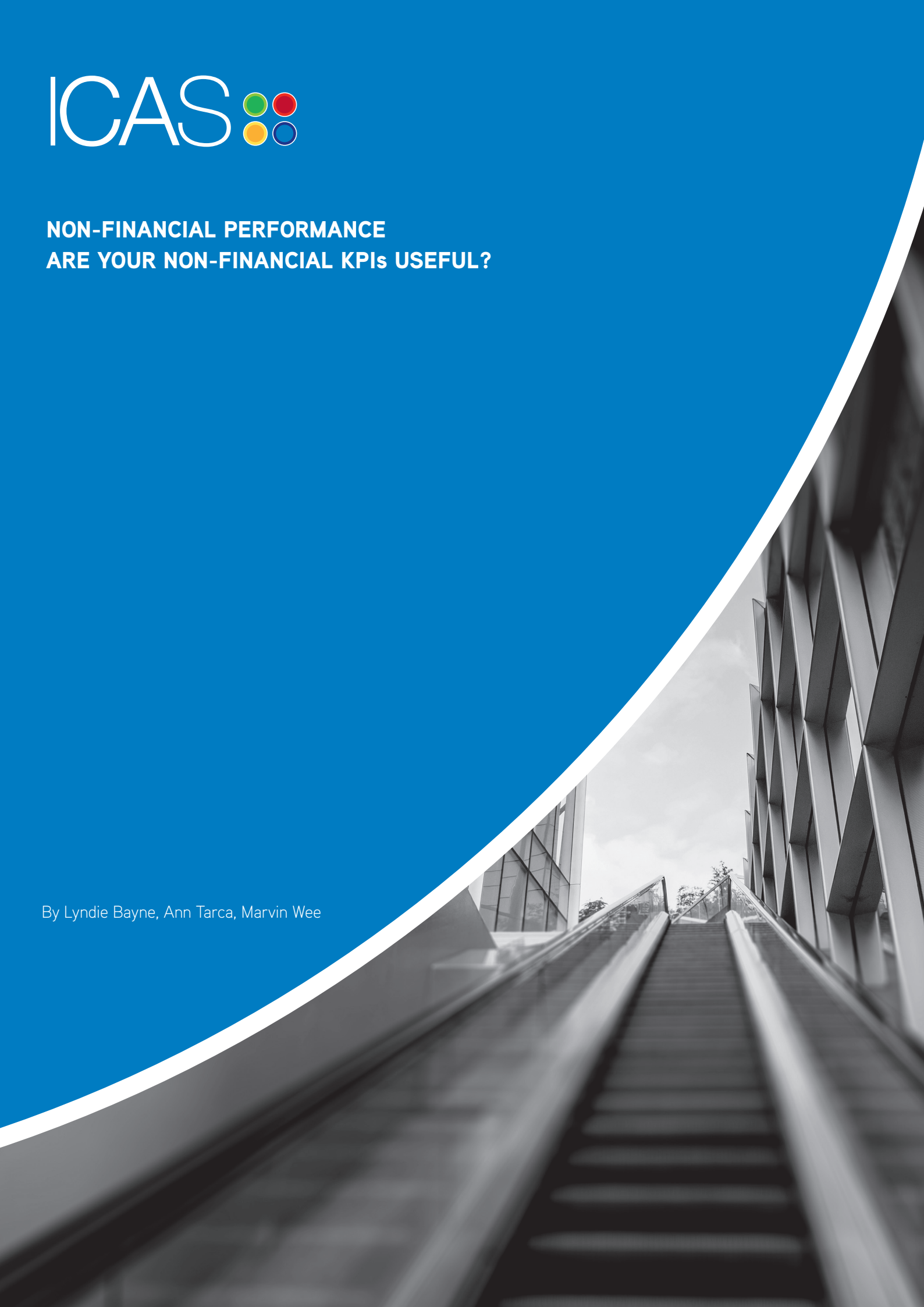
ICAS

NON-FINANCIAL PERFORMANCE
ARE YOUR NON-FINANCIAL KPIs USEFUL?



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FOREWORD

'What is performance?' A complex question indeed, and the title of a 2016 ICAS discussion paper which recognises that the environment in which businesses operate has changed considerably in the last decade, and questions whether a company's performance can continue to be captured in 'traditional' financial statements alone. The aim of the discussion paper was to frame and move the debate on performance forward rather than seek to answer or resolve issues, under the central argument that a more holistic view of performance was required, as well as mooting how financial and non-financial information could be joined more effectively. This paper was also, crucially, a call for research, resulting in ICAS commissioning two international teams of researchers in 2017 to investigate the concept of performance.

Fast forward to 2018 and performance and its disclosure continue to exercise the minds of regulators, standard-setters, preparers and users of financial reports world-wide. One of the key questions is whether the overlaying of non-financial key performance indicators (KPIs) to financial reporting is effective at enabling adequate understanding of a firm's financial position and sustainability. More recently in June 2018 the International Accounting Standards Board, in relation to its Primary Financial Statements project, highlighted the dichotomous feedback received that alternative performance measures can both provide relevant information but can also be misleading to investors.

In this context, this research team from the University of Western Australia Business School and the Australian National University evaluate the quality and usefulness of disclosure of IFRS companies' non-financial key performance indicators (KPIs). The project analysed the annual reports of 200 large listed companies from Australia, Canada, Germany, Japan and the United Kingdom, across five sectors.

The research assesses the quality of non-financial KPIs based on the provision of comparatives and the breadth of KPIs reported. It finds that whilst a large majority of companies disclose non-financial KPIs in their annual report, few present them together with comparatives such as prior year results, targets, or competitor score. Likewise, breadth of reporting is restricted and, surprisingly given the current focus on non-financial disclosures by regulators and standard setters alike, a comparison between the number of KPIs disclosed per company shows a decrease between 2013 and 2016.

As far as usefulness is concerned, evaluated by reference to the relationship between non-financial KPIs disclosure and companies' share price, the jury is still out - the analysis does not show a weaker link between earnings and share price for firms with more or better quality non-financial KPIs disclosures.

As late as the end of October 2018, the Global Investor Organisation Committee, a group of global investor organisations, urged listed companies and standard setters to do more to agree an approach to the treatment and inclusion of environmental, social and corporate governance (ESG) factors in company disclosure and reporting.

The recommendations of this project, such as companies laying out their approach to non-financial KPIs disclosure, the suggestion to provide comparatives, or again to ensure companies explain the rationale behind the KPIs presented, can all help achieve this objective for ESG and other non-financial KPIs. Importantly however, the research team underline the need for a future cohesive international framework to be principles-based, owing to the specialised and evolving nature of non-financial information.

The project supports ICAS' key policy position for improved corporate reporting which reflects, amongst others, better communication of how companies create and sustain value over time. The ICAS Strategy and Research Advisory Group has been pleased to support this project. The views expressed do not necessarily represent those of ICAS, but we hope that the report will contribute to the important debate in the UK and internationally on performance reporting.

Guy Jubb
Chair of the Strategy & Research Advisory Group

December 2018

Executive Summary

Background to the project

Around the world it is common for large listed companies to disclose non-financial information in the narrative section of their annual reports (KPMG, 2017). Non-financial information generally refers to "information which is included in the corporate report other than information in the financial statements" (ICAS, 2016, p.5), although some use the term more narrowly to refer to sustainability, corporate responsibility or Environment, Social, and Governance (ESG) information. This project focuses on a sub-section of non-financial information, namely non-financial key performance indicators (KPIs), disclosed in the narrative section of annual reports. The objective is to evaluate the comparability and breadth of these non-financial KPIs disclosed by listed companies across a number of countries where International Financial Reporting Standards (IFRS) are used.

Such an evaluation is relevant in the prevailing corporate reporting climate given the growing interest in non-financial KPIs by investors, stock exchanges and regulators, voluntary and mandatory standard setters, as well as a wider sphere of other stakeholders, including employees, suppliers, and non-governmental organisations. The project is important in light of the apparent confusion and discontent expressed by some report users, report preparers and standard setters relating to the comparability and usefulness of non-financial performance reporting. For example, while investors profess interest in non-financial performance for investment decisions (Blackrock, 2016, 2018; EY, 2017), they often do not use non-financial performance information due to a perceived lack of comparability. This is highlighted in an EY investor survey where 42 percent of the respondents believe that "non-financial information is often inconsistent, unavailable or not verified" and that "non-financial measurements are seldom available for comparison with those of other companies" (EY, 2017, p.7). Many attribute the lack of comparability to the myriad of non-financial regulations and frameworks emanating from governments, stock exchanges, and mandatory and voluntary standard setters (Amel-Zadeh and Serafeim, 2017; KPMG, 2017) that report preparers need to navigate.

Given the increasing expectations of stakeholders regarding non-financial KPIs and the uncertain non-financial reporting environment for companies, this project investigates the current disclosure practices and offers insights into best (and worst) practice, as well as country and industry sector differences and commonalities. The project provides both fine-grained analysis at the individual KPI level, as well as higher levels of examination of non-financial KPI reporting. A comparison of disclosure in 2013 and 2016 is also provided for a sub-sample of companies.

The evidence from the project offers insights for preparers and users of company reports, standard setters, the International Accounting Standards Board (IASB) and national regulators. An analysis of non-financial KPIs disclosed in annual report narratives can also inform the broader debate contemplating a more holistic consideration of corporate performance and calls for a global framework for non-financial performance reporting (ACCA/CDSB, 2016; Blackrock, 2016; Accountancy Europe, 2017).

Research approach

1. The main analysis is based on data drawn from the annual reports of 200 large listed companies from five countries (Australia, Canada, Germany, Japan and the United Kingdom (UK)) and five industry sectors (Consumer Discretionary, Financial Services, Materials, Telecommunication Services and Utilities) in 2016.
2. The quality of the non-financial KPIs is evaluated based on the provision of comparatives (such as prior year results and targets) and the breadth of non-financial KPIs disclosed by a company.
3. The focus is on annual reports as the annual report is an important and widely used corporate communication tool for engagement with external users.
4. The use of independently generated KPIs (such as inclusion in sustainability indices) is discussed and KPIs reflecting the interaction between non-financial and financial information are examined.
5. The usefulness of non-financial KPIs for decision makers is further investigated by exploring the extent to which they are associated with companies' share prices.
6. Trends in non-financial KPIs over time are investigated by comparing the reporting in 2016 and 2013 for a sub-sample of 100 companies.

Key findings

Over 4,000 non-financial KPIs (4,325) were collected from the narrative section of the 2016 annual reports of the 200 sample companies. Eighty-four percent of companies disclosed non-financial KPIs in their annual reports. The highest number of KPIs occurred in the *Employee* (42%) and *Environment* (30%) categories; these two categories represented 72 percent of non-financial KPIs reported. The third largest category of KPIs was *Awards and Indices* (10%), followed by *Community and Social* (8%). The lowest number of KPIs occurred in the *Customer* (4%), *Supply chain management* (4%) and *Business and Innovation* (2%) categories.

Companies from the UK (with an average number of 36 non-financial KPIs per company) and Germany (34 KPIs per company) had the highest number of KPIs disclosed in annual reports, followed by companies from Japan (20 KPIs per company), then Australia (11 non-financial KPIs per company) and Canada (7 non-financial KPIs per company). German companies reported more in the underused categories of *Supply chain management* and *Business and Innovation*. The most KPIs were reported by the Materials sector (with an average of 33 non-financial KPIs per company), followed by Utilities (22 KPIs per company), Consumer Discretionary (20 KPIs per company), Financial Services (17 KPIs per company) and Telecommunication Services (13 KPIs per company).

In terms of comparability of KPI reporting in 2016, the data shows that 39 percent of KPIs were presented together with prior year results while only 18 percent were presented with targets. On average less than one (0.69) type of comparative (out of four types: prior year results, target, competitor score and other benchmark) is provided per KPI. The most comparative information per KPI was provided for KPIs in the *Awards and Indices* category, followed by *Environment* and *Customer* categories. The amount of comparative information per KPI is similar across countries, with the most comparative information per KPI provided by companies from Japan, followed by Australia and Germany. Sector analysis shows similar amounts of comparative information per KPI

across sectors with the Financial Services sector providing the most comparative information, followed by Telecommunication Services and Consumer Discretionary sectors. Breadth analysis shows that companies covered three out of the seven main categories (average of 2.9 categories per company). Companies from the UK show the most breadth in their reporting (covering on average 4.6 categories), while companies from Canada only report across an average of 1.5 categories. Sector analysis indicates companies from the Materials sector display the most breadth (3.2 categories on average) and companies from Utilities the least (2.6 categories on average).

Trends over time show an overall decrease (40%) in the number of non-financial KPIs in 2016 compared to 2013 for the sub-sample of 100 companies. This result is surprising given the increased interest, including regulations and guidelines, relating to non-financial issues. Possible reasons for this result include: companies moving from an annual report in 2013 to an Integrated Report in 2016; companies changing from an annual report in 2013 to an annual plus stand-alone sustainability report in 2016; and companies' increasing use of online reporting of non-financial KPIs; all leading to fewer non-financial KPIs in annual reports over time. This marked change in reporting practice highlights a lack of comparability in the non-financial KPIs disclosed in the annual reports. However, it is encouraging that the provision of comparative information at the individual KPI level appears to have increased slightly over the period (5%). Thus while the number of KPIs has decreased, provision of comparatives - an indicator of quality of reporting - shows an increase at the KPI level.

Value relevance models show that the association between book value of equity and share price is stronger for companies with more or better quality non-financial KPIs in 2016. However, the association between earnings and share prices is not different for these companies. This may seem contrary to expectations (see for example, Baboukardos and Rimmel, 2016) however it concurs with the sentiment of the EY survey noted previously about the quality and usefulness of non-financial KPIs currently disclosed. The results are consistent with financial performance being a key factor in the valuation of companies, which is not affected by non-financial KPI disclosures. However, it may be that the link between non-financial factors and financial performance is not well explained by companies or is not fully understood by investors, thus a relationship with share price is not picked up in the value relevance models. In this study, any conclusions about the value relevance of non-financial KPIs need to be interpreted with care because the analysis is limited by the number of companies in the sample and the variability in the type and quality of non-financial KPIs provided by companies in the sample.

Practical and policy implications

This report offers practical recommendations for companies disclosing non-financial KPIs that may improve the comparability of disclosures and therefore the usefulness of annual report non-financial KPIs. The suggestions include: (1) Provision of a Non-financial Information Policy statement, disclosing the company's approach to non-financial disclosures including the reporting media used, the target audience, the materiality considerations, which group companies are included in the reported information and the measurement bases used; (2) Improved presentation, including the use of headings such as "Non-financial performance indicators" and tabular formats; (3) Provision of comparative information (prior year and targets); and (4) Explaining the reasons why the non-financial KPIs are presented, such as the business implications and/or reference to guidelines, legislation or regulations.

The results provide an important baseline for policymakers, giving evidence of current practices that can be useful in future policy making. The evidence highlights the need for measures to increase the comparability of non-financial KPI reporting in the narrative section of annual reports. The great variety of formats, KPIs and the inconsistent disclosure of definitions, measurement bases and comparative information suggest that further guidance concerning KPIs in annual report narratives is required for improvements in reporting to be achieved. However, the specialised and evolving nature of various aspects of non-financial information means that it is not possible to prescribe the full content of non-financial KPIs in an annual report so principles-based guidance, that can be enhanced by local jurisdictions as required, is recommended.

Given the international connections of companies and markets, a set of guiding principles to be used by companies throughout the world from an international umbrella organisation could lead to increased comparability of non-financial KPI reporting in annual reports. Importantly, this framework must also be supported by national efforts of regulators, standard setters, industry and professional groups to promote and achieve best practice reporting. The development of a principles-based international framework based on more dialogue between mandatory and voluntary standard setters, institutions determining accreditations and sustainability indices, and other stakeholders is recommended. Such a framework is necessary to bring about better streamlining, more comparability and consequently greater usefulness of non-financial KPI disclosure in annual reports over time. A key area for further research which would assist policymakers is suggested by the evidence that there are fewer non-financial KPIs in annual reports in 2016 compared to 2013. In additional to evidence about what is reported, data about where companies choose to report non-financial KPIs, such as online, stand-alone sustainability reports and/or annual reports, will be relevant to the development of a future framework for non-financial performance reporting.

1. Introduction and Background

Non-financial performance measures have long been of interest for the internal management of companies. For example, production processes have been managed through quality control measures and business innovation through tracking the number of patents processed. Non-financial KPIs have also become increasingly important within companies to manage performance through targets in remuneration contracts. Further, since the Brundtland report on sustainable development in 1987 (UN WCED, 1987) there has been global impetus for companies to disclose non-financial information to various stakeholders through their external reporting media (KPMG, 2017). The widespread interest in non-financial issues is reflected in initiatives such as the Paris Agreement on Climate Change of 2015 and the UN Sustainable Development Goals of 2015.

Over the last few decades multiple voluntary reporting frameworks have been developed (IASB, 2017) and the number of regulations and mandatory disclosure requirements has burgeoned. Companies face many choices regarding what non-financial KPIs to disclose outside the company, where to disclose the KPIs (such as in annual reports, sustainability reports, integrated reports and/or online) and what reporting guidelines to follow (such as the Global Reporting Initiative Sustainability Reporting Guidelines/Standards, the International Integrated Reporting Framework and the Task Force on Climate-related Financial Disclosures recommendations). Although there have been attempts by voluntary standard setters to assist companies in navigating the interrelationships between various non-financial reporting frameworks (see for example the Corporate Reporting Dialogue (2017)), and resources setting out the mandatory and voluntary requirements per country (see The Reporting Exchange website (2018)), an uncertain non-financial reporting environment prevails. Diverse sector and country voluntary and mandatory non-financial reporting requirements exacerbate the lack of comparability between company disclosures.

