact survey scores (see Hibbing et al., 2019; Levy et al., 2011). Thus, individual personality characteristics may also serve as a plausible alternative to our predicted results.

Although HR employees are exposed to MAS through budget, forecast, and internal reporting processes, their involvement is typically limited to understanding report summaries, versus their actual creation. Accounting employees are responsible for activities surrounding high-level accounting processes and information synthesis. Therefore, the literature on self reference effect (Rogers et al., 1977), familiarity effect (Zajonc, 1986), and in-group bias (Tajfel et al., 1971) would predict that, compared to HR employees, accountants place higher importance on the generation of accounting information and the method in which this information is used. Based on this discussion, we predict that:

H1a. *Accounting employees will respond significantly higher than HR employees on styles of use and types of information used for managerial accounting systems.*

Moving to predictions on HR variables, HR may be accepted as part of the firm's capital, but its centrality in the value creation process is not fully conveyed because HR is not recognized in accounting systems. Only recently has modeling and measurement of human resource capital gained attention through integrated reporting (Cheng, Green, Conradie, Konishi, & Romi, 2014). Compared to accounting employees therefore, HR personnel may be more inclined to see value in measuring the return on intangible assets/investments such as company training programs, work experience and accumulated knowledge. Given that HR employees have greater exposure to the organizational value of HR through measurement and recognition in accounting records, consistent with the self-reference effect (Rogers et al., 1977), familiarity effect (Zajonc, 1986), and in-group bias (Tajfel et al., 1971), HR employees may rate HR priorities and values higher than accounting employees. Literature on the personality of HR employees complements this theory: on average HR employees give higher general rankings due to differences in personality constructs between departments. Based on this discussion, we predict:

H1b. *HR employees will place higher importance on HR priorities and value measuring HR more than accounting employees.*

2.2. Accounting practices & firm performance

MAS are processes of information synthesis and dissemination that augment organizational practices and enhance firm performance (Simons, 1995 p.5; Gomez-Conde et al., 2019; Cleary, 2015). Contingency theory stipulates that strategic use of MAS nurtures relationships within and between business functions, thereby improving culture and decision-making processes and facilitating improved performance (Rowe, Birnberg, & Shields, 2008; Stoica, Liao, & Welsch, 2004; Wooldridge & Floyd, 1990). However, MAS is multi-dimensional, and it is organizational differences in these MAS features that potentially contribute to preferable performance outcomes.

The extant literature classifies MAS according to its *style of use* and *type of information provided* (Bouwens & Abernethy, 2000; Chenhall & Morris, 1986; Gomez-Conde et al., 2019; Novas et al., 2017). *Styles of use* describes the way a company designs and uses accounting systems: monitoring for patterns and deviations as part of a performance optimization strategy (diagnostic) or facilitating employee dialogue and debate as part of a strategy of innovation (interactive). *Types of information* refers to the output of MAS processes: aggregated and integrated. Aggregated information focusses on information transfer to management for high-level decision making, whereas integrated information synthesises department level data to facilitate cooperation between branches of an organisation (see Novas et al., 2017).

Organizational culture and MAS are co-determined. Organizational factors influence the form and effect of emerging MAS to the extent that MAS implementation fails when it conflicts with underlying firm culture (Bhimani, 2003; Markus & Pfeffer, 1983). MAS relies on employee attitudes, labor relations and other stakeholders, which jointly impact operational performance (Gomez-Conde et al., 2019). In turn, MAS develops and augments human capital, the primary source of value creation in organizations (Cleary, 2015; Novas et al., 2017). Most recently, research exploring the performance implications of misalignment across management and accounting cultures found that misalignments among business strategy, leadership style, organizational culture and MAS were negatively associated with both financial and non-financial performance (Juliana, Gani, & Jermias, 2021).

Perceptions of MAS quality have been noted in the literature to impact market performance (Ittner, Larcker, & Randall, 2003), and profitability (Bedford, 2015; Cadez & Guilding, 2008; Novas et al., 2017). However, given the dynamic tension between diagnostic/interactive style of MAS and between aggregated/integrated information

provided by MAS, we cannot predict the directionality of the association between accounting and performance. Based on this review we predict that:

H2. *The perceived level of importance attributed to managerial accounting practices will be associated with firm performance.*

2.3. HR practices and firm performance

Over half a century ago the term human resource accounting (HRA) was first used by Brummet, Flamholtz, and Pyle (1968a) as a 'challenge for accountants', and the impact of HRA on management and decision making was first discussed (Brummet, Flamholtz, & Pyle, 1968b). These seminal studies laid the groundwork for future research exploring the various concepts, methods and applications of HRA (Flamholtz, 1999). However, the scientific credibility of HRA is a recent development (see Toulson & Dewe, 2004). We subscribe to the definition of HRA as a tool that can be used for reporting people as organizational resources in financial and managerial accounting terms (Flamholtz, 1999; Steen & Welch, 2011). In the present study, we are interested in investigating the positive impact that a perceived level of importance in measuring HRA can have on firm performance. Further, we are interested in exploring whether accounting and HR employees differ in their perceptions of HR metrics and MAS. Investigating such differences are merited given that strong HRA alignment with organizational culture increases firm performance (Kuipers & Giurge, 2017).

Although there is some evidence that HR variables do not always correlate significantly with perceptions of financial performance (Purcell, 2003; Wright, Gardner, & Moynihan, 2003), a substantial body of literature supports a theoretical relationship between HRA and firm performance (Cherian & Farouq, 2013; Delery & Gupta, 2016; Johansson, 2007). The strategic HRA literature tends to approach the relationship between HR practices and firm performance through a resource-based view (Barney & Wright, 1998; Delery & Shaw, 2001). In line with this literature, we predict that:

H3. *The perceived level of importance attributed to human resource accounting practices will be positively associated with firm performance.*

3. Methods and sample

3.1. Measuring firm performance

There is a debate in the accounting literature surrounding the effectiveness of using subjective (i.e., participant perceptions) versus objective (i.e., using historical financial data) financial performance metrics (Agbejule, 2011; Ittner et al., 2003 p.718; March & Sutton, 1997; Uyar & Kuzey, 2016 p. 176). Although self-reported metrics are easier to administer than objective measures (e.g., survey responses need not differentiate between public and private companies), reliance on these perceptions of firm performance makes it difficult to interpret and compare results (Ittner et al., 2003).[1] Additionally, the use of objective measures is essential in aligning the management and financial accounting literatures in response to a growing awareness that the corporate information environment develops endogenously (Hemmer & Labro, 2008).

Research adopting objective firm performance measures includes Ittner et al. (2003) who finds evidence that measurement diversity (i.e., use of financial and non-financial measures) is positively associated with one-year stock returns, but failed to find significant results for ROA,

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[1] Agbejule (2011) argues that objective and self-reported financial performance measures yield equally valid and reliable results, but the research cited to support this argument is dated (Dess & Robinson Jr, 1984; Venkatraman & Ramanujam, 1987). Data availability and market metrics have significantly evolved over the past four decades, and objective financial measures benefit from replicability, comparability, and mitigated participant bias.

Table 2
Study scales.

	Measures	Items
HR scales Toulson and Dewe (2004)	HR Priorities	Preceded with: "For the following nine elements, please indicate your organisation's current priority [1 - of no priority 5 - a top priority]"
		To recruit, develop and retain sufficient staff to enable the organisation to meet its obligations To ensure the full utilisation of a high-quality staff as a basis for guaranteeing high quality of performance of the organisation To significantly improve employee efficiency and productivity To improve the quality of staff by investing in training and development To significantly improve service quality by investing in human resources To improve competitiveness by changing the skill mix of the workforce To improve the quality of working life for employees To control or contain labour costs to current levels To significantly reduce labour costs
	The Importance of measuring HR	Preceded with: "Using a five-point scale [1 - strongly disagree 5 - strongly agree] please rate the extent to which you believe the following statements reflect your organisation's views on the measuring of human resources"
		Importance of measuring HR Understanding the value of our people focuses us on our future HR needs, which is crucial for both setting long-term strategies and for helping us achieve them Measurement allows people to be seen as an investment to be developed, rather than an expense to be trimmed Through measuring the effectiveness of a particular programme and the impact it will have on the level of knowledge within the organisation, management can make better-informed decisions Measurement of the knowledge and skills of employees is an important indicator of future profitability Through being able to demonstrate the value and importance of the organisation's human resources, human resources becomes a strategic business partner Measuring helps with strategic planning To be able to manage knowledge, we need to be able to measure it The knowledge and skills of our people is our most important source of sustained competitive advantage Human resources should be accountable just like every other function The language of business is dollars. To earn credibility and receive needed resources, human resources must speak in financial terms Measurement of human resources gives investors needed information about the value of the business and its potential for future profitability Human resources should be mandated and have as one of its priorities the development of HR accounting practices and procedures
Accounting scales Novas et al. (2017)	Styles of Use	Preceded with: "Please indicate on a scale of 1–5 how the Managerial Accounting Systems implemented in your company provides information for the following"
	(diagnostic)	Following up significant exceptions and deviations Following up preset plans and goals Aligning performance measures with strategic goals Involving paying permanent attention to subordinates Adequately evaluating and monitor subordinates
	(interactive)	Signaling key strategic areas Implementing key strategic areas Setting medium/long term goals and targets Negotiating medium/long term goals and targets Debating data assumptions and action plans Learning tool
	Type of Information Provided	Preceded with: "Using a scale of 1–5, please describe your company Managerial Accounting Systems regarding the type of available information"
	(aggregation)	Information on the effect of events on particular time periods (e.g. summary reports, trends) Information in forms which enable you to conduct "what-if analyses" Information in formats suitable for input into decision models Information that relates to the impact of your decisions on the performance of other departments Information on the effects of your decisions throughout your business-unit/department/etc.
	(integration)	

sales growth, and three-year stock returns. Similarly, return-based measures (return on investment, equity, and sales) are employed in studies of strategic management accounting, intellectual capital, and management teams (Díaz-Fernández, González-Rodríguez, & Simonetti, 2015; Pavlatos & Kostakis, 2018). Responding to this literature and the call by Hemmer and Labro (2008) to align metrics from the financial and management accounting literatures, we adopt a variety of objective performance measures: ROA, sales growth, employee growth, environmental management, and one-year index-adjusted stock returns. Further, we measure the timeliness of price discovery to investigate the endogenous nature of the corporate information environment (Hemmer & Labro, 2008).

3.2. Participants

We originally recruited a total of 224 participants currently working in either an accounting or HR role through online recruitment platforms (i.e., CloudResearch & Prolific). We used participant filters available through both recruitment platforms. For example, with Prolific we used 'country' filter restricted to Canada, USA, and UK, and 'Employment' as

'full-time' working in 'Business Management & Administration', and finally Employer Type as 'Employee of a for-profit company or business or of an individual, for wages, salary, or commissions'.

Under CloudResearch we applied filters for Occupation Field 'Business Management & Administration, Finance' and Employment Status as 'full-time'. In the recruitment message for both platforms we indicated that we were looking for HR or Accounting employees working full-time for publicly listed companies. Approximately 15% of participants did not meet these criteria and were removed from the study. The final 224 sample (i.e., before data clean-up) represents only those participants who met the eligibility criteria and successfully completed the study.

However, due to issues with some item responses (i.e., hasty completion times, extreme acquiescence) and missing essential fields (i. e., job role, current organisation), we removed 34 responses, leaving us with a final sample of 186. Among these, 79 were accounting employees and the remaining 107 were HR employees. We collected both demographic information (i.e., Age, Gender) and work-related information (i.e., years in current role, total years worked in an accounting/HR role, job industry, level of seniority). We also asked participants how often they interacted (i.e., daily, weekly, monthly, never) with co-workers from their respective accounting/HR departments. Finally, participants were asked to share the name or stock ticker of the publicly listed company they worked for.

3.3. Survey measures

Table 2 summarizes the measures and scales used for the present study. We used the same scales measuring HR priorities and the importance of measuring HR developed and tested by Toulson and Dewe (2004). The scales were originally developed to measure the extent to which respondents thought each item reflected their organisation's view on the importance of measuring of human resources. The first construct, 'HR priorities' asks participants to indicate the current priority [1 - of no priority 5 - a top priority] they attached to nine different elements (e.g., 'to recruit, develop and retain sufficient staff to enable the organisation to meet its obligations', 'to significantly reduce labour costs' and 'to improve the quality of working life for employees') of their organisation's HR strategy. The HR priorities scale is based on a measure originally developed by Guest (2002).

The next construct 'The importance of measuring HR' involves three measures. The first is a single-item question asking respondents to indicate how important (1 = 'not important' to 5 = 'extremely important') measuring human resources is to their organisation. The second asked respondents to think about the importance given to measuring human resources at different levels of the organisation, however we

with several previous studies (Bedford, 2015; de Harlez & Malagueño, 2016; Henri, 2006; Naranjo-Gil & Hartmann, 2006; Novas et al., 2017). *Style of use* includes 11 Likert scale items asking participants to indicate using a five-point scale [1 - not available 5 – widely available] "*how the Managerial Accounting Systems implemented in your company provides information for the following*". Six of the 11 *Style of use* scale items measure diagnostic use of MAS: planning, identifying goals, comparing objectives to results, forecasting, and correcting deviations (Gomez-Conde et al., 2019). Sample items include "*aligning performance measure with strategic goals*", and "*adequately evaluating and monitor subordinates*". The remaining five *style of use* scale items measure interactive use of MAS. Items included in the scale are challenge, focus on critical issues, drawing attention, discussion, and involvement (Gomez-Conde et al., 2019). Sample items include ""*signaling key strategic areas,* and "*setting medium/long term goals and targets*".

The second scale, information provided by MAS comprises aggregation and integration consistent with previous studies (Bouwens & Abernethy, 2000; Chenhall & Morris, 1986). *Information provided* includes 5 Likert scale items asking participants to indicate using a five-point scale [1 – not available 5 – widely available] to "*describe your company Managerial Accounting Systems regarding the type of available information*". Aggregation item example includes "*Information on the effect of events on particular time periods (e.g., summary reports, trends)*", Integration item example includes "*Information that relates to the impact of your decisions on the performance of other departments*".