The current confusion in the non-financial reporting environment is accompanied by decades-long groundswell of questions about the state of corporate reporting in general, with many contemplating a more holistic conceptualisation of corporate performance (ICAS, 2016). While some suggest incremental improvements to corporate reporting are needed, others debate a more dramatic overhaul (ICAEW, 2009, 2017). There are advocates for a global umbrella organisation to take leadership in the non-financial reporting area and develop global non-financial reporting framework/standards (ACCA/CDSB, 2016; Blackrock, 2016; Accountancy Europe, 2017). Some suggest that the IASB may be well positioned to lead this process (FEE, 2015; UNEP, 2017). In November 2017 the IASB decided to revise its *IFRS Practice Statement 1: Management Commentary* (2010) (IASB, 2017), following recent developments in narrative reporting such as the UK's Strategic Report (2013), the German Accounting Standard (GAS) 20 on the group management report (2012), the European Commission's Non-financial Reporting Directive (2014) and its High-Level Expert Group on Sustainable Finance report (2018).

To provide evidence relevant to these discussions this project aims to evaluate the current comparability of non-financial KPIs of IFRS reporting companies in five countries. By assessing current non-financial disclosure practices the project offers insights into best (and worst) practice, as well as country and sector differences and commonalities. The evidence from the project may inform the broader debate contemplating a more holistic consideration of corporate performance and calls for a global framework for non-financial performance reporting (ACCA/CDSB, 2016; Blackrock, 2016; Accountancy Europe, 2017).

The remainder of the report is laid out as follows. Section 2 provides a brief review of extant literature to place the study in context, while Section 3 discusses the research approach. The main findings are presented in Section 4, followed by recommendations and policy implications in Section 5. Appendix 1 provides additional detail concerning the non-financial KPIs collected in 2016 annual reports and Appendix 2 gives further details about testing the usefulness of non-financial KPIs.

2. Brief literature review

Non-financial performance measures: current practice, best practice, comparability across entities and sectors

The importance of disclosure of information by companies seeking external finance is widely recognised in the finance literature, building on the concepts of agency theory and information asymmetry (Jensen and Meckling, 1976). The need to balance the costs and benefits of disclosure has been demonstrated from a theoretical (Verrecchia, 1983; Dye, 1985) and a practical perspective (Healy and Palepu, 2001; Beyer et al., 2010). The usefulness of financial information has been recognised since the seminal studies of Ball and Brown (1968) and Beaver (1968) (see Kothari, 2001; Leuz and Wysocki, 2008, 2016). However, many calls have been made for the disclosure of more non-financial measures as well as the integration of financial and non-financial measures (see for example ICAEW (2009), the EU Non-financial Reporting Directive (EU Commission, 2014) and the International Integrated Reporting Council's framework (IIRC, 2013)).

Many institutions provide guidelines for non-financial performance reporting, such as the Global Reporting Initiative (GRI) with their sustainability reporting guidelines/standards, the International Integrated Reporting Council (IIRC), the Sustainability Accounting Standards Board (SASB) as well as the International Organization for Standardization (ISO) and EU Eco-Management and Audit Scheme (EMAS). For example, ISO 14031 is an international standard that gives organisations guidance on how to identify environmental performance measures (Langfield-Smith et al., 2015). While there is currently no universally accepted non-financial reporting standard, the GRI Sustainability Reporting guidelines/standards are the most influential with over 70 percent of the world's largest listed companies referring to this framework (KPMG, 2015).

Non-financial performance measures have previously been studied in a number of research streams, such as management accounting (Abdel-Maksoud et al., 2005; Chenhall and Langfield-Smith, 2007), management compensation and earnings management (Ibrahim and Lloyd, 2011), sustainability reporting and voluntary disclosure studies (Haque and Deegan, 2010; Loh *et al.*, 2015). Non-financial performance measures have long been used internally by management accountants to improve and measure internal company performance (Malina and Selto, 2004). They have been used in management compensation contracts to ensure goal congruence between managers and companies. Some companies are required to externally report on these measures in their remuneration reports.

Over the last few decades there has been increased external disclosure of non-financial information, such as in annual reports and sustainability reports (KPMG, 2017). Extant studies have addressed what and where non-financial information is disclosed (Deegan and Rankin, 1997; Othman and Ameer, 2009). Studies have also explored the relationship between performance and disclosure. For example, Hummel and Schlick (2016) investigated the relationship between sustainability performance and sustainability disclosure, finding that better sustainability performers provide higher quality sustainability disclosure.

In addition to remuneration and sustainability reports, many companies discuss non-financial performance measures in the narrative section of annual reports, such as in a management commentary report, presented to accompany the financial statements. Although a significant part of the management commentary addresses financial measures, there is also guidance about including non-financial measures that are relevant to understanding performance (see the IASB's *IFRS Practice Statement 1: Management Commentary* (2010) and the Financial Reporting Council's *Guidance on the Strategic Report* (FRC, 2014)). Studies commonly investigated the content of narrative disclosures, using checklists and exploring topics, quantity and quality of disclosure (Beattie, 2014). Elzahar et al. (2015) investigated KPI disclosure quality for a sample of UK listed companies based on the UK Accounting Standards Board's guidelines for best practice KPI disclosure and the economic consequences of financial and non-financial KPI disclosure quality. Their findings suggested that only the disclosure quality of financial KPIs matter. Cole and Jones (2005) argued that changes in measures (in their case, financial measures) were particularly revealing. The current project explores changes in non-financial measures and also information about 'best practice' in non-financial disclosures.

Several theories are used to understand the content of narrative reports, based on concepts of communication or manipulation (Adelberg, 1979). An extensive literature focuses on the impact of managers' incentives on disclosure through impression management (see Beattie and Jones, 1992; Merkl-Davies and Brennan, 2007). Other studies investigated performance explanations through attribution analysis (Aerts, 1994, 2005).

Another stream of research concludes that disclosure reflects both company specific and country factors. For example, Vanstraelen, Zarzeski and Robb (2003) reported differences between countries in the content of non-financial disclosures. Investigating the impact of variation in regulation on disclosure, Elshandidy, Fraser and Hussainey (2015) found differences in mandatory and voluntary risk disclosures made by companies in the United States (US), UK and Germany. The current study adds to the cross-country literature in this area by focusing on cross-country disclosure of non-financial measures.

Disclosure studies draw from theories based on information efficiency and proprietary costs (Beyer *et al.*, 2010). That is, companies have incentives to provide information to meet various communication objectives (e.g. achieving a lower cost of capital or supporting their share price) but they are also constrained by proprietary costs (relating to costs of revealing private information). These incentives vary between companies and sectors, so the use of a range of disclosure measures is expected.

Voluntary disclosure studies have employed lenses such as legitimacy theory (Wilmshurst and Frost, 2000; Deegan *et al.*, 2002; Milne and Patten, 2002; O'Donovan, 2002; de Villiers and van Staden, 2006; Cho and Patten, 2007; Tilling and Tilt, 2010), stakeholder theory (Deegan and Blomquist, 2006; Elijido-Ten *et al.*, 2010; Gordon *et al.*, 2012), and signalling and institutional theories (Hahn and Kühnen, 2013) to understand why companies voluntarily report. The fact that companies are embedded in unique networks of stakeholder relationships further contributes to the expectation that companies are likely to differ in the non-financial performance measures they choose to disclose.

Evaluating non-financial performance measures

Management accountants have long recognised the problems with using traditional financial performance measures in isolation when measuring performance. For example, traditional financial performance measures focus on the financial consequences of decisions and activities, not the causes; they provide limited guidance about areas that need to be developed for the long-term success of the organisation; they may lead to managers focusing on improving short-term performance at the expense of long-term sustainability of the organisation (e.g. managers may sell off assets to increase profit in the short-term, while hindering future business growth) (Langfield-Smith et al., 2015). These arguments are equally applicable to the performance of a company. Leading textbooks such as Langfield-Smith *et al.* (2015) highlight the benefits of non-financial over financial performance measures, such as their emphasis on strategy, drivers of future financial performance, and being more actionable, timely and understandable.

Limitations of non-financial performance measures have also been acknowledged. For example, there are a wide range of available measures which affect comparability between companies and over time; necessity for trade-offs meaning that there is difficulty in deciding which non-financial measures are most important; the measurement system may lack integrity; and some measures are not easy to translate into financial outcomes (Langfield-Smith *et al.*, 2015). Prior studies emphasised that non-financial performance measures are industry and firm-specific (Maines *et al.*, 2002). Based on their review of management compensation research Maines *et al.* (2002, p.356) suggest that "the usefulness of non-financial performance measures is not universal, depending instead on firm-specific characteristics".

Malina and Selto (2004) listed the following desirable attributes of performance measures based on management control and strategy theories used internally - diverse and complementary, objective and accurate, informative, more beneficial than costly, causally related, strategic communication devices, incentives for improvement and supportive of improved decisions. Maines *et al.* (2002) evaluated non-financial performance measures against the same criteria used to evaluate financial performance according to the accounting conceptual framework, that is the characteristics of relevance, reliability and comparability. Due to their uniqueness to industry and company characteristics, Maines *et al.* (2002) recommended that non-financial disclosures remain voluntary and are given the 'safe harbour approach' (i.e. protections in the case of litigation).

The IASB's *IFRS Practice Statement 1: Management Commentary* (2010) stated that the management commentary should display the qualitative characteristics of relevance and faithful representation as well as the enhancing qualitative characteristics of comparability, verifiability, timeliness and understandability. The practice statement recommended that:

> "Management should disclose performance measures and indicators (both financial and non-financial) that are used by management to assess progress against its stated objectives. Management should explain why the results from performance measures have changed over the period or how the indicators have changed" (Para 37, p.15).

This highlights that non-financial performance measures are firm and industry specific, and relevant measures may change over time, aspects which are explored empirically in the current project. Similarly, ICAEW (2009) concluded that:

> "there seems no realistic possibility of a prescriptive reporting model that would cover all non-financial reporting and provide a detailed blueprint applicable to businesses

generally. The information that different businesses disclose and should disclose is too diverse to be captured by such a model" (p.vi).

However, ICAEW (2009) supported the idea of the general applicability of high-level principles for non-financial reporting such that businesses "disclose information that is relevant to the particular circumstances; vary their disclosures as circumstances change; and experiment in their reporting" (p.vii). ICAEW (2009) further suggested that businesses, in deciding what to disclose, engage with their stakeholders and other users of their reports and that business reporting is best viewed as a "complex social institution, which constantly evolves in response to changes in its environment" (p.vii). They went on to contend that "market forces, regulation, ethical and emulatory motives, and pressure from participants in public debate all push businesses reporting to adapt to changing circumstances" (p.vii). The current study empirically investigates these forces by exploring changes in non-financial KPIs over time and also across countries and sectors.

3. Research approach

3.1. Data

Data was drawn from the 2016 annual reports of 200 large listed companies from five countries where IFRS is used (Australia, Canada, Germany, Japan and the UK) and five sectors (Consumer Discretionary, Financial Services, Materials, Telecommunication Services and Utilities). Australia had adopted IFRS from 2005 for all reporting entities; Germany and the UK adopted IFRS from 2005 for listed companies' consolidated accounts; Canadian companies adopted from 1 January 2011; and in Japan some listed companies voluntarily adopt IFRS.

Companies were randomly sampled from the largest 200 listed companies in each country (based on market capitalisation). Forty companies were chosen for each country. For some countries there were small numbers of companies in particular sectors, in which case companies from the other four sectors were randomly chosen. The unbalanced number of companies per sector was taken into account when analysing the results. For example, the average number of KPIs per company rather than the total number of non-financial KPIs per sector are used.

3.2. Data collection

A repeatable and efficient data collection method was developed to identify and record non-financial KPIs from the narrative section of annual reports, which was defined as the whole annual report except for the financial statements and notes. The data collection method was developed using an initial pilot study of 50 company annual reports from 2016. The pilot study companies were randomly selected from the sample of 200 sample companies so that countries and sectors were equally represented. Two principal researchers manually reviewed and analysed the non-financial KPIs disclosed in the pilot company annual reports from Australia, Germany and the UK to develop a list of instructions for the research assistant to identify (using search words) and summarise the necessary data from the annual reports.

The method uses eight search words/phrases namely: KPI, Performance, Non-financial, Non financial (no hyphen), Supply chain, Goal, Target, and Objective. Adobe Acrobat was used to search the annual report pdfs for each word/phrase in turn. The data surrounding the search word was scanned and any non-financial KPIs identified were

recorded in the data collection template for each annual report. The choice of these eight key words/phrases was based on analysis of the disclosure of non-financial KPIs in the pilot study, paying attention to the headings and structure used for presentation of non-financial KPIs as well as the terminology used to discuss non-financial performance in annual reports. For example, some companies used headings which included the words "KPI", "Performance", "Non-financial", or "Non financial" (no hyphen). Further, the narrative discussing non-financial KPIs in the pilot study tended to use the words "Performance", "Goal", "Target" or "Objective"; hence their inclusion as search words. "Supply chain" was included as a search phrase since the pilot study showed the use of this phrase when discussing the non-financial performance of other companies in the supply chain.

The use of the above search words/phrases was more efficient than searching for common non-financial KPI categories, such as *Environment* or *Community* since searching for such words led the researchers to discussions involving non-financial information, in addition to non-financial performance measures. Non-financial performance measures were carefully differentiated from non-financial *information* as well as *financial* performance measures by adopting the definition below.

A non-financial KPI is defined as having the following characteristics:

- *Current year result*. A current year result or outcome needs to be provided. For example, "Company A supports women in the workforce" has no result and is merely non-financial information, whereas "Number of women in the workforce: 50%" is identified as a non-financial KPI;
- *Not a financial KPI*. The KPI should not directly relate or explain items in the financial statements. For example, "return on assets" and "gross profit percentage" are regarded as financial rather than non-financial KPIs. These traditional financial KPIs are well-researched and not the focus of this project. It is noted that hybrid KPIs, consisting of non-financial and financial aspects, such as carbon intensity (tonnes of carbon emissions / sales) is considered to be non-financial and included in this project; and
- *Intention*. The data needs to be intended to be a performance measure rather than merely information. The intention may be reflected by explaining why the measure is presented and/or disclosing a target.

Companies may disclose non-financial KPIs using various media other than the annual report (such as online and sustainability reports). However, the focus in this study was non-financial KPIs in the annual reports as the annual report is an important and widely used communication tool for engagement with external users. Therefore the research project is interested in the comparability and breadth of non-financial performance reporting provided in this reporting medium.

3.3. Measures of comparability

To assess comparability, two main aspects of KPI disclosure were measured:

1) *The provision of comparatives*
   Each KPI was assessed based on the extent of comparative information provided, namely 1) prior year results, 2) targets, 3) competitor scores and 4) other benchmarks. In addition to considering the use of these four types of comparative information individually, each KPI was also given a Summary

Comparability score. This is a score ranging from zero to four depending on how many types of comparatives are provided out of the above four types. For example, if a KPI is presented along with prior year results and a target, then it is awarded a Summary Comparability score of two (out of four);

2) *The breadth of non-financial KPIs presented*
The second way of assessing the comparability of KPIs is based on the range of non-financial KPIs disclosed by a company. This is a score ranging from zero to seven based on the number of main KPI categories a company reports on out of the seven main categories. For example, if Company A reports 20 non-financial KPIs in the *Environment* category and 10 KPIs in the *Employee* category, the breadth score is two (out of seven). Whereas, if Company B provides KPIs under all seven categories, the score for Company B is seven.

These two attributes of non-financial KPIs (comparatives and breadth) give indications as to the quality of the disclosure. The provision of comparative information is considered to provide the user with better information with which to interpret the KPI results. Providing KPIs across a range of relevant non-financial KPI categories is deemed to provide the user with a balanced view of how the company is performing. It is noted that the optimal number of categories covered is governed by the relevance of the KPIs to the business.

In addition to the two indicators of quality above another indicator of quality explored was the use of externally generated KPIs, such as the company's inclusion in sustainability indices. Such KPIs which are determined outside the company may be regarded as more credible by users. Further, KPIs reflecting both non-financial and financial information, such as the carbon intensity measures, defined as 'tonnes of CO_2 emissions / sales' were identified and explored.

Prior research has contemplated the meaning, measurement and effects of the quality of corporate disclosure (see for example Beattie *et al.* (2004), Wiseman (1982), Hooks and van Staden (2011) and Elzahar *et al.* (2015)). The current study extends this research into disclosure quality by focusing on the attribute of comparability and other novel quality indicators as mentioned above. Also, the current study adds to limited extant literature focusing exclusively on KPIs as opposed to evaluation of more general disclosure found in the narrative section of annual reports.

3.4. Assessing the usefulness of non-financial KPIs

Value relevance models were used to test the usefulness of non-financial KPIs by determining whether the provision of non-financial information affects the association between earnings and share price. The use of value relevance modelling to investigate the usefulness of information is well established in the accounting literature (Ohlson, 1995). Further details on prior value relevance studies informing the project are provided in Appendix 2.

3.5. Comparability over time

To assess the trends in the quantity and quality of non-financial KPIs over time, the results from a sub-sample of 100 companies were analysed for 2013 and 2016. The 100 companies were spread evenly across the five countries and five sectors.

4. Research findings

Over 4,000 non-financial KPIs (4,325) were collected from the narrative sections of the 2016 annual reports of the 200 sample companies, averaging 22 non-financial KPIs per company. One hundred and sixty eight companies (84% of the sample) disclosed non-financial KPIs in their annual reports, indicating that reporting non-financial KPIs is widespread. The following sections discuss trends in the quantity and comparability of non-financial KPI disclosures in 2016 across categories, countries and sectors. Thereafter disclosure of KPIs in 2013 and 2016 are compared. Finally, principles and examples for effective KPI disclosure are presented.

4.1. Quantity: What and how many non-financial KPIs are companies disclosing?

The following section considers overall category, country and sector trends in disclosure. The detail for each of the seven main non-financial KPI categories is presented in Appendix 1.

4.1.1. KPI categories

The KPIs recorded were organised into seven main categories based on the topics covered by the non-financial KPIs collected, guided by commonly used categories in the voluntary reporting literature, namely *Business and Innovation*, *Community and Social*, *Customer*, *Employee*, *Environment*, *Supply chain management* and *Awards and Indices*. Table 4.1 shows the number and percentage of non-financial KPIs per category, ranked from highest to lowest.

Table 4.1: *Summary of the number and percentages of non-financial KPIs by category (2016)*

Category	Number of non-financial KPIs	% of total non-financial KPIs
Employee	1,827	42%
Environment	1,294	30%
Awards and Indices	414	10%
Community and Social	340	8%
Customer	173	4%
Supply chain management	186	4%
Business and Innovation	91	2%
Total	**4,325**	**100%**

The *Employee* and *Environment* categories together account for 72 percent of KPIs recorded. The *Employee* category, representing 42 percent of non-financial KPIs, contains KPIs related to employee diversity, health and safety, board composition, employee levels, training and employee turnover. The high number of KPIs concerning *Employee* shows the importance of this stakeholder group for listed companies. In some countries, disclosure reflects mandatory disclosure requirements, such as German law (from 1 January 2016) requiring 30 percent of supervisory board positions to be held by women and disclosure of this information.

The *Environment* category (30% of non-financial KPIs) includes KPIs related to emissions, energy, waste, water, environmental compliance and paper. The focus on *Environment* is likely to be influenced by global interest in sustainable development and climate change and the operations of organisations such as the Carbon Disclosure Project and the Climate Disclosure Standards Board, who published the framework for reporting environmental information and natural capital in 2015 (CDSB, 2015). Most countries also have environmental legislation which is likely to increase the number of KPIs disclosed.

The other five categories show lower quantities of KPIs. The third highest category is *Awards and Indices* representing ten percent of total KPIs. This category reflects externally generated KPIs such as awards, accreditations, indices, rankings and affiliations. The *Community* and *Social* category, representing eight percent, covers KPIs related to donations, volunteering and community education.

The least number of KPIs fall into the *Business and Innovation*, *Customer* and *Supply chain management* categories. The *Business and Innovation* category includes non-financial KPIs related to research and development and patents. The low level of *Business and Innovation* KPIs (2%) raises questions about companies' disclosure strategies because this category would capture many operational efficiency and performance indicators which are arguably of interest to investors. However, for proprietary cost reasons companies may not want to report these internally used KPIs externally. The *Customer* category mainly relates to KPIs measuring customer satisfaction. The low level of *Customer* related KPIs (4%) may reflect the narrow focus of this category on customer satisfaction scores. The *Supply chain management* category includes KPIs concerning supplier audits and procurement. The low levels of *Supply chain management* KPIs (4%) may reflect reluctance of companies to report on non-financial performance of suppliers and other companies in the supply chain despite this being advocated by voluntary reporting guidelines such as the GRI G4 guidelines published in 2013 (GRI, 2013). Detailed discussion and examples of non-financial KPIs in the seven categories are provided in Appendix 1.

4.1.2. Country trends

Table 4.2 summarises the number of non-financial KPIs per category (columns 2 to 8) for each country for 2016.

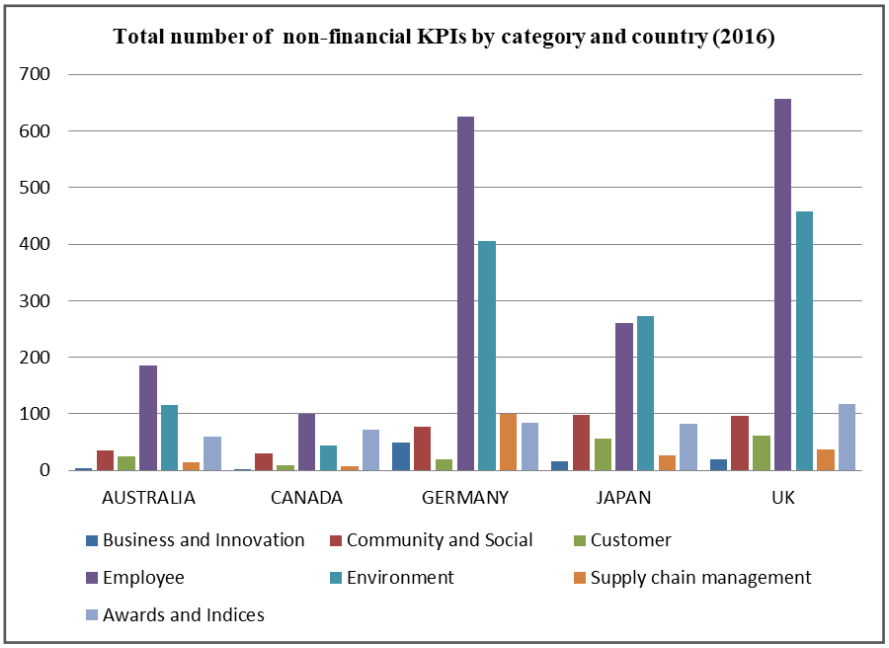
Table 4.2: *Summary of the number of non-financial KPIs by category and country (2016)*

Country (1)	Business and Innovation (2)	Community and Social (3)	Customer (4)	Employee (5)	Environment (6)	Supply chain management (7)	Awards and Indices (8)	Total KPIs (9)	Average number of KPIs per company (10)
UK	20	97	62	656	457	37	117	1,446	36
Germany	50	78	20	626	405	100	84	1,363	34
Japan	16	98	57	260	272	26	82	811	20
Australia	4	36	25	185	116	15	59	440	11
Canada	1	31	9	100	44	8	72	265	7
Total	**91**	**340**	**173**	**1,827**	**1,294**	**186**	**414**	**4,325**	**22**

As seen in column 10, companies from the UK (with an average of 36 non-financial KPIs per company) and Germany (34 KPIs per company) disclose the most non-financial KPIs in their annual report narratives, followed by companies from Japan (20 KPIs per company) and trailed by companies from Australia (11 KPIs per company) and Canada (7 KPIs per company). The variation in disclosure between countries is likely to be influenced by national mandatory and voluntary reporting requirements, legislation, stock exchange listing requirements as well as social and economic factors. It is noted that both the UK and Germany have national guidelines for the narrative in annual reports (in addition to guidelines in the non-mandatory *IFRS Practice Statement 1: Management Commentary* (IASB, 2010)). The introduction of the Strategic Report requirements in the UK for periods ending on or after 30 September 2013 may have contributed to the higher number of non-financial KPIs found in the UK annual reports. German companies' high level of non-financial KPI reporting may be influenced by the German Accounting Standard (GAS) 20 for the group management report (2012) and the EU Non-financial Reporting Directive (2014).

Figure 4.1 shows the patterns of non-financial KPI categories in each country, highlighting the prevalence of *Employee* and *Environment* categories in all countries. The *Employee* category has the highest number of KPIs for all countries except Japan where it is second. The *Environment* category is in the top two for all countries except Canada where it is third after *Awards and Indices*. The *Supply chain management* category of KPIs features more strongly in Germany than in the other countries. *Awards and Indices* feature consistently in the middle-range across all countries. Japanese companies disclose the greatest quantity of KPIs in the *Community and Social* category. The *Business and Innovation* category ranks last throughout except for Germany where the *Customer* category is the lowest.

Figure 4.1: *Number of non-financial KPIs by category and country (2016)*



4.1.3. Sector trends

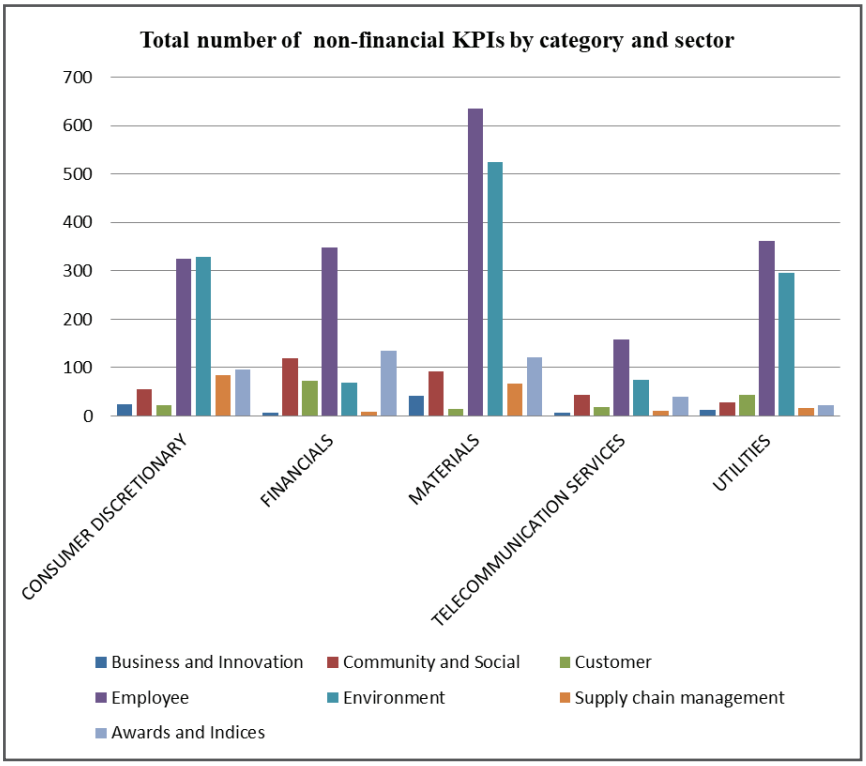
Table 4.3 summarises the average number of non-financial KPIs per company for each category for the five industry sectors. Column 11 shows that companies in the Materials sector disclosed the highest average number of KPIs per company (33 KPIs per company) in 2016. Companies from the Utilities sector averaged 22 KPIs per company, followed by Consumer Discretionary (20 KPIs per company). Lower levels of KPIs per company were found in the Financial Services sector (17 KPIs per company) and Telecommunications sector (13 per company).

Table 4.3: *Summary of the average number of non-financial KPIs per company by category and sector (2016)*

Sector (1)	Business & Innovation KPIs per company (2)	Community & Social KPIs per company (3)	Customer KPIs per company (4)	Employee KPIs per company (5)	Environment KPIs per company (6)	Supply chain management KPIs per company (7)	Awards and Indices KPIs per company (8)	Total KPIs (9)	Number of companies (10)	Average number of KPIs per company (11)
Materials	1	2	0	14	11	1	3	1,496	46	33
Utilities	0	1	1	10	8	0	1	783	36	22
Consumer Discretionary	1	1	0	7	7	2	2	938	47	20
Financial Services	0	3	2	8	2	0	3	758	45	17
Telecommunication Services	0	2	1	6	3	0	2	350	26	13
Total								4,325	200	22

Figure 4.2 shows the patterns of KPI categories across sectors. At the sector level *Employee* and *Environment* are again the top two categories, except for the Financial Services sector where *Environment* KPIs are the third lowest category. This low level of *Environment* KPIs in the Financial Services sector is expected, given the relative immateriality of direct environmental impact of their business operations. The data suggests the Financial Services sector focuses instead on the *Awards and Indices* and *Community and Social* categories, being the sector with the highest number of KPIs in these categories. *Supply chain management* KPIs are most prevalent in the Consumer Discretionary and Materials sectors and low in the Financial Services, Telecommunication Services and Utilities sectors.

Figure 4.2: *Number of non-financial KPIs by category and sector (2016)*



4.1.4. Caveat when interpreting company, country and sector results

Thirty-two companies (16 %) did not disclose non-financial KPIs in their 2016 annual report narratives. Forty-four percent of non-disclosing companies are from Canada followed by 28 percent from Australia, 22 percent from Japan and six percent from Germany. There are no non-disclosing companies from the UK. The sector analysis of non-disclosing companies shows that the highest level of non-reporting companies emanated from the Consumer Discretionary (23% of companies in this sector did not report non-financial KPIs) and Utilities (19%) sectors. In the Materials sector 13 percent of the companies did not report, while 12 percent did not report in the Telecommunication Services sector and 11 percent did not report in the Financial Services sector.

Care needs to be taken when interpreting the meaning of different quantities of non-financial KPI reporting by companies, countries and sectors to avoid erroneous conclusions. Low levels of non-financial KPIs do not necessarily imply less focus and company engagement in practices concerning non-financial issues such as Environment,

Social and Governance aspects. A low level of non-financial KPI reporting may instead be due to one or more of the following:

- *Medium of disclosure*
  Companies may choose to disclose non-financial KPIs in a medium other than the annual report narrative, such as in a stand-alone sustainability report.
- *Disclosure not meeting the KPI definition*
  Some companies recorded as having no non-financial KPIs may have disclosed non-financial information including aspirations, values or the type of KPIs they use. However, if the information provided did not meet the definition of a non-financial KPI as in section 3.2, then it was not recorded as a KPI for this project.
- *Data collection*
  While data has been carefully collected, it is possible that the method used to collect KPIs may not locate all KPIs.

4.2. Quality: Comparatives and Breadth

The previous sections and Appendix 1 discussed what and how many non-financial KPIs are disclosed by companies in the narrative section of annual reports, showing the variety of KPIs disclosed across companies, countries and sectors. The following sections provide insights relating to the quality of the KPI reporting, focusing on the comparability of the disclosure. Further, the use of externally generated KPIs is explored. Other quality considerations discussed relate to KPIs linking non-financial and financial information and the usefulness of KPIs for market participants (i.e. value relevance).

4.2.1. Comparative measures

The first comparability aspect presented assesses whether the report user is provided with context to assist in interpreting the non-financial KPI, through the provision of comparatives. The comparatives considered are 1) prior year results, 2) targets, 3) competitor scores and 4) other benchmarks. The 2016 sample company results are summarised in Table 4.4.

Table 4.4: *Summary of percentages of KPIs disclosed with comparators by category (2016)*

Category	Prior year results provided (1)	Target provided (2)	Competitor score provided (3)	Other benchmark provided (4)
Awards and Indices	11%	6%	0%	100%
Business & Innovation	36%	15%	0%	1%
Community & Social	20%	8%	0%	0%
Customer	42%	23%	2%	5%
Employee	39%	18%	0%	3%
Environment	53%	23%	0%	2%
Supply chain management	31%	23%	0%	2%
Total	**39%**	**18%**	**0%**	**12%**

Column 1 shows that 39 percent of the KPIs reported in 2016 are presented together with prior year results. Prior year results are most frequently presented with KPIs in the *Environment* category (where 53 percent of KPIs are presented together with prior year results) and *Customer* category (42%). It is noted that as non-financial reporting evolves, prior year results may not always be available (new information is developed, or previously reported information is determined to be irrelevant). As seen in Column 2 it is surprising that only 18 percent of the non-financial KPIs are presented in relation to a target which would improve the information content of the KPI. KPIs most commonly presented together with a target arise from the *Environment* (23%), *Supply chain management* (23%) and *Customer* (23%) categories. The provision of competitor scores is very uncommon, with only ten KPIs (0%) providing this comparator in Column 3. The category of KPIs providing this comparator is the *Customer* category where competitor customer satisfaction scores may be provided. The "Other benchmark" category shown in column 4 mainly includes KPIs which by nature represent a comparison to other companies, such as rankings and awards. Hence the *Awards and Indices* category KPIs all encompassed this comparator.

Table 4.5 shows the country analysis. Column 1 shows that KPIs are most likely to be disclosed together with prior year results for companies from Japan (48% of KPIs are disclosed together with prior year results), Germany (41%) and the UK (39%). Companies from Australia are the most likely to disclose targets along with their KPIs; 24 percent of the 2016 non-financial KPIs are disclosed with a target. Provision of competitor scores is low in all countries. The use of other benchmarks is driven by the *Awards and Indices* where the category is most used by companies from Canada where 29 percent of KPIs have this characteristic.

Table 4.5: *Summary of percentages of KPIs disclosed with comparators by country (2016)*

Country	Prior year results provided (1)	Target provided (2)	Competitor score provided (3)	Other benchmark provided (4)
Australia	28%	24%	0%	17%
Canada	17%	17%	1%	29%
Germany	41%	17%	0%	7%
Japan	48%	20%	0%	13%
UK	39%	16%	0%	10%
Total	**39%**	**18%**	**0%**	**12%**

Table 4.6 provides the sector analysis. Column 1 shows that the Utilities sector provides prior year results for 45 percent of KPIs disclosed, followed by the Financial Services sector where 41 percent of KPIs are presented together with prior year results. Column 2 shows that all sectors (except Utilities) are similar in providing targets (around 19% of KPIs are disclosed with a target); for utilities, only 14 percent of KPIs are presented together with a target. Column 3 indicates the low disclosure of competitor scores across all sectors. The other benchmark score reflects the use of the *Awards and Indices* category.

Table 4.6: *Summary of percentages of KPIs disclosed with comparators by sector (2016)*

Sector	Prior year results provided (1)	Target provided (2)	Competitor score provided (3)	Other benchmark provided (4)
Consumer Discretionary	38%	19%	0%	12%
Financial Services	41%	19%	0%	21%
Materials	36%	19%	0%	10%
Telecommunication Services	40%	20%	1%	13%
Utilities	45%	14%	0%	5%
Total	**39%**	**18%**	**0%**	**12%**

Another feature of the data was that 65 percent of KPIs were presented with a definition, which may be considered essential for interpretation by users especially for more complex KPIs, such as carbon intensity. The fact that 35 percent of KPIs are presented without a definition points to an area where practice needs to improve.

Summary Comparability scores

The four comparability aspects in columns (1) to (4) of Tables 4.4, 4.5 and 4.6 were summed to form a Summary Comparability score for each KPI. For details of the computations refer to section 3.3. The Summary Comparability score is associated with the quantity of KPIs because of the way it is computed. Therefore it is useful to use the average score per KPI when comparing across categories, countries and sectors.

Table 4.7 shows the average Summary Comparability scores per KPI by category from highest to lowest. Column 3 shows that on average less than one (0.69) type of comparator (prior year results, target, competitor score or other benchmark) is provided per KPI. The most comparative information per KPI was provided for KPIs in the *Awards and Indices* category (with an average of 1.2 types of comparators per KPI), followed by *Environment* (0.78) and *Customer* (0.71) categories. The category of KPIs with the least comparative information per KPI was the *Community and Social* category (0.29).

Table 4.7: *Analysis of average Summary Comparability scores per KPI by category (2016)*

Category	Summary comparability score total (1)	Number of non-financial KPIs (2)	Average Summary Comparability score per KPI (3) = (1)/(2)
Awards and Indices	496	414	1.20[1]
Environment	1,014	1,294	0.78
Customer	123	173	0.71
Employee	1,108	1,827	0.61
Supply chain management	104	186	0.56
Business & Innovation	48	91	0.53
Community & Social	97	340	0.29
Total	**2,990**	**4,325**	**0.69**

[1] It is noted that the *Awards and Indices* average summary comparability score per KPI will be greater than 1 by definition, since all KPIs in the category are by nature comparators.