3.4. Performance measures

We test H2 and H3, that accounting and HR measures will positively influence firm performance, using the following ordinary least squares (OLS) regression:
where the dependent variable is firm performance defined using accounting performance (ROA and one-year percentage change in sales), HR performance (five-year employee growth), and environmental management (MSCI ESG Research), market performance (one-year abnormal buy and hold returns), and timeliness of price discovery. Financial metrics are constructed using Y-Chart data, while Environmental management is taken from MSCI ESG Research. Market-level response variables are not directly available in Y-Charts and are therefore constructed by the researchers. The one-year abnormal (i.e., S&P500 index adjusted) stock return for firm i over the period h, where h is the 350-day calendar period ending 10 days after the firm's last earning announcement, is calculated as:

$$PERFORMANCE = \alpha + \beta_1 Diagnostic + \beta_2 Interactive + \beta_3 Aggregation + \beta_4 Integration$$

$$+ \beta_5 HRPriorities + \beta_6 \, ORGViews + \beta_7 JobRole + \sum_{k=1}^{K} \gamma_k Participant \, controls + \sum_{j=1}^{J} \sigma_j Firm \, controls \qquad (1)$$

omitted this scale based on irrelevance to H1b. The third measure is a 12-item checklist concerning the importance of measuring human resources. Respondents were asked to consider each statement and to indicate on a five-point scale (1 = 'strongly disagree' to 5 = 'strongly agree') the extent to which they thought each item reflected their organisation's view on the importance of measuring of human resources. Sample statements included "*Human resources should be accountable just like every other function*" and "*Measuring helps with strategic planning*".

We measured MAS style of use and information provided by MAS, using questionnaire items from Novas et al. (2017). The first measure, style of use, comprises diagnostic and interactive uses of MAS consistent

$$BUY\&HOLD \; ABNORMAL \; RETURN_{i,h} = \prod_{t=1}^{h} \left(1 + R_{i,t}\right) - \prod_{t=1}^{h} \left(1 + R_{m,t}\right) \qquad (2)$$

where $R_{i,t}$ is the day t simple return on firm i and $R_{m,t}$ is the day t simple return on the S&P500 market index.

Information environment is measured as timeliness (Beekes & Brown, 2006): the speed of price adjustment over the 12-month reporting period. Timeliness traces share price over the 250 trading days ending 10 trading days after the earnings announcement to

measure how quickly share price adjusts to price at the end of the 250-day window (day 0). Therefore, timeliness approaches a value of zero as firm information efficiency increases (e.g., as firms release information to the market promptly). Specifically,

$$TIMELINESS = \frac{\left(\sum_{t=-249}^{t=0}|log(P_{i0}) - log(P_{it})|\right)/250}{1 + |R_{i0}|} \quad (3)$$

where $t = 0$ corresponds to 10 trading days after the earnings announcement date, P is the market-adjusted share price for firm i at day t, and R is the S&P500 market-adjusted rate of return for the firm over the 250 trading days. R_{i0} adjusts for the magnitude in price drift over the 250 trading day period (Beekes, Brown, & Zhang, 2015).

Participant-level controls include gender, seniority, and interactions between HR and Accounting departments. Control variables include size, intangibles, leverage, price volatility, ownership, board composition and industry (see Appendix A for firm-level control variable definitions and theorized association with MAS and HR). Regressions on timeliness include an additional control for the count of days between a firm's fiscal year-end and earnings announcement date (Beekes & Brown, 2006). All metrics are recorded at the last fiscal year end date, thereby controlling for fluctuations in a firm's reporting cycle and capturing annual data. In regression analysis, each observation is weighted by the inverse count of employer frequency in the sample to reduce bias arising from participants employed by the same company.

4. Descriptive statistics

Table 3 summarizes correlations among survey variables. As expected, age, seniority and time in role significantly correlated with each other. Our two HR measures also significantly correlated with each other ($r = 0.46$, $p < .01$), and with the four accounting measures. Diagnostic and Interactive styles of use were strongly and significantly correlated ($r = 0.70$, $p < .01$), as were the Aggregation and Integration constructs ($r = 0.61$, $p < .01$). A summary of our participants' demographic information can also be found in the correlation table. The mean age of participants was 37.9 ($SD = 9.68$). Participants were 45.5% female and had an average of 6.7 years of experience ($SD = 1.01$) in their current role. Table 4 reports participant frequency per firm.

The 166 participants in our regression analysis sample are employed by 122 firms.[2] Of these 122 firms, six had more than three participant observations (30 participant observations; 18% of the sample), 20 firms had two participant observations (40 total observations; 24% of the sample), and the remaining 96 firms had only one observation (58% of the sample). These were relatively evenly distributed across the HR and Accounting sub-samples with 62.5% of the HR sample and 51.4% of the accounting sample coming from single-participant firms. The highest frequency in one firm is nine respondents.

Table 5 shows descriptive statistics on all variables used in this study, presented by job role (HR and Accounting subsamples), and signals whether significant differences exist between these sub-samples. Results indicate that accounting respondents are more likely to be men and tend to have lower seniority than HR respondents. Additionally, accounting participants allege to interact more inter-departmentally than HR participants. There are no significant differences between samples pertaining to the performance variables or firm-level control variables, except industry (accounting sample has more financial firms) providing some reassurance that selection bias does not impact our sample or the generalizability of our results.

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[2] 20 observations were removed for missing performance or control-level data (186–20 = 166 remaining obs)

5. Results

5.1. Differences in perceptions of accounting measures

We first test H1a, to determine whether accounting employees respond significantly higher than HR employees on items involving accounting style of use or information provision. We ran independent t-tests to compare mean differences reported for the overall constructs as well as individual items within the constructs. First, we explored the construct 'Style of Use' (i.e., Interactive / Diagnostic) for differences across HR and accounting employees. We found that HR employees (n = 106, M = 3.92, SD = 0.53) reported higher mean scores than did accounting employees (n = 79, M = 3.72, SD = 0.75) and that this difference was significant $t(184) = 2.125$, $p = .035$, leading us to reject H1a. A closer analysis of individual items revealed that four mean score differences were significant. For example, HR employees reported significantly higher levels *for implementing key strategic areas*, $t(184) = 2.465$, $p = .014$, *aligning performance measure with strategic goals*, $t(184) = 2.051$, $p = .037$, *involving paying permanent attention to subordinates*, $t(184) = 2.054$, $p = .039$, and *adequately evaluating and monitoring subordinates*, $t(184) = 2.602$, $p = .010$. Further, HR employees (M = 3.92, SD = 0.61) reported significantly higher levels of diagnostic use, $t(184) = 2.461$, $p = .015$, than those of accounting employees (M = 3.67, SD = 0.77). Table 6 summarizes our findings.

Next, we examined differences in 'Type of Information provided' (i.e., aggregation / integration) across our accounting and HR employees. No significant differences in mean scores reported across our HR and accounting employees were found at both the construct $t(184) = 0.478$, $p = .634$, or individual item level (see Table 7). Overall mean score differences between accounting (M = 3.69, SD = 0.71) and HR employees (M = 3.64, SD = 0.70) were not statistically significant, again in opposition to H1a. Table 7 summarizes our findings. Taken together, results provide evidence that accounting employees do not respond significantly higher than HR employees on accounting measures.