Table 4.8 shows the average Summary Comparability scores per KPI by country (2016) from highest to lowest.

Table 4.8: *Analysis of average Summary Comparability scores per KPI by country (2016)*

Country	Summary comparability score total (1)	Number of non-financial KPIs (2)	Average Summary Comparability score per KPI (3) = (1)/(2)
Japan	654	811	0.81
Australia	306	440	0.70
Germany	907	1,363	0.67
UK	953	1,446	0.66
Canada	170	265	0.64
Total	**2,990**	**4,325**	**0.69**

It is interesting to note in Table 4.8 that the amount of comparative information per KPI is similar across countries, with the most comparative information per KPI provided by companies from Japan (0.81 comparators per KPI on average), followed by Australia (0.70) and Germany (0.67).

Table 4.9 shows the sector comparison of Summary Comparability scores per KPI showing similar amounts of comparative information per KPI across sectors. The Financial Services sector shows the most comparative information per KPI, followed by the Telecommunication Services and Consumer Discretionary sectors.

Table 4.9: *Analysis of average Summary Comparability scores per KPI by sector (2016)*

Sector	Summary comparability score total (1)	Number of non-financial KPIs (2)	Average Summary Comparability score per KPI (3) = (1)/(2)
Financial Services	609	758	0.80
Telecommunication Services	257	350	0.73
Consumer Discretionary	657	938	0.70
Materials	969	1,496	0.65
Utilities	498	783	0.64
Total	**2,990**	**4,325**	**0.69**

4.2.2. Breadth measures

The second way of assessing the comparability of KPIs is based on the range of non-financial KPIs disclosed by a company as discussed in section 3.3. Table 4.10 summarises the breadth scores for the 200 companies in 2016.

Table 4.10: *Breadth of disclosure across non-financial KPI categories (2016)*

Number of categories covered (0-7) (1)	% companies (2)	Cumulative percent (3)
7	3%	3%
6	10%	13%
5	12%	25%
4	18%	43%
3	12%	55%
2	16%	71%
1	13%	84%
0	16%	100%

Only three percent of companies disclosed KPIs in all seven categories in 2016. Column 3 shows a cumulative 43 percent of companies report on four or more categories which may be considered to provide a wide spectrum of KPIs for a user to assess the main non-financial performance areas relevant to a particular company.

The country analysis in Table 4.11 reveals that companies from the UK cover more than four non-financial KPI categories on average. Companies from Germany and Japan provide KPIs from three KPI categories on average while companies from Australia cover only two categories and Canada one category on average.

Table 4.11: *Average breadth score per company by country (2016)*

Country	Average breadth score per company (out of 7 categories)
UK	4.6
Germany	3.1
Japan	3.1
Australia	2.4
Canada	1.5
Total	**2.9**

Sector analysis in Table 4.12 shows that the Materials sector scores highest, followed by Telecommunication Services and Consumer Discretionary.

Table 4.12: *Average breadth score per company by sector (2016)*

Sector	Average breadth score per company (out of 7 categories)
Materials	3.2
Telecommunication services	3.1
Consumer Discretionary	2.9
Financial Services	2.8
Utilities	2.6
Total	**2.9**

4.2.3. Externally generated measures

An alternative way of assessing quality relates to the source of the measure, where externally determined non-financial KPIs may be seen as more credible or reliable than self-reported measures. This score measures the number of non-financial KPIs determined by organisations external to the company, such as external awards, accreditations, indices and affiliations disclosed by the company. These KPIs fall into the *Awards and Indices* category (see Appendix 1 for more detail). This third ranked category accounts for 10 percent of the non-financial KPIs recorded. The subcategory with the most KPIs is *Awards*, followed by *Indices*, *Accreditations*, *Affiliations* and lastly *Rankings*.

The usefulness of these KPIs often depends on the award or index granting organisations' reputation. For example, one could argue that winning a local award for "Employer of the month" gives less assurance to the user than being ranked first in the Dow Jones Sustainability Index for a sector. These KPIs may prove useful in areas where users are not experts and struggle to interpret other KPIs presented, such as many technical *Environment* KPIs. The number of organisations providing rankings, accreditations and indices is growing, as illustrated by a global survey of managers conducted by the MIT Sloan Management Review which states that "fifty thousand companies are annually subject to ESG evaluations by 150 ratings systems on approximately 10,000 performance metrics" (MIT, 2016, p.11). Comparability for users is improved if companies are ranked on the same system rather than a range of systems.

Country analysis of *Awards and Indices* shows that companies from the UK report the most KPIs from this category and that all countries make substantial use of this category of non-financial KPIs. Sector analysis shows the Financial Services sector has the highest average *Awards and Indices* KPIs per company, followed by Materials and Consumer Discretionary sectors. The Telecommunications and Utilities sectors reflect the lowest average number of KPIs per company for this category.

4.2.4. KPIs linking financial and non-financial information

Table 4.13 provides examples of KPIs recorded which link non-financial and financial information, representing four percent of overall KPIs collected in the study for 2016.

Table 4.13: *KPIs linking non-financial and financial information (2016)*

Category	Examples	Number of non-financial KPIs
Business & Innovation	• Gross research & development expenditure / sales • Sustainable adjusted R&D intensity	6
Community & Social	• Amount equivalent of hours of community investment • Community investment as a percentage of pre-tax profits - Group (%)	3
Environment	• Amount of recycled waste per turnover • Carbon footprint per employee • CO_2 emissions intensity • Energy consumption intensity • GHG emissions intensity • Water intensity ratio (% change)	140
Supply chain management	Raw material spend represented by suppliers audited (%)	3
Total		**152**

4.2.5. Value relevance models

The usefulness of non-financial disclosure is explored using value relevance models. For companies providing better quality non-financial disclosures, this information is expected to be reflected in share price. The prediction is that financial information is less value relevant for entities providing more and high quality non-financial information compared to other entities. This prediction is tested using models based on Ohlson (1995) by investigating the association of financial and non-financial data with share price.

The accounting and financial market data from the CapitalIQ database (as reported) is used for the following analysis. The initial sample comprises the 200 companies from the 2016 sample, excluding one company where the accounting data for the company could not be located in the database. Table 4.14 provides summary statistics of the companies in the sample from 2016. As noted in prior sections, the majority of the sample companies (n = 168) provided non-financial KPIs. There are no statistically significant differences in the share prices (*SP_3mth*), earnings per share (*EPS*) and book value of equity per share (*BVE*) between the two groups. However, companies with non-financial KPIs are, on average, larger in size (*MktCap*), possibly because they have the resources (i.e. teams and systems) available to compile the information.

Table 4.14: *Comparison of companies with non-financial KPIs versus those without (2016)*

Variable	Without non-financial KPIs	With non-financial KPIs	*t*-test
n	31	168	
SP_3mth	30.790	30.648	0.017
MktCap	11,093	23,616	-2.039 **
EPS	1.526	1.262	0.528
BVE	17.281	16.779	0.110
** indicates a 5% level of significance			

In Table A2.1 (see Appendix 2), the summary statistics are presented for groups partitioned on (1) the number of non-financial KPIs, (2) the provision of comparatives, (3) the breadth of non-financial KPIs presented, and (4) the use of externally generated KPIs. The median of the measures is used in each country to partition the 40 companies in each country into two groups: (1) high disclosure or quality, and (2) low disclosure or quality. The results in Table A2.1 show that companies that report across more non-financial KPIs categories or use more externally generated KPIs are on average larger in size. It is also noted that the share prices of companies with more breadth in their reporting are higher than companies with less breadth.

The results of the value relevance models are presented in Table A2.2 (see Appendix 2). Consistent with prior studies, it is found that earnings (*EPS*) and book value of equity (*BVE*) are strongly associated with share price at three months after the financial year end (see Panel A). However, no differences were found in the association between earnings and share price for companies with and without non-financial KPI disclosures. Also, no differences were observed in the association between earnings and share price for companies partitioned based on the extent of use and quality of the non-financial KPIs (see Panel B). Interestingly, the association between book value of equity and share price are lower for companies with poor quality non-financial KPI disclosures. This finding appears to differ from Baboukardos and Rimmel (2016), where the association between price and book value of equity is found to be weaker for companies with better ESG performance. However, it is important to note that the two studies differ in that this study examined the quality of the disclosure whereas Baboukardos and Rimmel (2016) examined ESG performance. In addition, the analysis in this study is limited by the number of observations in the sample. Also, the effect of non-financial performance on price is not modelled due to the wide variation in the non-financial KPIs reported by companies.[2] These results only provide a preliminary indication. A deeper understanding would require additional data collection, including data from more companies without non-financial KPIs.

[2] It is noted that the GRI standards are not targeted at investment or financial decision making but rather the impact the company has on the environment and society. It is important to bear this in mind when assessing the effect of non-financial KPIs on share prices.

4.3. Trends in non-financial KPIs over time

The following sections explore the trends in 2013 compared to 2016 in the quantity and comparability of non-financial KPIs for a subsample of 100 companies (evenly spread across countries and sectors). The data shows a decrease in the quantity of non-financial KPIs reported in annual reports, but fairly stable comparability scores per KPI in 2013 and 2016.

4.3.1. Trends in quantity of non-financial KPIs over time

The subsample data indicates an overall decrease (40%) in the quantity of non-financial KPIs in 2016 compared to 2013, from 3,402 in 2013 to 2,051 KPIs in 2016. This result is surprising given the increase in disclosure requirements and guidelines relating to non-financial issues. Review of the annual reports of ten companies showing a marked decrease in the number of KPIs reported in 2016 compared to 2013 revealed possible reasons for the decline, including the following:

- Changing from an annual report in 2013 to an Integrated Report in 2016, which may have reduced the number of KPIs because companies focused on material non-financial KPIs relevant to shareholders' investment decisions;
- Changing from an annual report in 2013 to an annual report plus stand-alone sustainability report in 2016, which may have resulted in some non-financial KPIs disclosed in the sustainability report instead of annual report (recall that the data in this report is collected from annual reports, see section 3.2); and
- Increasing the use of online reporting of non-financial disclosures in 2016 compared to 2013, thereby reducing the number of non-financial KPIs reported in the annual report.

The above observations of reporting practice point to the lack of comparability of non-financial information in the annual reports arising from companies' choices about where to disclose non-financial information.

Table 4.15 shows the decrease in the number of KPIs by category (Panel A), country (Panel B) and sector (Panel C) for the 100 subsample companies (n=100). Panel A indicates a decrease in the number of non-financial KPIs across all seven main categories in 2016 compared to 2013. The largest decrease occurred in the *Business and Innovation* category (54%) and the lowest in the *Customer* category (21%).

Table 4.15: *Change over time in the number of non-financial KPIs (n=100)*

Panel A: Categories			
	Total number of non-financial KPIs 2013	Total number of non-financial KPIs 2016	Change (%)
Business and Innovation	97	45	-54%
Environment	1,084	596	-45%
Employee	1,391	809	-42%
Community and Social	267	181	-32%
Awards and Indices	265	187	-29%
Supply chain management	186	145	-22%
Customer	112	88	-21%
Total	**3,402**	**2,051**	**-40%**
Panel B: Countries			
Japan	682	359	-47%
Germany	1,241	699	-44%
Canada	198	121	-39%
Australia	272	172	-37%
UK	1,009	700	-31%
Total	**3,402**	**2,051**	**-40%**
Panel C: Sectors			
Financial Services	631	304	-52%
Consumer Discretionary	778	387	-50%
Telecommunication Services	492	278	-43%
Utilities	647	415	-36%
Materials	854	667	-22%
Total	**3,402**	**2,051**	**-40%**

Panel B shows that the decrease in KPIs occurred in all countries, thus reflecting changes in annual report disclosure practices in all five countries. Japan experienced the largest decrease (47%), followed by Germany (44%). The UK experienced the least decrease (31%). Panel C shows the decrease in number of non-financial KPIs occurred in all sectors. The largest decrease occurred in the Financial Services sector (52%) followed by Consumer Discretionary (50%). The lowest decrease occurred in the Materials sector (22%).

4.3.2. Trends in quality measures over time

The following sections consider trends in three quality measures used in this report in 2013 and 2016.

Trends in comparative measures

Table 4.16 shows the changes in quantity, Total Summary Comparability scores and average Summary Comparability score per KPI in 2013 and 2016 for the subsample of 100 companies. The average Summary Comparability score indicates that the number of comparator types (prior year results, target, competitor score or other benchmark) provided per KPI was less than one in 2013 and 2016. Although the number of KPIs and the total Summary Comparability score have reduced over time (by 40% and 37%, respectively), the average Summary Comparability score per KPI increased by five percent over the period. This suggests that while the number of non-financial KPIs disclosed has decreased, quality in terms of the provision of comparability measures per KPI has improved slightly.

Table 4.16: *Comparison of comparability over time (n=100)*

	2013	2016	Change
Total number of KPIs	3,402	2,051	-40%
Total Summary Comparability scores	2,388	1,515	-37%
Average Summary Comparability score per KPI	0.70	0.74	5%

Table 4.17 compares the average Summary Comparability score per KPI across categories (Panel A), countries (Panel B) and sectors (Panel C). Panel A shows small improvements and deteriorations in comparability information per KPI for the seven categories between 2013 and 2016. Panel B shows an improvement in the average number of comparator types per KPI in all countries from 2013 to 2016. Panel C indicates small improvements and deteriorations for the various sectors.

Table 4.17: *Comparison of average Summary Comparability scores over time (n=100)*

Panel A: Categories		
	Average Summary Comparability score per KPI	
	2013	2016
Awards and Indices	1.26	1.23
Customer	0.93	0.84
Supply chain management	0.79	0.59
Environment	0.75	0.87
Employee	0.59	0.64
Business and Innovation	0.57	0.56
Community and Social	0.42	0.38
Total	**0.70**	**0.74**
Panel B: Countries		
Japan	0.74	0.81
Germany	0.72	0.74
Canada	0.70	0.90
UK	0.67	0.67
Australia	0.65	0.71
Total	**0.70**	**0.74**
Panel C: Sectors		
Financial Services	0.84	0.83
Utilities	0.75	0.67
Consumer Discretionary	0.70	0.82
Telecommunication Services	0.63	0.78
Materials	0.60	0.68
Total	**0.70**	**0.74**

Trends in breadth measures

Table 4.18 shows that the number of categories covered (breadth) by companies in 2016 is similar to 2013.

Table 4.18: *Change over time in the breadth measure (n=100)*

Number of categories covered by non-financial KPIs	Number of companies (out of 100 sample companies)	
	2013	2016
0	14	13
1	13	15
2	18	17
3	7	11
4	15	16
5	14	14
6	10	12
7	9	2
Total	**100**	**100**

Table 4.19 shows the country analysis (Panel A) and sector analysis (Panel B) of the average number of categories covered by companies over time. Panel A indicates that the category coverage for each country in 2016 is similar to 2013. The ranking of countries has stayed the same over the period, with companies from the UK scoring the highest in breadth, and companies from Canada the lowest. Panel B shows similar ranking of sectors over the period, except for Consumer Discretionary and Utilities which changed rankings as the two lowest sectors.

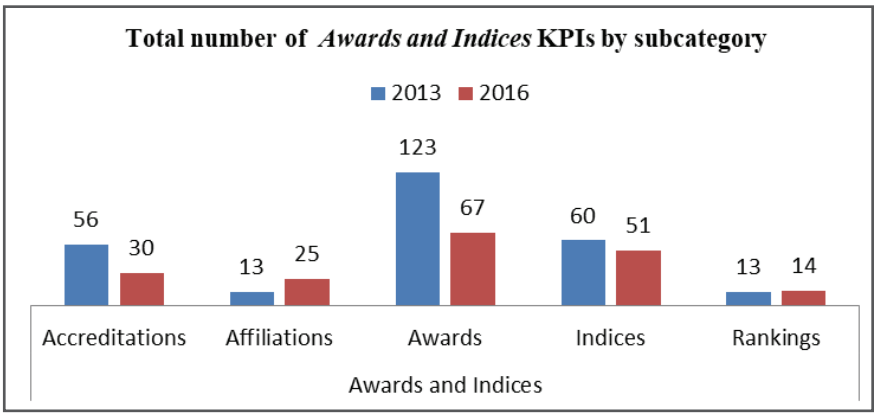
Table 4.19: *Change over time in average breadth scores per company (n=100)*

Panel A: Countries		
	Average number of categories per company	
	2013	2016
UK	5.3	4.6
Germany	3.7	3.3
Japan	3.0	3.3
Australia	2.3	2.0
Canada	2.0	1.9
Total	**3.2**	**3.0**
Panel B: Sectors		
Materials	3.4	3.2
Telecommunication Services	3.4	3.2
Financial Services	3.1	3.0
Consumer Discretionary	3.1	2.9
Utilities	3.2	2.8
Total	**3.2**	**3.0**

Trends in externally generated measures

Figure 4.3 shows a decrease from 2013 to 2016 across all categories of *Awards and Indices* except for *Affiliations* and *Rankings*.

Figure 4.3: *Change over time in* Awards and Indices *subcategories (n=100)*



Overall

The comparison of 2016 and 2013 data shows a marked reduction in quantity of non-financial KPIs in the annual reports, but a five percent increase in the average Summary Comparability score per KPI. The breadth score decreased from an average of 3.2 to 3.0 categories per company. The number of externally generated non-financial KPIs decreased over the period. Importantly, the reduction in quantity of non-financial KPIs in the annual reports in 2016 exacerbates the lack of comparability of non-financial KPIs disclosed. However, it is encouraging that the provision of comparative information at the individual KPI level appears to have increased slightly over the period.

4.4. Principles of best (and worst) practice

This section provides further insights into principles of best practice using examples from the data of this study. Practices hindering comparability of non-financial KPIs in annual reports are also highlighted.

4.4.1. Principles of best practice

The following principles and examples of best practice in non-financial KPI reporting emanated from the data.

a) Presentation

Use of section headings

The use of section headers such as "Non-financial key performance indicators" makes it easier for the user to locate and identify important non-financial KPIs.

Example: ANZ Ltd (Australia) (2016) has a specific section headed "Non-financial key performance metrics", which makes it clear which non-financial metrics are important to the company.

Use of tabular format and summaries

Some companies use a tabular format to present non-financial KPIs. Sometimes the table deals with separate categories, for example a table for *Environment* and another for *Community*. Other companies present a single table of non-financial KPIs. Summary tables covering multiple categories are useful because they show the user the range of KPI categories relevant to the company. Some companies provide a five year summary of non-financial KPIs.

Example: Potash Corporation of Saskatchewan Inc. (Canada) (2016) provides a clear and understandable tabular format. A summary table is presented directly after the financial data summary under the heading "Non-financial data". Clear subheadings are provided (customers, community, employees, safety and environment) and 11 years of data are presented. Footnotes are used to explain how KPIs are computed and terms are explained in a section denoted "Non-financial terms" (directly after "financial terms").

Non-financial KPIs presented together with financial performance sections

Presenting non-financial KPIs in close proximity to financial KPIs lends importance to the non-financial KPIs and assists the user in interpreting the non-financial KPIs within the context of the financial KPIs.

Example: Nomura Holdings Inc. (Japan) (2016) provide a five year summary of non-financial KPIs, in tabular format, after the financial summary, with a heading "CSR Key facts" and subheadings with KPIs clearly showing the units and the definition of the KPIs.

b) Provision of comparatives

Many companies present current year KPIs with comparatives which assists comparability across companies and years.

c) Inclusion of non-financial KPIs in remuneration contracts

Some companies explain how non-financial KPIs are used in the remuneration contracts, pointing to the importance to the company of managing these KPIs. However, in many instances there is a lack of detail about the KPIs in remuneration contracts, such as definitions and results.

Example: ANZ Ltd (Australia) (2016) state in the remuneration report section: "The Group uses a number of non-financial measures to assess performance. These metrics form part of the balanced scorecard used to measure performance in relation to the Group's main incentive programs."

d) Use of more sophisticated non-financial KPIs

Some companies use ratios to make the KPIs more relevant and trend analysis more understandable. This takes into account the effect of differences in size, such as size of company, level of production and number of employees. For example, the absolute amount of carbon emissions in isolation or as a trend over time is a simple measure. A more sophisticated and potentially more useful measure is "Carbon emissions intensity" which is the ratio of carbon emissions to revenue. The intensity ratio takes into consideration that larger companies and greater operational activities (as proxied by revenue) are likely to be related to higher carbon emissions enabling users to better interpret whether the company is improving their carbon emissions, given changes in the level of business activities. Such a ratio is analogous to the financial KPIs such as return on assets or return on equity which are more useful to users than returns or

amount of assets in isolation. Another more useful KPI is the ratio of donations to profits, showing the proportion of donations in relation to profit, providing the user with a more informative measure.

Examples: AMC 2016:

- Greenhouse gas emission intensity (ratio of GHG emissions divided by revenue)
- Energy consumption per unit of production

e) Use of externally generated KPIs

Some companies use external indicators to communicate their non-financial performance, for example in the *Awards and Indices* category. In the example from Compass 2016 below, the company presents the icons of various external organisations that they are members of (such as the Dow Jones Sustainability Indices) or support (such as the UN Global Compact).

Example: Compass 2016 (UK) p.32

f) Balance of favourable and unfavourable performance indicators

Some companies show balance in their reporting of both favourable and unfavourable performance which could generate more credibility with users and improve comparability over time.

Example: Volkswagen (2016) list the indices in which they were no longer included, compared to prior years before the emissions scandal (BBC, 2015); thus reporting practice is more balanced than if the company did not report on this KPI.

g) Conciseness

Some companies communicate their non-financial performance concisely whereas other companies report the same information in a less structured and more verbose style.

Example: ENBW Energie Baden-Wurttemberg AG (Germany) (2016) demonstrate conciseness by eliminating repetition and avoiding scattering KPIs throughout the text. In contrast, Lanxess AG (Germany) 2016 provide many high quality KPIs and useful summary tables, however there is much repetition of KPIs throughout the report.

h) Independent assurance

Some companies specify which KPIs are externally assured, giving further validity to the KPI.

Example: Nomura Holdings Inc. (Japan) (2016) provide a five year summary of non-financial KPIs indicating which KPIs have undergone independent assurance.

i) Explaining the reasons for choosing non-financial KPIs disclosed

Some companies give the reason for the KPI disclosure, such as the relevant legislation or regulation in terms of which they are reporting. This adds context enabling the user to interpret the KPI.

Example: Deutche Bank Aktiengellschaft (2016) explain that their "percentage of women on the supervisory board is 35%" and go on to explain that "the statutory minimum of 30% pursuant to Section 96 (2) of the German Stock Corporation Act (AktG) is thereby fulfilled."

j) Balancing quality and quantity

A key issue is whether there is an optimal relationship between quantity and quality of KPIs. For example, if a company discloses 50 non-financial KPIs, are they providing more or less useful information than a company that only reports on five KPIs which are used to manage their operations, such as through their use as targets in remuneration contracts?

Example: Puma (2016) present a vast number of non-financial KPIs, including an innovative environmental profit and loss statement, but do not use any of these measures directly in their remuneration report performance measures.

k) Providing performance measures not aspirations

Many companies explain their values, aspirations and targets in relation to non-financial KPIs without actually presenting results using measurable KPIs. In best practice examples, non-financial KPIs are clearly disclosed and the intention of the measure is discussed along with its relevance to tracking performance

Example: In the 2016 Lanxess AG annual report (p.82) the importance of sustainable waste management for the company is explained, followed by a graph tracking performance of KPIs over five years. In contrast, Shin-Etsu Chemical Co Ltd 2016 annual report states in terms of waste elimination that the group "promoted initiatives aimed at achieving zero waste emissions" (p.25), however no results were provided in the annual report.

4.4.2. Impediments to greater comparability

In addition to the principles of effective disclosure noted above, there are several issues which further limit comparability highlighted by the data:

- *Different names for the same KPIs*
  Some similar non-financial KPIs are called different names by different companies making comparability more difficult.

- *Subtle differences in KPIs*
  Some KPIs are similar but not the same between companies. For example, while Company A and Company B may both give KPIs relating to the age of employees, Company A may use "Under 30 years old" while Company B may use "Under 29 years old". These subtle differences make intercompany comparisons more difficult.
- *Diverse measurement bases and reporting boundaries*
  Some companies explain measurement bases and state the companies within the group included in the computation of non-financial KPIs. In other cases companies do not disclose the measurement bases nor reporting boundaries used.
- *Different reporting media over time*
  As shown in the analysis of non-financial KPIs in 2013 and 2016, some companies change where they disclose non-financial KPIs over time, such as in a separate sustainability report or online instead of in the annual report. Users may find it difficult to locate and compare data.

5. Recommendations and policy implications

The project highlighted the large quantity of diverse non-financial KPIs disclosed in the narrative section of annual reports, reflecting a range of different formats, content and quality. At present, this variety makes comparability challenging across companies, countries, sectors and time. The project also provided principles of best practice disclosure, which can be adopted by companies and lead to immediate improvements in comparability and therefore usefulness of KPIs for users.

5.1. Recommendations

Based on the findings of this study the recommendations for companies disclosing non-financial KPIs in the narrative section of annual reports are summarised as follows:

- *Non-financial policy statement*
  Disclose the company's approach to non-financial reporting including the reporting media used, the target audience, materiality considerations, reporting boundary decisions and measurement bases.
- *Presentation*
  Use headings such as "Non-financial performance indicators" and tabular format to increase clarity of disclosure for users.
- *Comparative information*
  Include the targets and prior year comparatives to allow the user to better interpret trends in performance. If a KPI is new, explain that this is why data is not presented for prior years. If a KPI is no longer relevant, state that a prior year KPI is no longer reported this year and give the reason why.
- *Use more sophisticated KPIs*
  Where possible use measures that increase comparability over time and companies, such as measures combining financial and non-financial aspects like carbon intensity ratios.

- *Explain why KPIs are presented*
  Give reasons why the company includes the KPI, such as the business implications, and state if a KPI is presented in terms of legislation or regulations.
- *Question quantity versus quality*
  A balance needs to be reached between presenting multiple disjointed KPIs versus fewer but better explained KPIs. Focus on disclosing non-financial KPIs which link back to strategy and risks identified in other parts of the annual report.
- *Use graphical displays*
  Graphics may make it easier for the user to interpret trends over time.
- *Include externally generated non-financial KPIs*
  KPIs such as awards and inclusion in sustainability indices provide credibility to supplement internally generated measures.
- *Consider inclusion of non-financial KPIs in remuneration contracts*
  Inclusion of non-financial KPIs in remuneration contracts may demonstrate that non-financial performance is important to the company.
- *Obtain audit or other assurance*
  External assurance of non-financial KPI data may lend more credibility to KPIs.
- *Give balanced reporting*
  Provide balanced reporting by disclosing both positive and negative KPIs.

5.2. Policy implications

The project has highlighted the need for measures to increase comparability and usefulness of non-financial KPI reporting in the narrative section of annual reports. The great variety of formats, KPIs and the inconsistent disclosure of measurement bases and comparative information suggest that further guidance about non-financial performance measures is required to achieve improvements in reporting. The specialised and evolving nature of various aspects of non-financial information means that it is not possible to prescribe the full content of non-financial KPIs in an annual report. Therefore principles-based guidance, that can be enhanced by local jurisdictions as required, is recommended. Given the international connections of companies and markets, a set of guiding principles to be used by companies throughout the world from an international umbrella organisation could lead to increased comparability of non-financial KPI reporting in annual reports.

Importantly, this framework must be supported by efforts of national regulators, standard setters, industry and professional groups to promote and achieve best practice in reporting and disclosure. The development of a principles-based international framework based on greater dialogue between mandatory and voluntary standard setters, institutions determining accreditations and sustainability indices, and other stakeholders is recommended. Such a framework is necessary to bring about better streamlining, more comparability and consequently greater usefulness of non-financial KPI disclosure in annual reports over time.

5.3. Limitations and directions for future research

The current project has some limitations. The data collection method developed in the project has the possibility of certain non-financial KPIs not being captured. Further, it is acknowledged that there are other ways of scoring comparability and usefulness, beyond the measures investigated in this project. For example, an important aspect of usefulness may be the extent to which KPIs relate to company strategies.

A key area for further research, arising from the current project findings of a decreasing number of non-financial KPIs in annual reports from 2013 to 2016, is to explore companies' choices regarding the medium for non-financial KPI reporting, such as online, stand-alone sustainability reports and/or annual reports. It is imperative that standard setters and other stakeholders gain a holistic understanding of the full suite of non-financial KPI reporting across the multiple reporting outlets to develop policy regarding non-financial performance disclosure specific to annual reports. Future research could also analyse the use of externally provided non-financial KPIs (in the *Awards and Indices* category) in more depth, by researching the methods used by the external organisations to include companies in indices, awards and certifications. The reasons for the low number of *Customer*, *Supply chain management* and *Business and Innovation* non-financial KPIs warrant further investigation, given their importance to business sustainability. Further, future studies could investigate the use and disclosure of non-financial KPIs in remuneration contracts, which represents an important non-financial and financial performance management tool.

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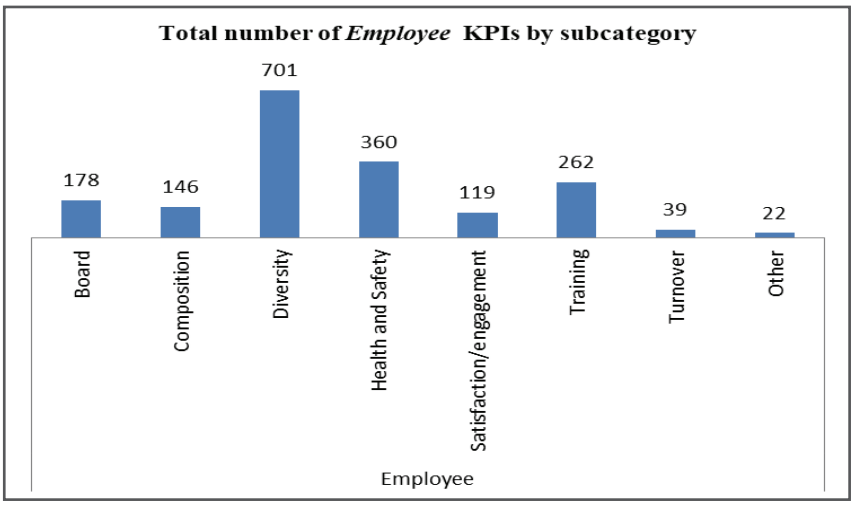
Appendix 1: Digging deeper - Detailed analysis of non-financial KPI categories (2016)

The following sections discuss each of the seven main non-financial KPI categories in Table 4.1 in more detail. The subcategories are based on the topics covered by the KPIs collected.

Employee

This category represents the most frequently disclosed non-financial KPI, accounting for 42 percent of the non-financial KPIs collected. Figure A1 shows the subcategories of *Employee*.

Figure A1: *Number of* Employee *KPIs by subcategory (2016)*



The figure shows that the largest subcategory is *Diversity*, followed by *Health and Safety* and *Training*. Fewer KPIs are reported relating to *Board, Composition of employees*, *Satisfaction/engagement* and *Employee turnover*. To better understand the type of KPIs in each subcategory, Table A1 provides examples of KPIs in each subcategory. The examples show the range of non-financial KPIs reported.

Table A1: *Examples of* Employee *non-financial KPIs (2016)*

Categories	Examples	Number of non-financial KPIs
Board		**178**
Gender	• Females on the Board (%) • Number of males on the executive management board	124
Composition of employees	• Executive directors (%) • Number of board members	16
Other	• Number of Board meetings held • Board member aged 46-50 years • Board of directors attendance rate (%)	21
Tenure	• Directors with tenure of 7-10+ years (%)	17
Composition of employees		**146**
Contract type	• Number of part-time employees	29
Education level	• Employees with a PhD qualification (%)	8
Hiring	• Internal hiring (%) • Number of new employees	27
Length of service	• Average employee length of service • Employees' years of service: >20 years (%)	17
Level	• Managers - 1st level below the Board of Management • Number of engineers	21
Number	• Number of employees - % change	44
Diversity		**701**
Age	• Employees aged <26 years (%) • Employees aged 17-29 years (%)	44
Country	• Employees based internationally (%) • Local employees (%)	89
Disability	• Number of employees with disabilities	15
Gender	• Average employee length of service – female • Female employees (%) • Female managers (%) • Female senior managers (%) • Number of new female employees aged 40-49 years • Percentage staff turnover resulting from voluntary resignation - males (by location and in total) (including reduction programme)	525
Other	• Number of Diversity Days activities held	12
Race	• Ethnic minority full-time employees (%)	16

Health and Safety		**360**
Accidents	• Accident frequency rate • Number of fatal accidents	82
Audit	• Number of hazardous work audits performed	14
Other	• Amount spent on occupational health and safety • Sickness absence rate	30
Incidents	• Number of incidents reported (% change) • Total Recordable Cases Frequency Rate	26
Injuries	• Lost Time Injury Frequency Rate • Total Recordable Injury Frequency rate	122
Leave	• Number of employees taking childcare leave	16
Participation	• Employee participation in Health and Wellbeing program (%)	18
Prevention	• Number of staff trained in Alert Driver • Hours of safety training - contractors	52
Satisfaction/ engagement		**119**
Employee disclosure	• Number of Hotline enquiries received relating to labour concerns particularly salaries • Number of speak up reports relating to discrimination or harassment	29
Other	• Minimum wages	11
Survey	• Employee engagement score (%) • Employee Net Promoter Score	79
Training		**262**
Apprentices	• Number of apprentices	35
Other	• Amount invested in training • Number of interns • Number of trainees	31
Hours	• Average number of annual training hours per employee	31
Participation	• Cumulative number of employees who have completed training • Number of employees trained on anti-corruption	165
Employee turnover		**39**
Rate	• Annual employee turnover rate (%)	23
Other	• High performance retention (%)	4
Voluntary	• Voluntary employee turnover (%)	12
Other		**22**
Productivity	• Labour efficiency	10
Compliance	• Amount of fines payable due to health and safety	12
Total		**1827**

The examples in Table A1 show the KPIs in the *Employee* category are generally easy to understand and self-explanatory. There is a fairly high level of consistency of the terms used between companies, such as "Total Recordable Injury Frequency Rate" which may suggest the role played by legislation in this category. However, there are small differences in similar KPIs which may hinder direct comparisons, such as Company A disclosing the "Number of employees aged below 30" and Company B reporting on the "Number of employees aged below 29". These differences may arise due to dissimilar national legislations. Differences in national institutional settings are apparent from the KPIs, such as the reference to both supervisory and management board in Germany compared to the single board in Australia and the UK. The number of KPIs in this category may be inflated due to the level of detail provided. For example, a company may provide detail of males, females and total employees across five age categories, resulting in 15 KPIs being recorded.

Figure A2 shows the country analysis highlighting that UK companies record the most KPIs relating to *Employee*, followed closely by Germany. Japan, Australia and Canada report the lowest levels in this category.