5.2. Differences in perceptions of HR measures

To test H1b, we conducted independent sample t-tests to see if our accounting and HR groups differed in their self-reported values of measuring HR within their organizations. Overall, we found that the HR group consistently reported higher levels of HR measurement practices than the accounting group. The first 1-item scale asked participants to indicate "*how important measuring human resources is to your organisation*" (Toulson & Dewe, 2004). We found that HR employees (M = 4.44, SD = 0.72) reported a higher importance than our accounting employees (M = 3.85, SD = 0.83), and this difference was significant, $t(184) = 5.189$, $p < .001$. We then tested for significant differences across mean scores for HR and accounting employees for the 9-item 'HR Priorities' construct. We found that overall, HR employees reported higher mean scores (n = 107, M = 3.86, SD = 0.60) than did accounting employees (n = 79, M = 3.61, SD = 0.54). This difference was significant, $t(185) = 2.93$, $p < .004$, providing support for H1b. Our analysis of within construct items revealed four significant differences. For example, HR employees reported higher priorities based on *significantly improving employee efficiency and productivity*, $t(184) = 3.464$, $p < .001$, *controlling or containing labour costs to current levels*, $t(184) = 3.225$, $p = .001$, *significantly improving service quality by investing in HR*, $t(184) = 2.202$, $p = .029$, *and improving competitiveness by changing the skill mix of the workforce*, $t(184) = 2.091$, $p = .038$. It is important to note that although the items used in this measure were HR-focused, this was not explicitly disclosed in the survey title. Table 8 summarizes our results.

Next, we tested for significant differences in mean scores across HR and accounting employees for our 12-item 'Importance of measuring HR' construct. We found that overall HR employees (n = 107) reported higher mean scores (M = 4.23, SD = 0.47) than did accounting employees (M = 4.05, SD = 0.51). This difference was significant $t(185) =$

Table 3

Mean scores and correlations among study variables.

		M(SD)	1	2	3	4	5	6	7	8	9
1	Age	37.88(9.68)									
2	Seniority	2.29(0.64)	0.24**								
3	Time in Role	6.72(1.01)	0.51**	0.27**							
4	Interactions	2.27(1.00)	−0.11	−0.12	−0.09						
5	HRPriorities	3.76(0.59)	0.03	0.16*	0.09	−0.17*					
6	HRImport	4.15(0.49)	−0.01	−0.04	0.06	−0.10	0.46**				
7	Diagnostic	3.82(0.69)	−0.02	0.03	0.08	−0.30**	0.45**	0.38**			
8	Interactive	3.90(0.70)	0.04	−0.02	0.10	−0.21**	0.44**	0.37**	0.70**		
9	Aggregation	3.68(0.72)	−0.05	−0.04	0.08	−0.18*	0.36**	0.25**	0.51**	0.46**	
10	Integration	3.63(0.79)	−0.10	0.05	0.01	−0.18**	0.32**	0.21**	0.49**	0.40**	0.61**

Note. $* p < .05$, $** p < .01$; $N = 186$.

Table 4

Participant frequency per firm.

Frequency (participants per firm)	Number of Firms	[a]Total Obs. In Sample	HR Role Obs.	Accounting Role Obs
9	1	9	6	3
7	1	7	3	4
5	1	5	1	4
3	3	9	3	6
2	20	40	23	17
1	96	96	60	36
Totals	122	166	96	70

The underline in Table 4 indicates summation.

[a] Total observations is the number of observations that appear with a given participant frequency, calculated as Frequency × Number of Firms.

2.49, $p = .014$, providing additional support for H$_{1b}$. Our analysis of within construct items revealed three significant mean score differences including: *measurement allows people to be seen as an investment to be developed, rather then an expense to be trimmed*, $t(184) = 2.632$, $p = .009$, *measurement of HR gives investors needed information about the value of the business and its potential for future profitability*, $t(184) = 1.987$, $p = .048$, and *HR should be mandated and have as one of its priorities the development of HR accounting practices and procedures*, $t(184) = 3.035$, $p = .003$. Table 9 summarizes our findings. Taken together, our results provide evidence that HR employees do indeed respond significantly higher than accounting employees on items involving HR priorities and HR views, consistent with H1b.

5.3. Regression analysis

OLS regressions exploring H2 and H3 are presented in Table 10. The sample comprises 166 observations (see Table 2 for sample construction). Consistent with Eq. (1), we define the response variable as firm performance and explanatory variables of interest as accounting style of use (diagnostic and interactive), information provided by MAS (aggregated and integrated), HR priorities, and organizational views on HR measurement. Firm-level controls are not included in the body of this paper for brevity.

Panel A reports results of accounting-level performance variables: ROA and sales growth. Pooled results indicate that firms with diagnostic MAS style, less integrated information, and lower priority on HR have higher return on assets. Conversely, firms with high sales growth tend to not have diagnostic MAS style, and place high priority on HR generally. These firms also place low priority on measuring HR. Comparing the accounting and HR subsamples, significant findings on accounting and HR variables are driven by their respective area. This is consistent with the theory guiding hypotheses H1a and H1b; each function is both specialized and familiar with their respective area (e.g., familiarity effect).[3] Panel B shows OLS regressions on five-year employee growth and environmental management. Results indicate that firms with diagnostic

MAS and higher priority on HR measurement are more likely to increase their workforce. Firms with high-quality environmental management have low integration of accounting information and low priority on measuring HR. These firms may also place low priority on HR generally, though this result is of marginal significance. Panel C reports results on stock market performance (i.e., one-year abnormal buy and hold stock returns) and efficiency of the information environment (i.e., timeliness of price discovery). In the pooled sample, market performance is predicted by low diagnostic MAS and high priority on HR generally. Similar to Panel A, HR results are driven by the HR subsample. Timeliness of price discovery informs on the effect of MAS and HR on firms' information environment. Results show that firms with high interactive MAS have more sluggish price discovery, a result that is driven jointly by accounting and HR subsamples. As expected, the sign on diagnostic MAS is negative indicating that traditional top-down style of MAS results in timelier price discovery, although this result is only marginally significant.

6. Discussion of results

The present study set out to investigate how accounting and HR employees differ in their perceptions of organizational practices related to MAS and HRA, and how differences in these perceptions were related to both financial and non-financial performance indicators. We discuss both sets of findings, beginning with our survey measures.

6.1. Survey measure results (H1a & H1b)

We found interesting differences in how each job role 'group' responded to our study constructs. Intuitively, both HR *priorities* and *importance* of HR were perceived more favourably by HR employees. However, we were surprised to see that accounting employees did not rate MAS items significantly higher than HR employees. Rather, HR employees rated *diagnostic* and *interactive* styles of use higher than accounting employees, and the difference in diagnostic style of use was significant. For this we offer the following explanations.

First, personality differences related to job role function may have influenced survey response patterns. The literature exploring

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[3] The one exception here is aggregation, which is driven by the HR function.

Table 5

Descriptive statistics and tests of difference between participant roles.