Figure A2: *Number of* Employee *KPIs by country (2016)*

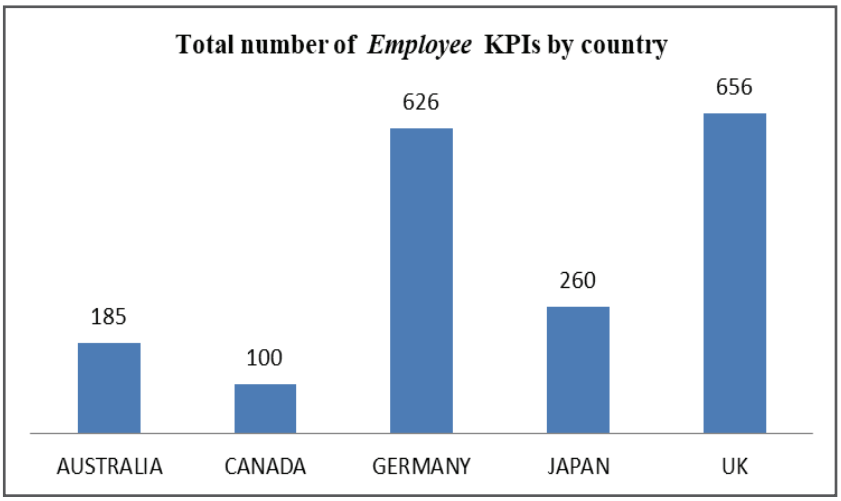
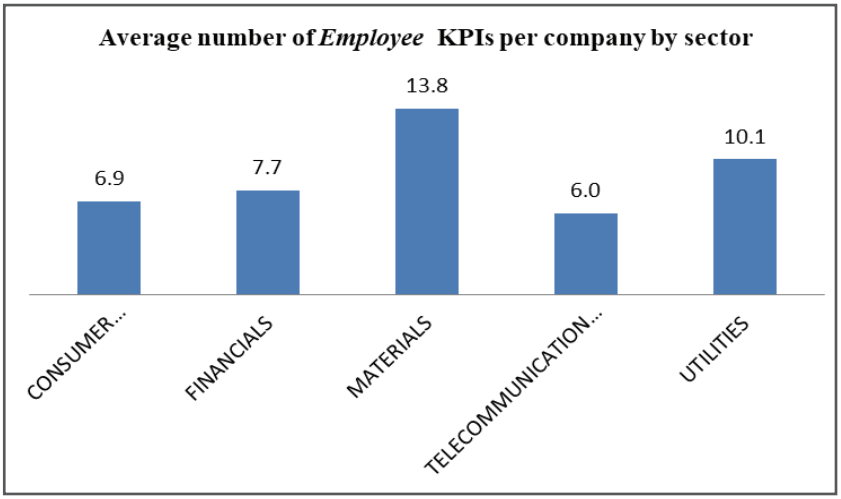


Figure A3 shows the *Employee* category disclosure by sectors, showing the average number of non-financial KPIs per company in each sector. Companies in the Materials sector record the highest average number of KPIs per company and Telecommunication Services the lowest.

Figure A3: *Number of Employee KPIs per company across sectors (2016)*



Environment

This is the second largest category of KPIs, accounting for 30 percent of all KPIs collected. Figure A4 shows the subcategories of *Environment*. The largest number of KPIs relate to the subcategory *Emissions*, followed by *Energy*, then *Waste, Water and Compliance*.

Figure A4: *Number of* Environment *KPIs by subcategory (2016)*

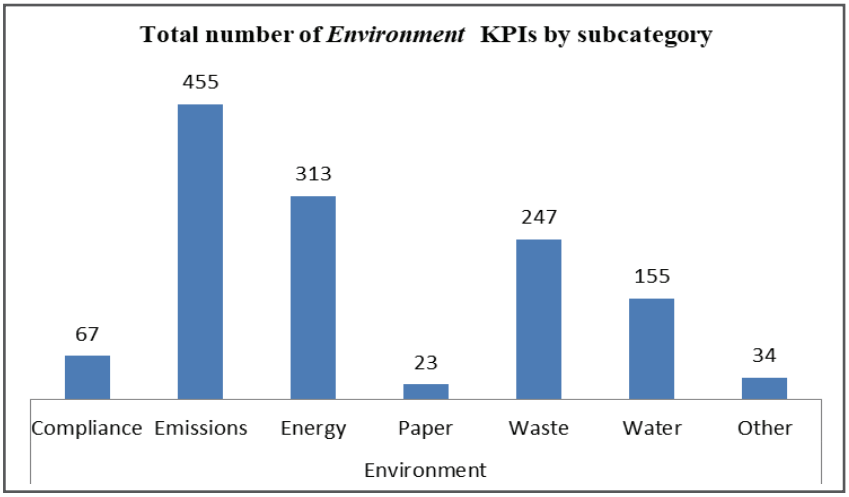


Table A2 provides examples of KPIs for each of the subcategories. The examples highlight the complexity of the KPIs making this category arguably one of the most challenging for non-specialist report users to interpret. For example, if a company emits 1 000 tonnes of CO_2 equivalent, is that acceptable? Also, a variety of terms are used which a non-specialist user may not be able to compare across companies, such as CO_2 emissions, GHG emissions, and CO_2 equivalent emissions. Another aspect making interpretation difficult is the inherent trade-offs. For example if a company recycles plastic and therefore uses more water to rinse off the plastic for recycling, then both recycling percentage and water consumption KPIs may increase. A user may find it difficult to decide if these KPI movements represent positive or negative performance. The *Environment* category is an area where the user may need to rely on independent certifications and indices determined by specialists to give the user assurance about sound environmental management practices.

Table A2: *Examples of* Environment *non-financial KPIs (2016)*

Categories	Examples	Number of Non-Financial KPIs
Compliance		**67**
Other	• Number of compliant licences	16
Breaches	• Number of material breaches in environmental regulations • Amount of environmental fines from regulatory bodies	20
Incidents	• Number of accidents that had a serious impact on the environment • Number of environmental incidents	31
Emissions		**455**
Air	• Air emissions (% change) • NOx emissions	27
Carbon footprint	• Carbon footprint (% change) • Carbon footprint per employee (% change) • Carbon footprint per revenue (% change from base year)	21
CO_2/CO_2e	• CO_2 emissions • CO_2e emissions - Scope 1 • CO_2e emissions - Scope 2 - location based method • CO_2 emissions intensity by revenue • CO_2e tonnes - Scope 2 (market-based emissions) intensity ratio • tCO_2e per full-time equivalent ('FTE') employee: market -based approach	248
GHG	• GHG emissions • GHG emissions - Direct (scope 1): CH4 • GHG emissions - Scope 1 and 2 per employee • GHG emissions per 1000 sq. ft. (% change)	117
Other	• Global warming potential - Thousand tonnes CO_2 equivalent • SOx emissions (thermal power generation) • Volatile organic compounds (VOCs) excluding methane (% change)	23
Mitigation	• Amount invested in low-carbon infrastructure • CO_2 avoidance due to renewable energies plants (% change)	19

Energy		**313**
Other	• Total Direct and Indirect Energy Use by Source (GJ): Diesel (stationary equipment)	36
Consumption	• Energy consumption • Energy sources - % from diesel • Electricity consumption • Natural gas consumption • Energy consumption intensity • Energy consumption per unit of production	202
Efficiency	• Amount of cost savings per annum due to implementation of energy efficiency projects	29
Generation	• Coal as generator of power sold (%) • Electricity generation from renewable energies and biogenic waste share of waste/ RDF:Hydroelectricity (% change)	46
Paper		**23**
Amount	• Paper consumption • Paper and cardboard consumption from production per Turnover	23
Waste		**247**
Amount	• Amount of construction waste • Amount of final disposal – waste • Waste from production intensity per turnover	123
Landfill	• Amount of waste sent to landfill	28
Recycled	• Amount of recycled waste • Amount of hazardous waste disposed of through incineration / recycling	54
Water	• Amount of effluent (% change) • Process wastewater with subsequent treatment (million m^3)	42
Water		**155**
Consumption	• Water consumption • Water consumption per unit of production (m^3/tonne) • Water consumption - from raw water • Water consumption - % from seawater	119
Other	• Water losses due to evaporation from cooling water circuits (million m^3) • Number of water forum meetings held • Water recycled and reused • Water withdrawal/ abstraction from surface water / freshwater	36
Other		**34**
Other	• Cumulative number of new products that support environmental initiatives • Tonnes of packaging materials	34
Total		**1,294**

The examples in Table A2 highlight the use of "intensity" KPIs, such as "CO_2 intensity", which is the ratio of emissions over revenue (or production). Ratios such as these assist in making comparisons over time and between companies because the emissions are scaled by business activity levels. However, these KPIs linking financial and non-financial information are rare.

Figure A5 shows the quantity of *Environment* KPIs per country. The highest quantity of environmental KPIs is reported by the UK, followed by Germany, then Japan. Australia and Canada report the lowest quantities. These results are likely influenced by the national annual reporting requirements in the UK and Germany, notably the Strategic Report requirements in the UK and the German Accounting Standard (GAS) 20 on the group management report (2012) and the EU Non-financial Reporting Directive (2014) in Germany. These reporting requirements appear to promote the disclosure of more non-financial KPIs.

Figure A5: *Number of* Environment *KPIs by country (2016)*

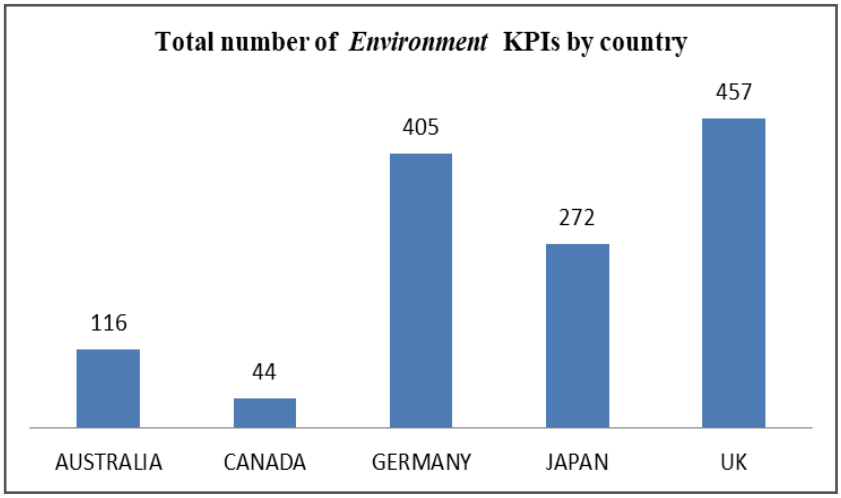
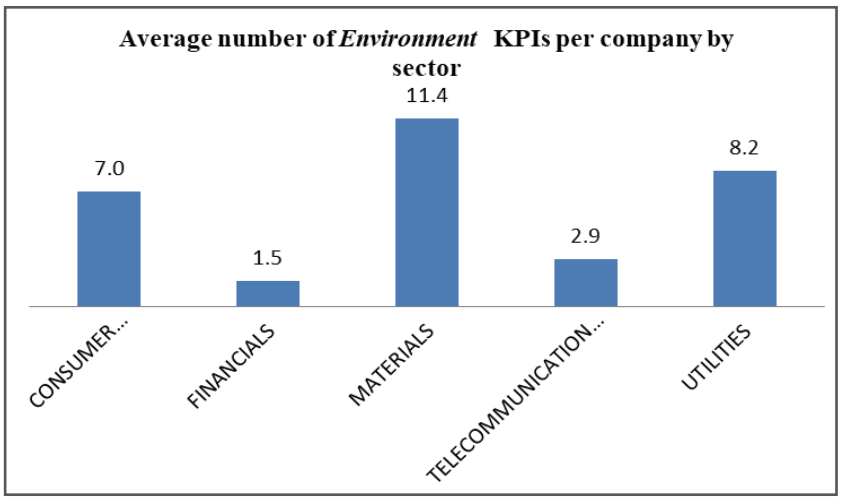


Figure A6 displays the average number of *Environment* KPIs per company by sector, highlighting the high average number of KPIs reported in the Materials sector, followed by the Utilities and Consumer Discretionary sectors. The high number of KPIs in Materials (includes mining companies) and Utilities could be expected because these sectors have high environmental impact. The lowest average number of KPIs occurs in the Telecommunication Services sector and Financial Services sectors.

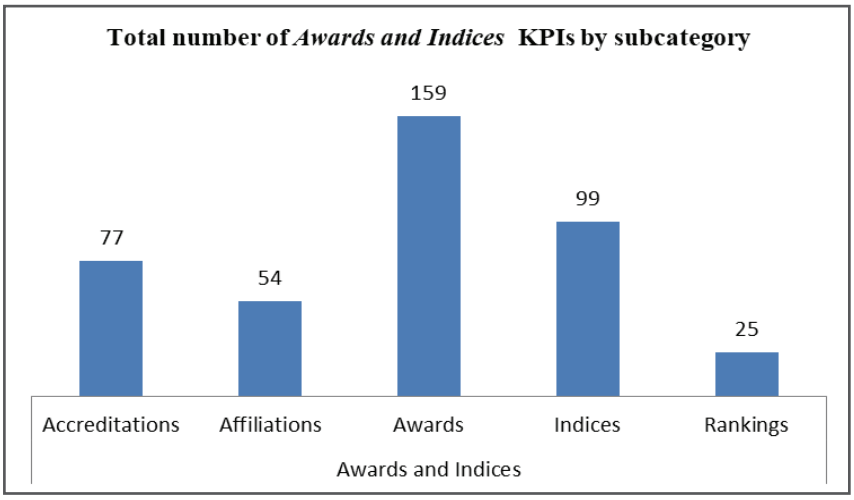
Figure A6: *Average number of* Environment *KPIs per company by sector (2016)*



Awards and Indices

This third ranked category accounts for 10 percent of the non-financial KPIs recorded. Figure A7 shows the subcategories of *Awards and Indices*. The subcategory with the most KPIs is *Awards*, followed by *Indices*, *Accreditations*, *Affiliations* and lastly *Rankings*.

Figure A7: *Number of* Awards and Indices *KPIs by subcategory (2016)*



This category is interesting because it contains KPIs which are more independently generated than the other categories. Table A3 provides examples of the *Awards and Indices* subcategories. The table shows that the most commonly used *Accreditations* KPIs relate to *environment*, followed by *sustainability* KPIs. The *Affiliations* and *Rankings* subcategories also usually relate to *sustainability* and the *environment*. The *Awards* subcategory is spread across many areas, such as *employee* and *sustainability*. Most KPIs in the *Indices* subcategory relate to sustainability.

Table A3: *Examples of* Awards and Indices *non-financial KPIs (2016)*

Categories	Examples	Number of Non-Financial KPIs
Accreditations		**77**
Environment	• ISO14001 certification • Floor space certified to advanced green building standards (%) • Number of facilities that qualified for ISO50001 - Energy management system certificates ISO9001 and ISO14001 compliance • Number of sites that comply with the International Cyanide Management Code (ICMC)	53
Sustainability	• Global Reporting Initiative • Global Reporting Initiative (GRI) G4 Framework • UN Global Compact	12
Other	• Number of sites certified as OHSAS18001 (or equivalent)	12
Affiliations		**54**
Environment	• Australian Packaging Covenant signatory • CDP • United Nations Environment Programme for Finance Initiative (UNEPFI)	18
Sustainability	• UN Global Compact • United Nations Principles for Responsible Investment • United Nations Guiding Principles on Business and Human Rights	24
Other	• Diversity Charter • British Safety Council member	12
Awards		**159**
Environment	• CDP	13
Sustainability	• Dow Jones Sustainability Index • Global Reporting Initiative (GRI) G4 Framework	40
Business and Innovation	• Design award	23
Other	• Awards - payroll giving platinum award • Awards - supplier engagement	6
Customer	• Various	18
Employee	• Awards - diversity	59

Indices		**99**
Environment	• CDP (UK FTSE Carbon Disclosure leadership index) - Climate Performance Leadership index • CDP Climate Disclosure Leadership Index	9
Sustainability	• Dow Jones Sustainability Index • FTSE4Good Index • Global 100 (G100) Most Sustainable Corporations Index • Ethibel Excellence Investment Register • MSCI Global Sustainability Index • STOXX Global ESG leaders • Removed from indices	79
Customer	• Brand Attractiveness Index	1
Employee	• Business Disability Forum index (%) • Institutional Relationship strength index • Workplace wellbeing (WorkAbility Index) (change)	10
Rankings		**25**
Environment	• CDP A- rating awarded	7
Sustainability	• Gold status on EcoVadis	10
Other	• Inclusion in BrandZ Top 100 Most Valuable Global Brands 2016 • Inclusion in Thomson Reuters Top 100 Global Innovators • Placement in retail banking ranking by Bloomberg	8
Total		**414**

The *Accreditations* and *Indices* subcategories appear to offer particularly useful supplementary evidence for users of company reports. For example, knowing that a company has ISO14001 accreditation for all its facilities may give a non-specialist user comfort that the company is attempting to manage its environmental impacts. Inclusion in sustainability indices (such as the Dow Jones Sustainability Index and FTSE4Good Index) may also give the user assurance about a company's sustainability performance. Affiliations may be less convincing for a user, such as a company ascribing to the UN Global Compact, yet they may communicate awareness of ESG issues. Scrutiny of the KPIs shows the influential role of many organisations on directing company's non-financial reporting, such as GRI, ISO, UN Global Compact, CDP, Dow Jones Sustainability Index and FTSE4Good Index.

Figure A8 displays the country analysis of *Awards and Indices*, showing that the UK reports the most KPIs from this category. The figure indicates that all countries make substantial use of this category of non-financial KPIs.

Figure A8: *Number of* Awards and Indices *KPIs by country (2016)*

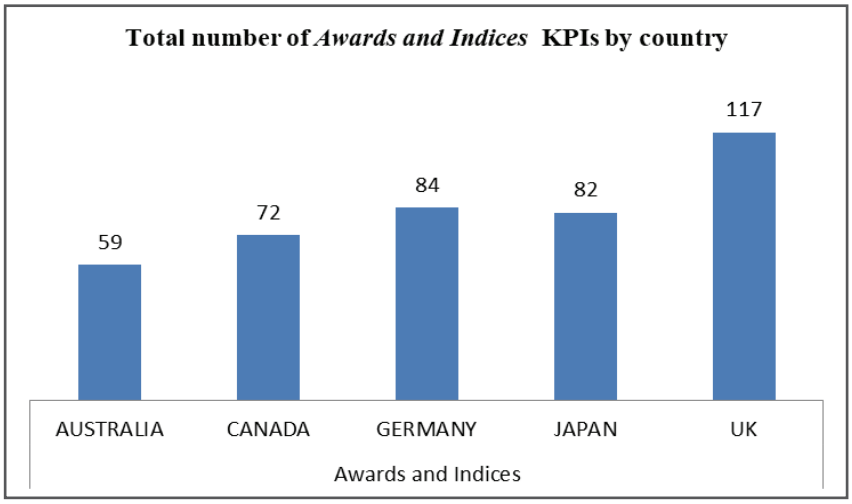
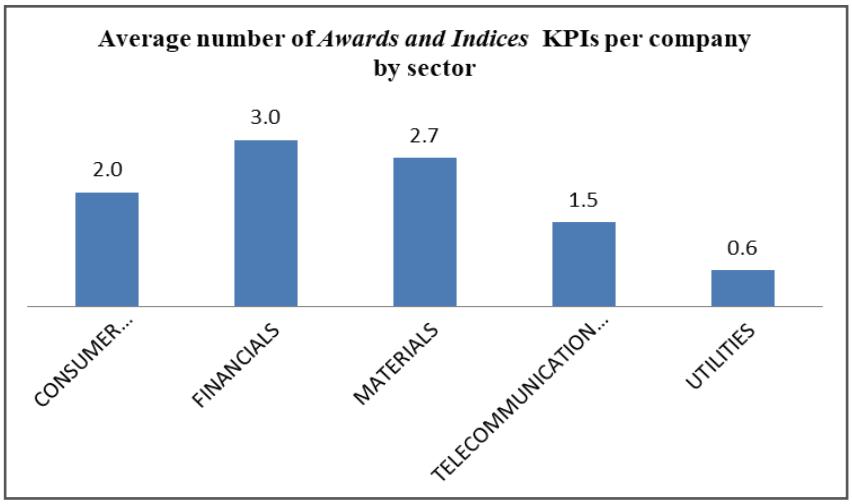


Figure A9 shows the average number of *Awards and Indices* KPIs per company by sector. The Financial Services sector has the highest average per company, followed by Materials and Consumer Discretionary sectors. The Telecommunication Services sector and Utilities sectors reflect the lowest average number of KPIs per company for this category.