	HR Role					Accounting Role					t-test
	Min	Med	Max	Mean	Std Dev	Min	Med	Max	Mean	Std Dev	(p-value)
Participant-level variables											
Gender	0.000	0.000	1.000	0.490	0.443	0.000	1.000	1.000	0.711	0.415	**0.007**
Age	1.671	29.000	103.025	31.764	16.591	0.499	29.000	98.247	33.350	18.896	0.627
Seniority	1.000	2.000	4.000	2.486	0.575	1.000	2.000	3.000	2.061	0.414	**0.000**
Time in current role	1.000	2.000	5.000	2.487	0.790	1.000	2.000	5.000	2.277	0.945	0.189
Interactions	1.000	2.000	5.000	2.025	0.788	1.000	3.000	5.000	2.636	0.822	**0.000**
Dependent variables											
One-year Change Sales	−0.151	0.116	19.995	0.415	2.029	−0.221	0.134	0.964	0.152	0.164	0.361
ROA	−0.808	0.051	0.284	0.049	0.112	−0.002	0.042	0.266	0.063	0.052	0.424
Five-year Emp Growth	−0.119	0.022	0.476	0.046	0.083	−0.137	0.010	2.137	0.067	0.264	0.535
Environmental Mgmt	0.000	7.300	10.000	6.942	2.131	0.800	7.600	10.000	6.958	2.197	0.968
Buy & Hold Return	−0.920	−0.003	5.449	0.148	0.619	−0.263	−0.013	2.503	0.072	0.335	0.431
Timeliness	0.249	0.452	4.587	0.586	0.533	0.333	0.459	2.409	0.511	0.249	0.355
Independent variables of interest											
Diagnostic	2.400	4.000	5.000	3.939	0.530	1.800	3.800	5.000	3.729	0.617	**0.048**
Interactive	2.600	4.000	5.000	3.972	0.501	1.800	3.800	5.000	3.819	0.706	0.168
Aggregation	1.000	3.667	5.000	3.597	0.734	1.000	4.000	5.000	3.707	0.755	0.425
Integration	1.000	3.500	5.000	3.418	0.863	1.500	3.500	5.000	3.541	0.702	0.406
HR Priorities	2.111	4.000	5.000	3.890	0.560	2.333	3.556	4.889	3.576	0.447	**0.001**
HR Import	2.750	4.333	5.000	4.245	0.414	2.500	4.167	5.000	4.097	0.419	**0.056**
Firm-level control variables											
Size	4.008	10.619	14.675	10.386	1.647	6.915	11.007	14.460	10.672	1.409	0.322
Intangibles	0.000	0.139	0.739	0.224	0.199	0.000	0.171	0.638	0.210	0.171	0.680
Leverage	0.000	0.999	3815.000	59.385	389.017	0.000	0.867	37.062	2.200	4.621	0.299
Price Vol	0.060	8.461	337.777	15.757	34.802	0.608	5.866	72.219	10.327	10.096	0.284
Independence	0.455	0.857	1.000	0.832	0.097	0.455	0.846	1.000	0.826	0.095	0.737
Diversity	0.133	0.333	0.636	0.351	0.084	0.167	0.333	0.583	0.338	0.080	0.329
Inst Investorship	0.000	5.327	51.477	6.108	5.888	0.001	5.623	19.278	5.595	3.323	0.579
Industry	1.000	2.000	2.000	1.742	0.386	1.000	1.000	2.000	1.402	0.410	**0.000**
YE_EA	14.000	35.000	83.000	37.850	11.821	14.000	33.000	413.000	41.463	46.772	0.539

$N = 166$. This table reports descriptive statistics by job role and tests whether variables are statistically different between roles. Observations are weighted by the inverse count of participants per firm (see Table 5) to reduce the effect of repeated firms in the sample. Pooled t-tests are reported.

Table 6

Style of use of Managerial Accounting Systems.

Item		HR M (SD)	ACC M (SD)	p-value
1.	Signaling key strategic areas	3.95 (0.84)	3.80 (1.08)	0.288
2.	Implementing key strategic areas	4.06 (0.85)	3.71 (1.08)	0.014
3.	Setting medium to long-term goals and targets	4.17 (0.76)	4.08 (0.94)	0.225
4.	Negotiating medium to long-term goals and targets	3.74 (0.90)	3.81 (1.00)	0.618
5.	Debating data assumptions and action plans	3.59 (0.97)	3.48 (1.06)	0.463
6.	Following up significant exceptions and deviations	3.84 (0.98)	3.80 (0.97)	0.782
7.	Following up pre-set plans and goals	4.15 (0.79)	3.91 (0.96)	0.063
8.	Aligning performance measure with strategic goals	4.17 (0.72)	3.92 (0.90)	0.037
9.	Involving paying permanent attention to subordinates	3.58 (1.06)	3.25 (1.08)	0.039
10.	Adequately evaluating and monitoring subordinates	3.88 (0.96)	3.48 (1.12)	0.010
11.	Learning tool	3.93 (0.97)	3.63 (1.12)	0.052
	Diagnostic (6–10)	**3.92 (0.61)**	**3.67 (0.77)**	0.015
	Interactive (1–5, 11)	**3.97 (0.56)**	**3.80 (0.85)**	0.102

Alpha = 0.77 (Diagnostic); 0.79 (Interactive); N = 186.

Table 7

Type of information provided by Managerial Accounting Systems.

Item		HR M (SD)	ACC M (SD)	p-value
1.	Information on the effect of events on particular time periods (e.g., summary reports, trends)	3.86 (1.00)	3.91 (1.09)	0.746
2.	Information in forms which enable you to conduct "what-if analyses"	3.37 (1.12)	3.41 (1.17)	0.814
3.	Information that relates to the impact of your decisions on the performance of other departments	3.48 (1.11)	3.22 (1.14)	0.120
4.	Information on the effects of your decisions throughout your business-unit/department/etc.	3.44 (1.10)	3.72 (0.99)	0.075
5.	Information in formats suitable for input into decision models	3.61 (1.01)	3.77 (1.00)	0.285
	Aggregation (1, 2, 5)	**3.65 (0.71)**	**3.72 (0.74)**	0.514
	Integration (3–4)	**3.61 (0.80)**	**3.65 (0.77)**	0.732

Alpha = 0.71 (Aggregation); 0.67 (Integration); $N = 186$.

Table 8

Mean differences in HR Priorities.

	Item	HR M (SD)	ACC M (SD)	*p*-value
1.	To recruit, develop and retain sufficient staff to enable the organisation to meet its obligations	4.13 (0.87)	4.06 (1.00)	0.612
2.	To significantly improve employee efficiency and productivity	4.21 (0.79)	3.81 (0.79)	0.001
3.	To ensure the full utilisation of a high-quality staff as a basis for guaranteeing high quality of performance of the organisation	4.09 (0.93)	3.92 (0.96)	0.226
4.	To improve the quality of staff by investing in training and development	3.83 (1.11)	3.85 (1.00)	0.899
5.	To control or contain labour costs to current levels	3.93 (0.92)	3.49 (0.92)	0.001
6.	To significantly improve service quality by investing in human resources	3.79 (0.98)	3.46 (1.05)	0.029
7.	To improve the quality of working life for employees	3.70 (1.07)	3.46 (1.05)	0.129
8.	To significantly reduce labour costs	3.54 (1.05)	3.25 (1.10)	0.070
9.	To improve competitiveness by changing the skill mix of the workforce	3.51 (1.07)	3.19 (1.01)	0.038
	Overall	3.86 (0.60)	3.61 (0.54)	0.004

Alpha = 0.77; N = 186.

Table 9

Mean differences in the Importance of measuring HR.

	Item	HR M (SD)	ACC M (SD)	p-value
1.	Understanding the value of our people focuses us on our future HR needs, which is crucial for both setting long-term strategies and for helping us achieve them	4.35 (0.72)	4.14 (0.80)	0.062
2.	Measurement allows people to be seen as an investment to be developed, rather then an expense to be trimmed	4.27 (0.75)	3.95 (0.92)	0.009
3.	Through measuring the effectiveness of a particular programme and the impact it will have on the level of knowledge within the organisation, management can make better-informed decisions	4.25 (0.73)	4.23 (0.70)	0.851
4.	Measurement of the knowledge and skills of employees is an important indicator of future profitability	4.23 (0.82)	3.99 (0.99)	0.073
5.	Through being able to demonstrate the value and importance of the organisation's human resources, human resources becomes a strategic business partner	4.22 (0.78)	4.03 (0.83)	0.112
6.	Measuring helps with strategic planning	4.48 (0.66)	4.35 (0.73)	0.206
7.	To be able to manage knowledge, we need to be able to measure it	4.19 (0.88)	4.01 (0.98)	0.191
8.	The knowledge and skills of our people is our most important source of sustained competitive advantage	4.33 (0.74)	4.15 (0.88)	0.132
9.	Human resources should be accountable just like every other function	4.41 (0.80)	4.44 (0.84)	0.805
10.	The language of business is dollars. To earn credibility and receive needed resources, human resources must speak in financial terms	3.84 (1.03)	3.78 (1.06)	0.699
11.	Measurement of HR gives investors needed information about the value of the business and its potential for future profitability	4.02 (0.94)	3.73 (1.00)	0.048
12.	Human resources should be mandated and have as one of its priorities the development of HR accounting practices and procedures	4.16 (0.74)	3.81 (0.82)	0.003
	Overall	4.23 (0.47)	4.05 (0.51)	0.014

Alpha = 0.83; N = 186.

personality differences across job roles suggests that HR employees may give higher survey ratings than accounting employees, for all measures. Two studies suggest that HR professionals score higher on openness, agreeableness, and optimism than accountants. Specifically, Lounsbury, Steel, Gibson, and Drost (2008) found that HR managers have significantly higher mean scores than their non-HR peers on all big-five personality traits except conscientiousness, and Levy et al. (2011) provided evidence that accountants scored significantly lower than their non-accountant peers in openness, agreeableness, and optimism (Levy et al., 2011). Further, Hibbing et al. (2019) explored correlations between personality differences and survey response patterns, examining how the big-five predicts extreme response style (ERS; gravitation toward the most extreme response options) and acquiescence response style (ARS; the tendency to approve of ideas). They found that openness and optimism are significantly and positively correlated with both ERS and ARS (Hibbing et al., 2019). In sum, prior research investigating personality trait differences across job roles suggest that HR employees tend to respond more agreeably to survey items. On the other hand, a healthy level of scepticism comes with the accounting profession (Cooper & Robson, 2006), potentially resulting in less agreeable survey responses. It is worth noting that most job-role personality research has explored broad functions such as job characteristics (i.e., Judge, Bono, & Locke, 2000) with little focus on personalities across job roles. Research into the impact of personality on job roles is an avenue for future research.

Secondly, we note that HR employees in this study responded significantly higher to only one of the two MAS constructs. Although researchers have noted the potential overlap between these MAS dimensions (i.e., Bouwens & Abernethy, 2000), HR employees only reported practices related to style of use as significantly higher than accounting employees. Compared to accounting employees, it is possible that our HR employees perceived the diagnostic and interactive dimensions as necessary practices to encourage dialogue, innovation, and organizational learning (Agbejule, 2011; Gomez-Conde et al., 2019). Qualitative research (i.e., semi-structured interviews) may be helpful in contextualizing how HR employees interpret styles of use MAS.

A final explanation as to why HR participants in our study rated MAS items strongly may relate to cultural definitions. Organizational cultures have the capacity to strongly influence how resources are measured. Specifically, Steen and Welch (2011) discuss how the HRA literature has been dominated by discussion as to whether humans fit the traditional definition of 'assets', and how to measure and report them. The items within the HR measures explored in this study included various statements related to measuring and reporting HRA practices. Perceptions of managerial accounting practices are important, given that the way items are measured conveys organizational values and priorities (Boudreau, 1998), and differences found in our study could reflect organizational differences in how to report and measure assets across both accounting and HR cultures.

6.2. Regression results (H2 and H3)

In regression analysis, we explored how perceptions of organizational practices impact performance. In terms of accounting performance, *diagnostic* style of use increases ROA and negatively impacts sales growth. This result is consistent with a cost control perspective attributed to the diagnostic style: lower expenses lead to higher profit thereby increasing ROA without generating sales growth. Additionally, a focus on resource allocation is likely to increase ROA through reduction of assets: a denominator effect. Our results augments research by Ittner et al. (2003) who fail to find a significant association between MAS and accounting performance. HR *priorities* had a negative effect on

Table 10
Regression results.

Panel A: Accounting Performance

	Return on Assets (ROA)				Sales Growth			
	1 ACC	1 HR	1 All		2 ACC	2 HR	2 All	
Intercept	0.130	−0.500	−0.249		0.726	9.976	5.365	
	(0.26)	(0.01)	(0.03)		(0.04)	(0.01)	(0.01)	
Diagnostic	0.015	0.023	0.030		−0.053	0.121	−0.516	
	(0.44)	(0.49)	(0.11)		(0.29)	(0.84)	(0.15)	
Interactive	−0.026	−0.003	−0.019		0.039	−0.709	0.121	
	(0.13)	(0.93)	(0.26)		(0.49)	(0.30)	(0.70)	
Aggregation	0.002	−0.018	−0.019 *		−0.051	0.021	0.178	
	(0.90)	(0.36)	(0.09)		(0.18)	(0.96)	(0.41)	
Integration	−0.004	0.009	0.006		0.011	0.112	0.032	
	(0.74)	(0.60)	(0.59)		(0.75)	(0.76)	(0.87)	
HR Priorities	−0.010 *	−0.036 **	−0.026 *		−0.020	0.741	0.556 *
	(0.63)	(0.11)	(0.10)		(0.75)	(0.11)	(0.06)	
HR Import	0.003	0.032	0.017		0.037	−1.129 **	−0.663 **
	(0.86)	(0.25)	(0.34)		(0.52)	(0.05)	(0.05)	
Job Role			0.011				0.132	
			(0.57)				(0.70)	
Gender	−0.018	0.001	−0.004		−0.177 ***	−0.588	−0.338	
	(0.30)	(0.98)	(0.79)		(0.00)	(0.21)	(0.22)	
Seniority	−0.022	0.001	−0.007		−0.075	0.351	0.255	
	(0.17)	(0.97)	(0.60)		(0.12)	(0.34)	(0.28)	
Interactions	−0.009	0.008	−0.001		−0.044 *	−0.300	−0.059	
	(0.31)	(0.56)	(0.92)		(0.09)	(0.30)	(0.70)	
FIRM CONTROLS	YES	YES	YES		YES	YES	YES	
R-square	0.275	0.444	0.350		0.368	0.308	0.203	
Adj r-square	0.038	0.323	0.270		0.162	0.157	0.106	