Figure A9: *Average number of* Awards and Indices *KPIs per company by sector (2016)*



Community and Social

This category accounts for eight percent of non-financial KPIs disclosed and captures company performance relating to giving to the community. Figure A10 shows the subcategories of *Community and Social*, reflecting the domination of *Donations* KPIs, followed by *Volunteer* and *Education* related KPIs.

Figure A10: *Total number of* Community and Social *KPIs by subcategory (2016)*

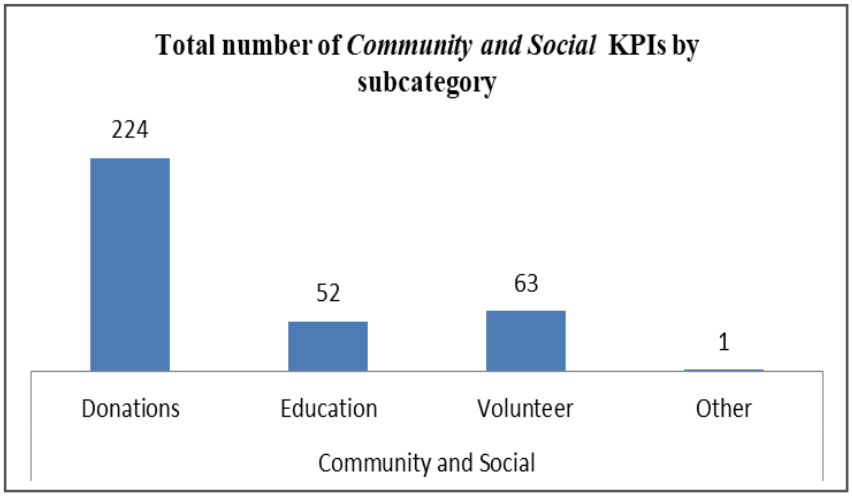


Table A4 provides examples of the KPIs in this category. This category contains the type of KPI which Blackrock (2016) suggests is aimed at the values-based investor and other stakeholders, rather than relevant to general investors' decisions related to the operations and future prospects of the company. Nevertheless, if the amount of resources donated is material, it is likely general investors would want to be informed.

Table A4: *Examples of* Community and Social *non-financial KPIs (2016)*

Categories	Examples	Number of Non-Financial KPIs
Donations		**224**
Amount	• Amount of donations (% change) • Amount donated - arts, culture and sports • Cumulative amount donated	108
Beneficiaries	• Number of charities supported • Number of community partnerships	35
Other	• Number of scholarships awarded • Payroll giving participation rate (%) • Number of meals donated	81
Education		**52**
Number	• Number of universities visited • Number of courses for general public held	52
Volunteer		**63**
Percentage	• Employees participating in volunteering (%)	14
Hours	• Number of employee volunteer hours	20
Number	• Number of employee volunteers	29
Other		**1**
	• Community survey score	1
Total		**340**

Figure A11 shows the country analysis of this KPI category. Japan comes first, with the UK a close second, followed by Germany, then Australia and Canada.

Figure A11: *Number of* Community and Social *KPIs by country (2016)*

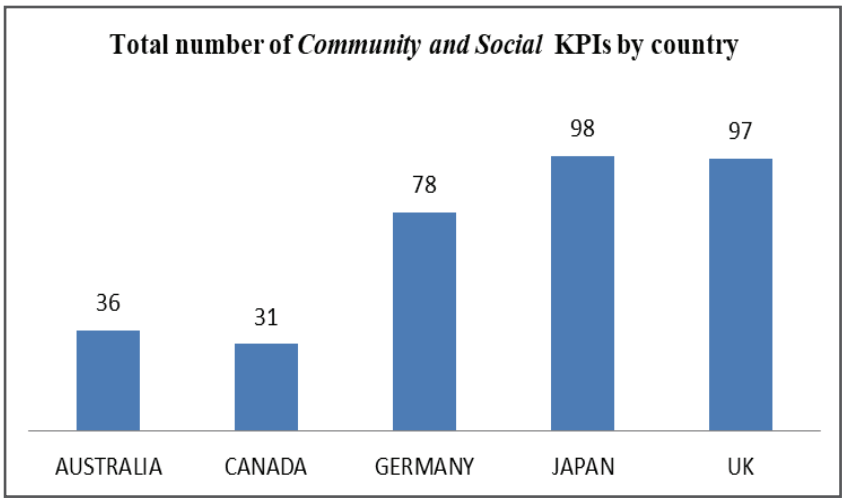
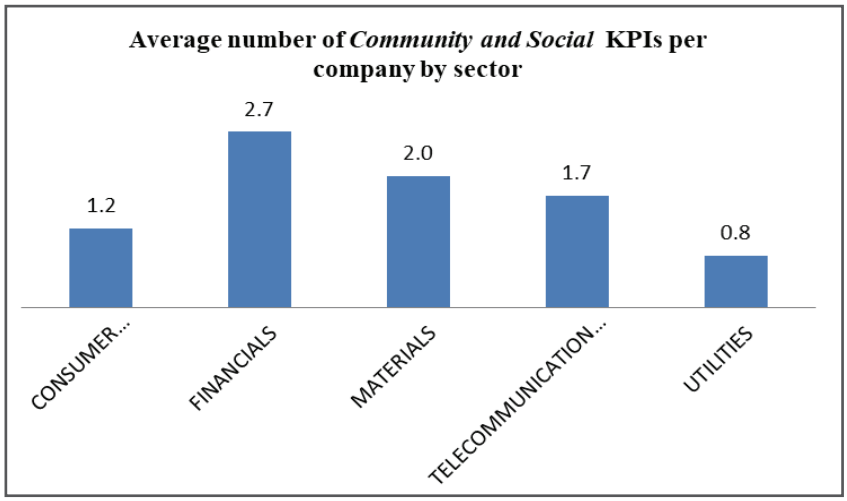


Figure A12 shows the Average number of *Community and Social* KPIs per company by sector. The Financial Services sector shows the highest average per company, followed by the Materials sector, then Telecommunication Services, Consumer Discretionary, and Utilities.

Figure A12: *Average number of* Community and Social *KPIs per company by sector (2016)*



Customer

This category reflects only four percent of the KPIs collected. The subcategories are shown in Figure A13. The figure shows that this category is almost solely focused on consumer satisfaction.

Figure A13: *Number of* Customer *KPIs by subcategory (2016)*

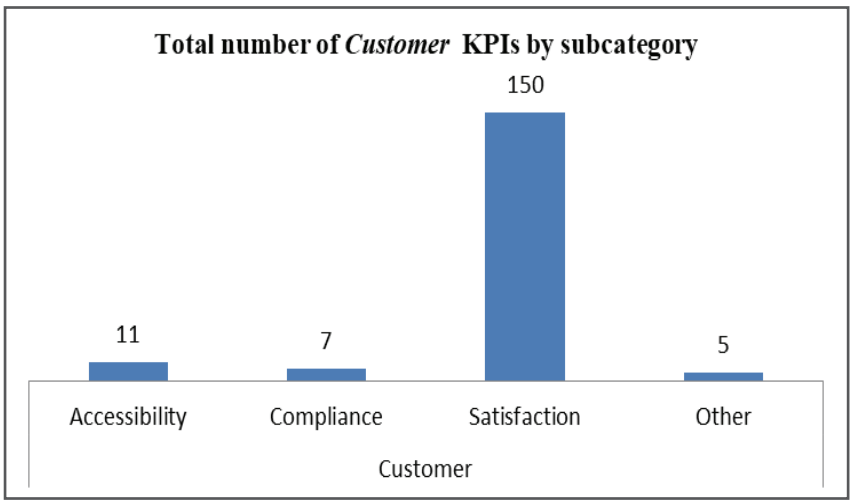


Table A5 provides examples of the KPIs in this category. An interesting addition to traditional customer surveys is the "Net Promoter Score ®" used by a number of companies where customers are asked, on a 0-10 scale, " How likely is it that you would recommend [brand] to a friend or colleague?" (NetPromoter.com, 2017). This standardised question allows for more comparability across companies and time.

Table A5: *Examples of* Customer *non-financial KPIs (2016)*

Categories	Examples	Number of Non-Financial KPIs
Accessibility		**11**
Number	• Number of Braille walkways • Number of branches that have wheelchair -accessible toilets	11
Compliance		**7**
Incidents	• Number of customer safety incidents	7
Satisfaction		**150**
Complaints	• Number of customer complaints per 1,000 units of product	31
Feedback	• Number of calls received at the customer centre	8
Net Promoter Score	• Net Promoter score (NPS)	21
Number	• Number of new customers	10
Product	• Annual average of failure/outage time per household	13
Queries	• Number of customer queries	12
Service	• Calls answered at the customer centre (%)	6
Social media	• Change in the number of fans on Facebook and following on Twitter	3
Survey	• Customer satisfaction index (% change) • Number of customer surveys completed	39
Turnover	• Customer turnover	4
Other	• Number of media appearances	3
Other		**5**
Number	• Number of languages in which safety information is available	5
Total		**173**

Country analysis is presented in Figure A14. The UK is the leading user of this category of KPIs. Thereafter follows Japan as a close second. Australia is the third largest user, followed by Germany and Canada. Germany is surprisingly low in this category, compared to its ranking in most other categories.

Figure A14: *Number of* Customer *KPIs by country (2016)*

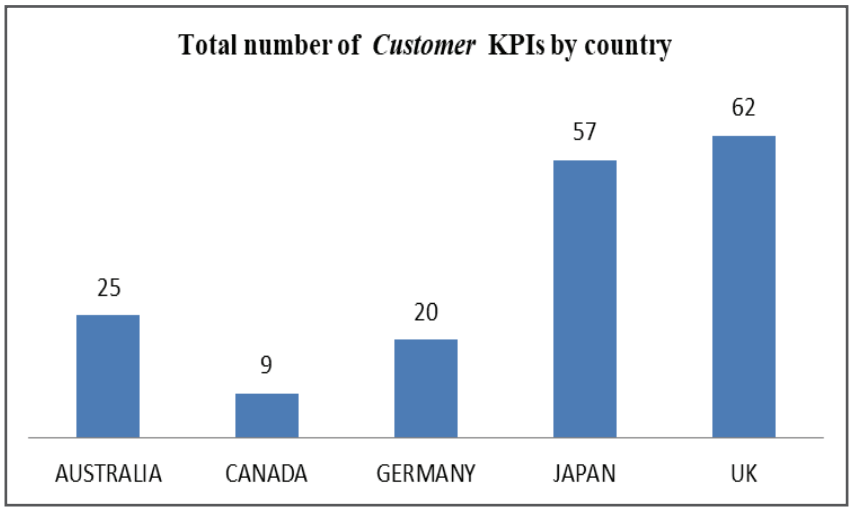
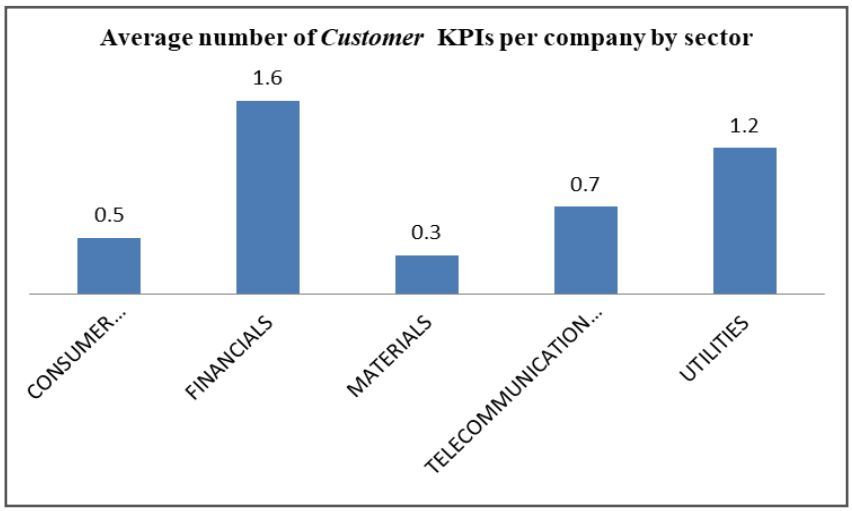


Figure A15 shows the per company sector analysis, where the Financial Services sector makes the most use of this category. Utilities are a large user of this category, coming second, followed by Telecommunication Services, Consumer Discretionary and Materials.

Figure A15: *Average number of* Customer *KPIs per company by sector (2016)*



Supply chain management

This category is the second lowest in quantity of KPIs, representing four percent of KPIs reported. The importance of extending sustainability considerations beyond company borders is highlighted in the GRI 4 series, yet the data shows the low levels of KPIs in this category. This is somewhat surprising, given that lead companies and brand owners are increasingly being held accountable in the media for issues arising along their supply chains, such as unfair treatment of workers in supplier factories.

The subcategories are shown in Figure A16, indicating the predominance of *Supplier Audit* KPIs. This category also includes supply chain KPIs relating to the *environment* (such as Scope 3 emissions data), *procurement*, *diversity* and *compliance*.

Figure A16: *Number of* Supply chain management *KPIs by subcategory (2016)*

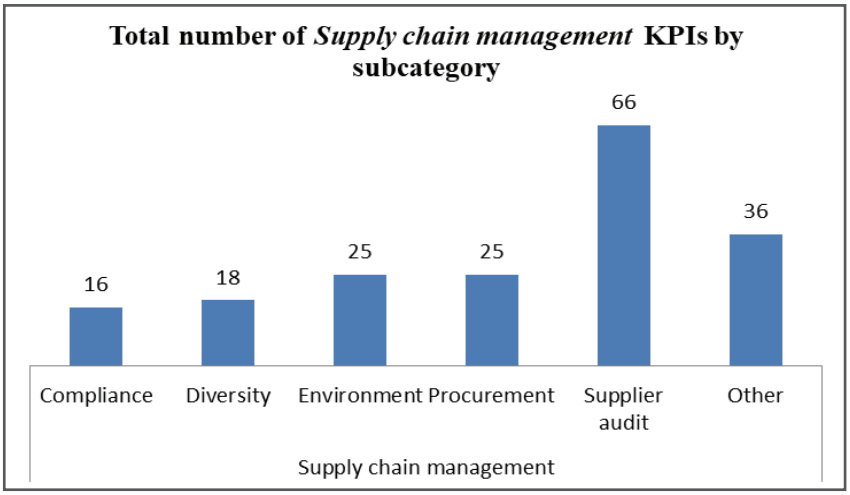


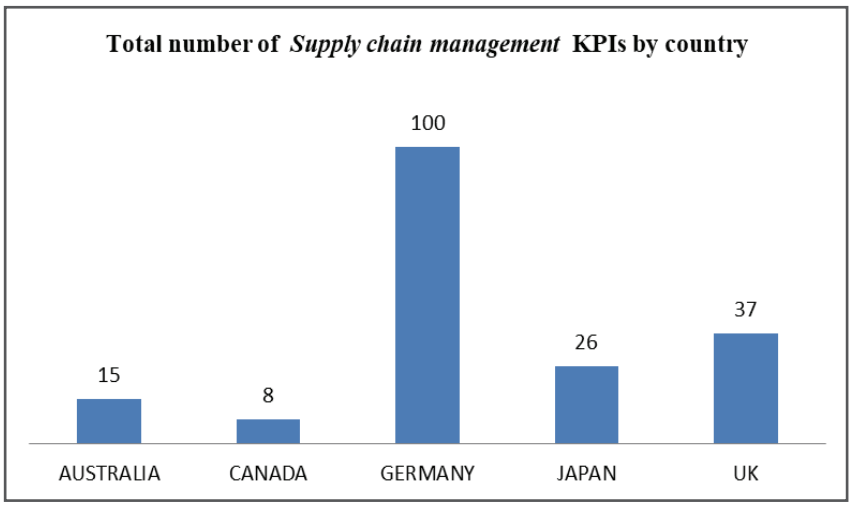
Table A6 provides examples of *Supply chain management* KPIs

Table A6: *Examples of* Supply chain management *non-financial KPIs (2016)*

Categories	Examples	Number of Non-Financial KPIs
Compliance		**16**
Compliance	• Code of business conduct approved supplier signatories contracted in the year (%) • Number of reported issues with child labour or forced labour	16
Diversity		**18**
Diversity	• National contractors (%) • Female workers at suppliers (%) • Local supplier (%)	18
Environment		**25**
Environment	• GHG Emissions in the Group's Supply Chain - Scope 1 • Greenhouse gas emissions along the value chain: Disposal	25
Procurement		**25**
Procurement	• Invoices paid on time (%) • Responsibly sourced timber and paper in products (%)	25
Supplier audit		**66**
Supplier audit	• Percentage of all strategically important suppliers evaluated against sustainability targets • Number of corrective action plans relating to audits performed • Number of suppliers audited	66
Other		**36**
Other	• Overtime work (hours per week) (suppliers) • Number of suppliers instructed on sustainability • Number of factory visits	36
Total		**186**

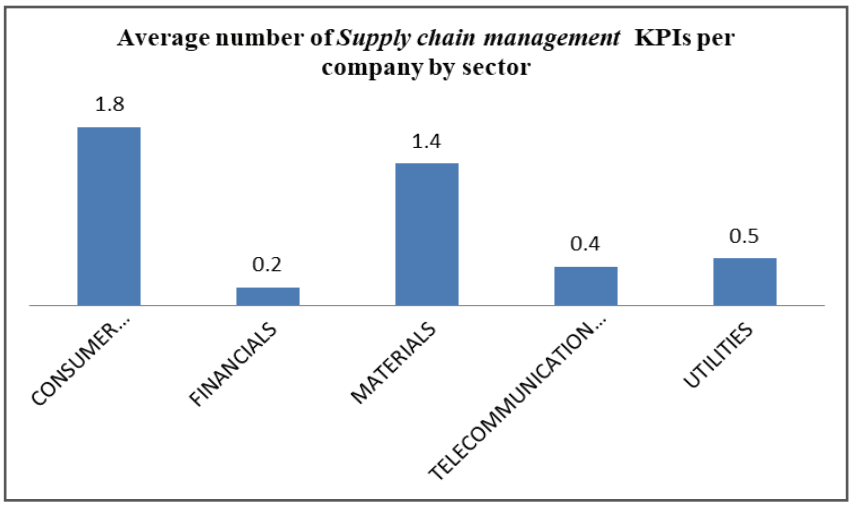
Figure A17 shows the country analysis reflecting the lead of Germany in disclosing this category of underdeveloped KPIs. The UK and Japan follow, then Australia and Canada.