Panel B: Employment and Environmental Performance

	Five-year Employee Growth				Environmental Management			
	3 ACC	3 HR	3 All		4 ACC	4 HR	4 All	
Intercept	0.723	−0.086	0.228		−10.07	0.726	−3.777	
	(0.16)	(0.58)	(0.01)		(0.01)	(0.85)	(0.18)	
Diagnostic	0.144 **	0.014	0.090 **		0.441	0.678	0.367	
	(0.10)	(0.64)	(0.03)		(0.50)	(0.35)	(0.44)	
Interactive	−0.069	0.021	−0.046		0.564	0.210	0.281	
	(0.36)	(0.42)	(0.21)		(0.32)	(0.75)	(0.50)	
Aggregation	−0.077	0.012	−0.040		−0.041	0.296	0.204	
	(0.19)	(0.49)	(0.11)		(0.92)	(0.49)	(0.48)	
Integration	−0.045	−0.013	−0.027		−0.923 **	−0.639 *	−0.720 ***
	(0.41)	(0.40)	(0.24)		(0.03)	(0.10)	(0.01)	
HR Priorities	−0.035	0.008	0.011		−1.534 **	−0.547	−0.626	
	(0.71)	(0.67)	(0.74)		(0.03)	(0.26)	(0.11)	
HR Import	0.088	0.002	0.061		1.868 ***	0.330	0.870 **
	(0.32)	(0.92)	(0.11)		(0.01)	(0.58)	(0.05)	
Job Role			0.065				−0.093	
			(0.11)				(0.84)	
Gender	0.108	0.025	0.054 *		0.798	−0.311	0.179	
	(0.18)	(0.21)	(0.10)		(0.19)	(0.53)	(0.63)	
Seniority	0.145 **	0.005	0.049 *		0.962 *	0.574	0.719 **
	(0.05)	(0.75)	(0.07)		(0.08)	(0.14)	(0.02)	
Interactions	0.010	−0.003	0.003		−0.184	0.813 ***	0.388 *
	(0.79)	(0.80)	(0.86)		(0.53)	(0.01)	(0.06)	
FIRM CONTROLS	YES	YES	YES		YES	YES	YES	
R-square	0.437	0.205	0.222		0.542	0.297	0.270	
Adj r-square	0.253	0.031	0.127		0.392	0.144	0.181	

Panel C: Market Performance and Information Environment

	One-year Buy & Hold Abnormal Return				Timeliness			
	5 ACC	5 HR	5 All		6ACC	6 HR	6 All	
Intercept	1.317	2.532	1.772		−0.289	−0.667	0.227	
	(0.07)	(0.02)	(0.01)		(0.59)	(0.50)	(0.69)	
Diagnostic	−0.151	−0.255	−0.215	*	−0.041	−0.144	−0.136	
	(0.21)	(0.20)	(0.06)		(0.65)	(0.39)	(0.15)	
Interactive	0.091	0.101	0.119		0.106	0.333 **	0.221 ***
	(0.39)	(0.57)	(0.23)		(0.18)	(0.03)	(0.01)	
Aggregation	0.014	−0.005	0.014		0.007	−0.050	0.023	

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Table 10 (*continued*)

Panel C: Market Performance and Information Environment

	One-year Buy & Hold Abnormal Return			Timeliness		
	5 ACC	5 HR	5 All	6ACC	6 HR	6 All
	(0.86)	(0.97)	(0.84)	(0.91)	(0.62)	(0.69)
Integration	0.004	0.034	0.023	0.013	−0.018	−0.044
	(0.96)	(0.75)	(0.71)	(0.81)	(0.84)	(0.41)
HR Priorities	0.110	0.186	0.176 *	0.064	−0.052	−0.018
	(0.40)	(0.16)	(0.06)	(0.53)	(0.64)	(0.81)
HR Import	0.088	−0.283 *	−0.120	−0.141	−0.044	−0.039
	(0.47)	(0.09)	(0.25)	(0.13)	(0.76)	(0.66)
			0.078			−0.036
Job Role			(0.48)			(0.70)
	0.077	−0.083	0.027	0.084	−0.215 *	−0.078
Gender	(0.49)	(0.53)	(0.76)	(0.32)	(0.07)	(0.29)
	−0.009	0.132	0.104	0.164 **	0.084	0.051
Seniority	(0.93)	(0.21)	(0.16)	(0.04)	(0.37)	(0.42)
	−0.050	−0.083	−0.064	0.003	0.067	0.038
Interactions	(0.35)	(0.32)	(0.34)	(0.95)	(0.34)	(0.36)
FIRM CONTROLS	YES	YES	YES	YES	YES	YES
R-square	0.331	0.378	0.295	0.321	0.404	0.295
Adj r-square	0.112	0.242	0.209	0.082	0.265	0.203

This table presents results of OLS regressions of Eq. (1) with the accounting subsample $N = 70$, HR subsample $N = 96$, and pooled sample N = 166. ACC models are the accounting subsample (N = 70), whereas HR HR models are the HR subsample ($N = 96$). Models labeled All are the pooled sample (N = 166). Dependent variables are as follows: return on assets (model 1), one-year percentage change in sales (model 2), five-year employee growth (model 3), environmental management (model 4), one-year buy & hold abnormal stock returns (model 5) and timeliness of price disclosure (models 6). Parameter estimates are shown with *p*-values in parentheses.

ROA but a positive effect on sales growth, while *importance* of measuring HR negatively predicted sales growth. The initially counterintuitive finding on HR *priorities* may be related to HR stakeholders emphasising and prioritizing different aspects of HR (Ramlall & Melton, 2019). That is, although HR professionals share a common interest in disseminating HR priorities throughout their respective organizations, they may differ as to which policies are prioritized.

Turning to non-financial performance measures, *diagnostic* MAS positively associates with five-year employee growth. One might hypothesize that a firm with diagnostic MAS would have a lower static level of human capital because of its focus on resource efficiency. However, employee growth is a change-based measure and firm expansion requires strategic focus on resource growth including human capital. Secondly, firms with high-quality environmental management tend to have less *integrated* MAS, lower *priority* on HR, and place greater *importance* on HR measurement. None of the items listed in our HR *importance* measure (Toulson & Dewe, 2004) addressed environmental issues, yet despite this absence, our research supports a more recent societal trend toward green HR management and ESG measurement (Haddock-Millar, Sanyal, & Müller-Camen, 2016; Roscoe, Subramanian, Jabbour, & Chong, 2019).

Lastly, market-level results indicate that firms with high abnormal stock returns tend not to use *diagnostic* style of MAS, and have high *priority* on HR. This result reflects the market's orientation toward firm fundamentals (i.e., future value creation potential) which often diverges from the historical orientation of financial accounting measures. Accordingly, the market may place a premium on firms that focus on innovative strategy (i.e., more interactive and less diagnostic MAS) and pay attention to human capital as a significant source of value. This result is consistent with Ittner et al. (2003) who finds that reporting a diverse suite of accounting information leads to greater one-year stock returns.

In exploration of firms' information environment, we found that firms with *interactive* MAS styles were associated with sluggish market price discovery, while *diagnostic* accounting styles may have more timely price discovery. We found this result to be intuitive because the diagnostic style of use focuses attention, while interactive style of use widens the focus of attention (Agbejule, 2011; Gomez-Conde et al., 2019). In effect, interactive MAS style requires employee input and debate (i.e., widened attention), a timely endeavor that delays information

transmission to capital markets and likely results in more nuanced information which takes time to digest.

6.3. Limitations & future research

We acknowledge that survey methodologies are limited in their ability to demonstrate temporal precedence and control for alternative explanations that exist in laboratory experiments (Wright, Gardner, Moynihan, & Allen, 2005). Our results reflect a snapshot of accounting/ HR employee perceptions, and how they relate to organizational performance. Future research could use experimental design or a matched sample approach using pairs of HR and accounting employees from the same firms to directly test business unit alignment could allow for causal inferences.

Next, our research explores perceptions of cultural practices instead of the actual practices themselves. There is debate (and a recent research focus) concerning the impact of 'perceived' organizational policies and practices versus those actually implemented by organizations on performance (Khilji & Wang, 2006; Nishii, Lepak, & Schneider, 2008). Researchers have suggested such discrepancies between implemented and perceived practice is essential and has received little attention (Piening, Baluch, & Ridder, 2014).

We would like to acknowledge sample related limitations. First, our sample of HR and accounting employers were not perfectly equivalent in size (i.e., 79 versus 107) Given that we had only one or two observations (i.e., participants) for several firms, our findings may not represent the values of the departments or firms as a whole. Second, we would like to acknowledge our data is based off large, public firms which may inherently have organizational cultures that differ (i.e., co-worker proximity, interaction opportunities, etc.) from smaller firms (Gray, Densten, & Sarros, 2003), therefore inferences to smaller firms should be drawn with caution.

Third, our research sample is North American and British. Readers should interpret our findings carefully when extrapolating to international contexts as cross-cultural differences may exist (Björkman, Ehrnrooth, Mäkelä, Smale, & Sumelius, 2013; Micah, Ofurum, & Ihendinihu, 2012). Future research could translate and extend the current study's measures to different cultures in order to explore cross-cultural differences in employee perceptions of managerial and HR accounting practices.

Finally, our paper explored only one aspect of firms' information environment. We encourage future research to supplement our current understanding of the impact of internal MAS and HR processes on the external reporting environment using widely accepted metrics such as information asymmetry or analyst forecast characteristics.

7. Conclusion

The present research investigated differences in accounting and HR employee perceptions of the importance their employer places on organizational practices. We found that HR employees gave significantly higher ratings to HR items and several accounting items (i.e., styles of use), compared to their accounting counterparts. We believe this finding reflects job role personality differences, cultural differences across departments, and a higher HR involvement in policy creation. The higher involvement in policy creation leads to stronger engagement in the practices that surround organizational cultures. Therefore, this research contributes to the literatures on job role personality differences and business unit alignment.

Secondly, this research explored the connection between survey results and firm performance, finding that firms with diagnostic style of accounting have higher ROA, lower sales growth and lower one-year abnormal stock growth. This evidence suggests that diagnostic style is useful for reducing costs but not for increasing revenue. Further, priority on HR corresponds to value creation through stock returns and sales growth. We also explored timeliness of price discovery in response to Hemmer and Labro (2008) call for research into the economic impacts of managerial accounting. We found that diagnostic style of use may lead to speedier information delivery to the capital market. On the other hand, interactive style of use was associated with sluggish information delivery.

This paper may be of interest to practitioners in relation to diversity, defined as the distribution of (personality) differences between groups where heterogeneity (i.e., groups are dissimilar from other groups) represents inequality and homogeneity (i.e., all groups are similarly composed) approximates equality (Junge, 1994). Our research reinforces the notion that HR and Accounting groups are dissimilar from each other, presenting a potential avenue for organizational improvement. Given that diversity benefits organizations through creativity and innovation, organizational adaptability, recruitment and retention of skilled employees, decision making capability, marketability, and profitability (Cottrill, Lopez, & Hoffman, 2014; Cox, 1991), diversity within departments may be an important opportunity for development. Care should be taken to ensure that MAS and HR cultures align to achieve strategic organizational goals.

In closing, research exploring HR accounting practices has been scarce over the last two decades. At a strategic decision-making level, HR accounting and managerial accounting system practices include significant overlap. However, as demonstrated in this study, if significant discrepancies surrounding the value and interpretation of these practices exist across departments (i.e., accounting and HR), then organizations may suffer from business unit misalignment. Such alignment issues have been demonstrated to impact both financial and non-financial performance indicators, and therefore should be of concern to senior managers and policy makers.

Declaration of competing interest

None.

Data availability

The data that has been used is confidential.

Appendix A. Gender comparisons across four constructs

Construct	HR females (52)	HR males (54)	ACC females (22)	ACC males (56)
HRImport	4.23 (0.47)	4.21 (0.47)	4.03 (0.50)	4.05 (0.52)
HRPriorities	3.89 (0.63)	3.83 (0.59)	3.55 (0.60)	3.63 (0.52)
Aggregation/Integration	3.70 (0.63)	3.63 (0.77)	3.61 (0.88)	3.76 (0.69)
Integration/Diagnostic	3.58 (0.73)	3.67 (0.87)	3.60 (0.83)	3.65 (0.75)
Total (39.8% female)				

Bolded () indicates sample size; non-bolded () are SDs.

Appendix B. Firm-level control variables, measurement, and theorized association with MAS and HR

Variable	Measurement	Theory
Size	Natural logarithm of market capitalization	As firms grow, their MAS becomes more sophisticated to handle challenges in communication and control (Cadez & Guilding, 2008; Guilding, 1999; Libby & Waterhouse, 1996; Merchant, 1981). Ittner et al. (2003) measures size as the natural logarithm of assets, whereas Gomez-Conde et al. (2019) measure size as the number of employees.
Intangibles	Ratio of intangibles to total assets	Firms with high growth opportunities and uncapitalized intangible assets contribute value that is not well captured in traditional accounting (Grilliches, 1994). Therefore, these firms may rely more heavily on MAS. Additionally, Ittner et al. (2003) finds that market to book value positively associate with return on assets and one-year stock returns.
Leverage	Ratio of debt to equity	Information requirements of debtholders may affect the types of information produced by MAS.
Price volatility	Price volatility (over one-year ending 15 days after the last annual earnings announcement)	Stock price volatility proxies for firm risk and uncertainty. MAS complexity, style of use, and type and frequency of information may be affected by environmental uncertainty and risk.
Inst_Ownership	Percentage of total shares that are held by institutional investors (e.g., hedge funds, pension funds, etc.)	Institutional investors have different information requirements due to their private information set which may affect the information provided by MAS.

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Variable	Measurement	Theory
Board composition (*independence; diversity*)	Board of directors independence and gender diversity.	The board of directors uses information provided by MAS to make decisions on firm strategy and operations, therefore it is likely that the board directs both the style and use of MAS and the type of information provided by MAS. Institutional theory posits that firms operate withing the norms of their competitor group to reduce stakeholder scrutiny (Bansal & Clelland, 2004; Meyer & Rowan, 1977). Through best practice industry standards, shared environment, and shared social networks, MAS and HR practices are likely affected by industry. Cadez and Guilding (2008) report 10 industries in their sample which is dominated by the manufacturing industry. Similarly, the Novas et al. (2017) sample contains 13 industries, mostly from manufacturing. Ittner et al. (2003) controls for industry effects by including the median performance of other firms in the same industry.
Industry	Our sample is dominated by the financial industry, therefore we define industry as binary variable equal to one where the firm is in the financial industry and zero otherwise.	

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