Figure A17: *Number of* Supply chain management *KPIs by countries (2016)*



Sector analysis is shown in Figure A18, indicating the highest average number of KPIs per company in the Consumer Discretionary sector, followed by the Materials sector. Lower levels of KPIs per company are seen for the Utilities, Telecommunication Services and Financial Services sectors. Media attention to business practices of companies in the Consumer Discretionary and Materials sectors may contribute to more KPIs disclosed in these sectors.

Figure A18: *Average number of* Supply chain management *KPIs per company by sector (2016)*



Business and innovation

This category represents only two percent of non-financial KPIs disclosed and relates to operational performance and efficiency as well as innovations. The subcategories are shown in Figure A19, reflecting a focus on KPIs concerning research and development (R&D), patents, compliance and products. The low number of KPIs reported suggest that this is a less mature and under-represented category of external non-financial reporting. The category captures current operating performance and efficiencies and also points to potential future operational performance and opportunities, which suggests that this category should apply to all companies. However companies may be using such KPIs internally but have chosen not to disclose externally, possibly for concerns about competitive advantage. Given the focus of requirements such as the UK Strategic Report and other narrative reporting requirements to reflect financial and non-financial performance that is material to shareholders, this category may be expected to be better represented in the future.

Figure A19: *Number of* Business and Innovation *KPIs by subcategory (2016)*

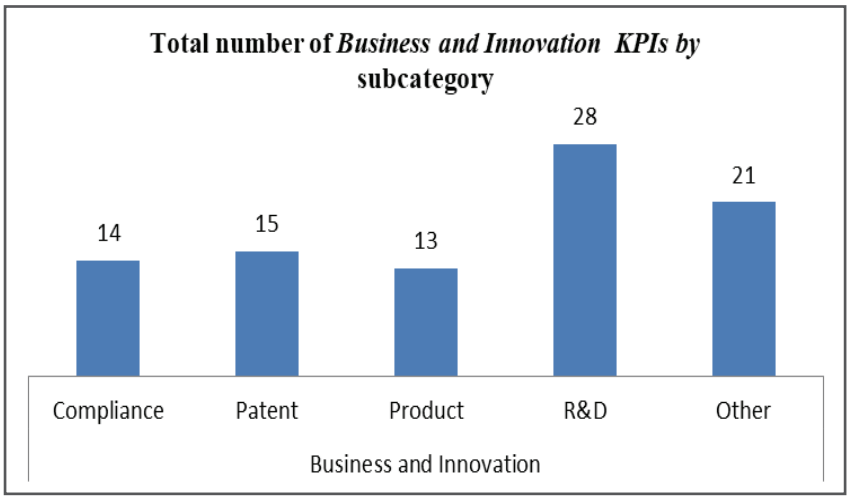


Table A7 provides examples from this category of non-financial KPIs.

Table A7: *Examples of* Business and Innovation *non-financial KPIs (2016)*

Categories	Examples	Number of Non-Financial KPIs
Compliance		**14**
Breaches	• Number of compliance breaches and suspected cases – Material compliance breaches	10
Other	• Amount of legal costs payable • Number of fines received for breaches in data protection laws	4
Patent		**15**
Number	• Number of patents held	15
Product		**13**
Innovation	• Number of team members in Stewardship Activity Promotion	6
Sustainability	• Number of bonds issued : Social-contribution type bonds • Number of product applications assessed and rated for aspects of sustainability	5
Other	• Number of product launches	2
R&D		**28**
Collaboration	• Number of university partnerships	2
Expenditure	• R&D expenses as percentage of total sales • Sustainable adjusted R&D intensity	9
Number	• Number of employees in R&D • Number of R&D projects	17
Other		**21**
	• Number of internal audits to confirm Good Manufacturing Practice compliance • Number of employees participating in Quality Circles • Responsible investment funds under management	21
Total		**91**

Figure A20 shows the patterns across countries, with Germany the leading reporter, just as in the Supply chain management category. Thereafter follows the UK and Japan, with Australia and Canada reporting the least KPIs in this category.

Figure A20: *Number of* Business and Innovation *KPIs by country (2016)*

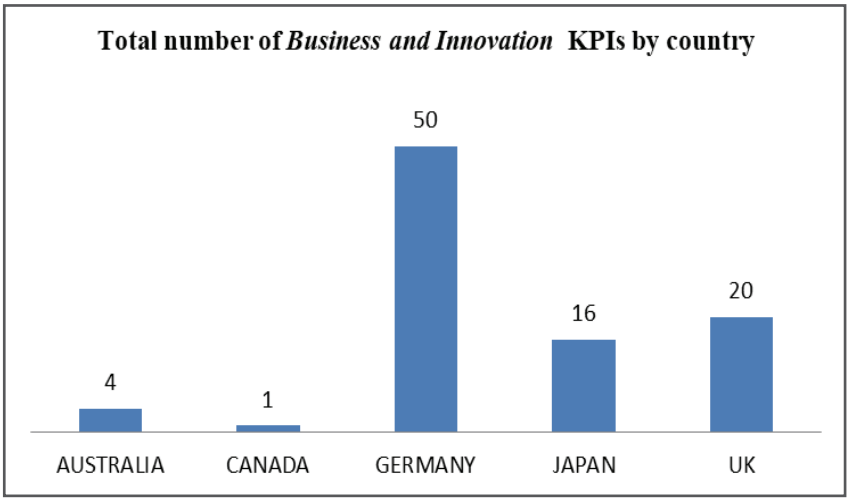
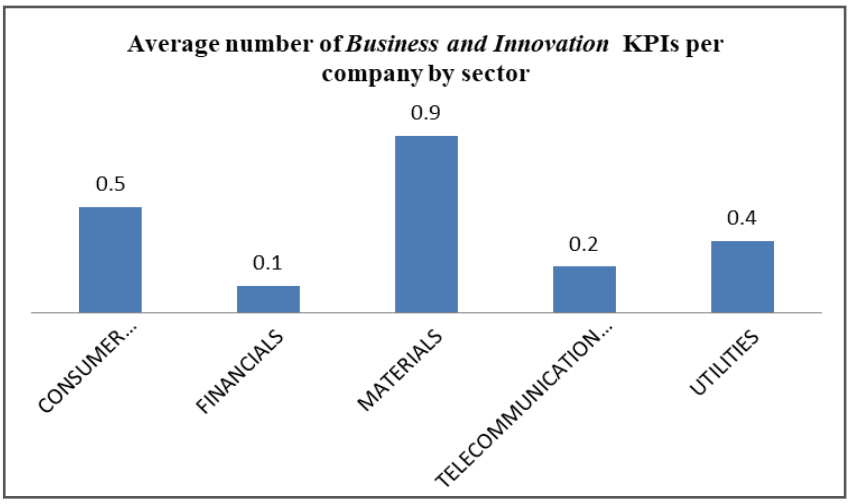


Figure A21 provides sector analysis showing the highest average number of KPIs per company in the Materials sector, followed by Consumer Discretionary and Utilities. Lowest averages of KPIs per company occur in the Telecommunications and Financial Services sectors.

Figure A21: *Average number of* Business and Innovation *KPIs per company by sector (2016)*



Appendix 2: Value relevance analysis for 2016 sample

The following sections provide a brief literature review and the results of the value relevance tests.

Prior literature

Studies that have examined the relationship between non-financial measures and future financial performance have generally found mixed results (Amir and Lev, 1996; Ittner and Larcker, 1998). Amir and Lev (1996) showed that non-financial information was value relevant, as was earnings data combined with non-financial information, for wireless communications companies. While Ittner and Larcker (1998) found customer satisfaction measures to be economically relevant to the stock market, their analysis showed that the non-financial information is only partially reflected in the accounting book value. Some of the studies on the value relevance of non-financial information are discussed in the following subsections.

Value relevance of industry specific metrics

Studies have examined the value relevance of company-specific and customer-based metrics for different industries. A number of studies have documented the value relevance of web traffic measures for Internet companies (see for example, Trueman *et al.*, 2000; Demers and Lev, 2001). Trueman *et al.* (2000) showed that unique visitors and page views provided incremental explanatory power for stock prices over accounting measures such as net income. Demers and Lev (2001) examined the value relevance of web traffic measures during the internet shakeout in 2000. They found the extent to which the company was able to attract unique visitors and the time that the visitors stayed at the site was associated with share prices of the Internet companies. However, the value relevance of web traffic measures appeared period specific and decreased after the end of the internet bubble.

Callen *et al.* (2010) examined the value relevance of three non-financial measures particular to the biotechnology industry. These were patent counts, number of collaborations and probability adjusted portfolio of drugs under development. Their results indicated that both financial and non-financial information are complementary when modelling the market value equity of biotechnology companies. Sievers *et al.* (2013) considered the relevance of firm characteristics and human capital proxies (e.g., team composition, Chief Executive Officer education, and team experience) for the valuation of venture capital-backed firms. Similar to Callen *et al.* (2010), they found that financial and non-financial information sets are complementary, and that a model that considers both information sets was more powerful than one that considers each information set singularly. Using data on seven of the largest airlines, Riley *et al.* (2003) reported that non-financial performance variables such as revenue load factor and customer dissatisfaction provided incremental value relevance over traditional accounting measures, but the opposite is not true. That is, traditional accounting measures did not reflect incremental explanatory power in models starting with non-financial variables.

Value relevance of environmental, social and governance disclosures

Barth and McNichols (1994) introduced non-financial information into an accounting identity-valuation model in their examination of a sample of firms facing environmental clean-up costs. Subsequent studies have extended this work by examining disclosure of other environmental and social information. For example, Hughes (2000) examined the value relevance of air pollution measures in the electric utility industry and found that

unbooked future environmental liabilities were associated with a lower share price. The findings showed that the value relevance of pollution measures were affected by changes in environmental legislation and compliance costs.

More recently, Qiu *et al*. (2016) examined the relationship between a firm's environmental and social disclosures and its market value. They reported that firms with more social disclosures have higher market values, and attributed this to the higher expected growth rates in the cash flows of these companies. Similar findings were shown in Jain *et al*. (2016), where firms with low composite environmental, social and governance (ESG) scores were found to have lower market value and future financial performance. While they did not examine the value relevance of governance per se, Song *et al*. (2010) showed that the value relevance of fair value measurements depended on the firms' corporate governance mechanisms. In particular, they found that the value relevance of fair value measurements was lower for firms with weaker corporate governance. This was especially so for Levels 2 and 3, involving inputs that were not directly observable from active markets.

Banker and Mashruwala (2007) argued that the relationships between non-financial information and financial performance are likely to be contextual. They studied the relationship between customer satisfaction, and financial performance (i.e., earnings) and reported that non-financial measures were only informative for firms in competitive industries or environments. The reason being that the lack of competition resulted in higher switching costs for the customers, hence weakening the relationship. In contrast, Edmans (2011) concluded that non-financial items (in this case, intangibles such as employee satisfaction) only affected share price when they were manifest in financial items (i.e., tangibles).

This project builds on this line of research, by focusing on the usefulness for investors of a range of non-financial measures that are given prominence in companies' annual reports. Value relevance models based on Ohlson (1995) are used to investigate the association of disclosed financial and non-financial measures with share prices and returns. The contribution is to investigate the quality of the information provided and to determine its usefulness for investors. Quality is based on the attributes of the information disclosed, in particular comparability and breadth.

Results

Table A2.1 compares the summary statistics for groups partitioned on (1) the number of non-financial KPIs, (2) the provision of comparatives, (3) the breadth of non-financial KPIs presented, and (4) the use of externally generated KPIs.

Table A2.1: *Comparison between groups (2016)*

Variable	Mean		t-test
	Low or No KPIs	High or with KPIs	
Panel A: Groups based on number of non-financial KPIs (partitioned based on country median)			
n	101	98	
SP_3mth	28.575	32.828	-0.693
MktCap	18,318	25,115	-1.519
EPS	1.326	1.280	0.126
BVE	15.787	17.960	-0.660
Num_KPI	5.980	37.908	-9.125 ***
Panel B: Groups based on comparability score (partitioned based on country median)			
n	100	99	
SP_3mth	26.710	34.670	-1.302
MktCap	18,597	24,764	-1.376
EPS	1.211	1.396	-0.512
BVE	16.096	17.626	-0.464
Comp_Score	0.254	0.938	-17.382 ***
Panel C: Groups based on breadth of non-financial KPIs (partitioned based on country median)			
n	119	80	
SP_3mth	24.520	39.817	-2.481 **
MktCap	17,408	27,998	-2.339 **
EPS	1.139	1.547	-1.104
BVE	15.853	18.351	-0.744
Breadth	1.850	4.500	-11.727 ***
Panel D: Groups based on number of external KPIs (partitioned based on country median)			
n	122	77	
SP_3mth	27.944	34.988	-1.121
MktCap	18,038	27,412	-2.050 **
EPS	1.238	1.405	-0.448
BVE	16.652	17.183	-0.157
Awards	0.203	5.052	-13.411 ***

Panels A to D compare the groups with low and high number or quality of non-financial KPIs, where the companies within each country are partitioned based on the country median. Panel A is based on the number of non-financial KPIs, Panel B is based on the comparability score, Panel C is based on the breadth of non-financial KPIs and Panel D is based on the number of externally generated KPIs.
* = 10%, ** = 5% and *** = 1% levels of significance.

To examine whether financial information (e.g., EPS) is relatively less value relevant for companies providing more (and better quality) non-financial information, the following ordinary least squares (OLS) value relevance model is used:

$$PRICE_i = \sum_i \beta_{0j} C_{ji} + \sum_k \beta_{0k} I_{ki} + \beta_1 BVE_i + \beta_2 EPS_i + \beta_3 DumNonDisc_i + \beta_4 DumNonDisc_i \times BVE_i + \beta_5 DumNonDisc_i \times EPS_i + \varepsilon_i$$

...(Eq 1)

where *PRICE* = a company's share price three months after end of year *t*;
BVE = book value of equity per share, at year end *t*;
EPS = earnings per share, for year *t;*
C_j = indicator variable for country *j;*
I_k = indicator variable for sector *k*.

A common problem in modelling the value relevance of summary accounting information is the scale bias (Barth and Clinch, 2009; Tsalavoutas et al., 2012). Consistent with prior value relevance research, this study uses a per share specification for the main analysis. In additional tests, an alternative specification of weighted least squares is used, where the market value of equity is used as the deflator (Tsalavoutas *et al.*, 2012).

In order to examine the relevance of BVE and EPS for companies that disclose non-financial information versus those that do not, an indicator variable, *DumNonDisc*, is included in Equation 1. According to the proposition that companies do not disclose non-financial performance measures because financial information is sufficiently informative about the performance for those companies, a positive and significant coefficient should be observed on the interaction term with earnings, i.e., $\beta_5 > 0$. In Panel A of Table A2.2, the value relevance models are presented for groups partitioned on whether the company discloses any non-financial KPIs. The results for the alternative specification using weighted least squares are qualitatively similar and are not tabulated.

In other variations of the models, the dummy variable *DumNonDisc* is substituted with other indicator variables that measure the breadth and quality of non-financial information provided by the company. In Panel B of Table A2.2, the models are presented for groups partitioned on (1) the number of non-financial KPIs disclosed, (2) the provision of comparatives, (3) the breadth of non-financial KPIs presented, and (4) the use of externally generated KPIs.

Table A2.2: *Value relevance models (2016)*

Panel A: Companies partitioned based on disclosure of non-financial KPIs

Variable	Coeff	t-stat
BVE	0.930	5.899 ***
EPS	3.467	9.781 ***
Dum_NonDisc	-2.914	-2.576
Dum_NonDisc X *BVE*	-0.535	-0.638
Dum_NonDisc X EPS	5.566	0.665
Country fixed effects	Yes	
Sector fixed effects	Yes	
n	199	
Adjusted R^2	0.441	

Panel B: Companies partitioned based on the extent of use of non-financial KPIs

	(1) Num_KPI		*(2) Comp_Score*		*(3) Breadth*		*(4) External*	
Variable	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
BVE	0.867	10.279 ***	1.442	5.981 ***	1.016	4.465 ***	1.682	5.947 ***
EPS	3.920	6.529 ***	2.533	5.223 ***	4.720	3.477 ***	3.134	4.156 ***
Dum_Lo	-4.620	-1.896 *	6.629	2.518 **	-3.131	-0.468	10.120	2.067 **
Dum_Lo X BVE	0.115	0.289	-1.000	-3.958 ***	-0.414	-2.923 ***	-1.075	-2.206 **
Dum_Lo X EPS	-0.812	-0.859	1.891	0.837	-1.038	-0.800	1.507	1.111
Country fixed effects	Yes		Yes		Yes		Yes	
Sector fixed effects	Yes		Yes		Yes		Yes	
n	199		199		199		199	
Adjusted R^2	0.439		0.438		0.478		0.507	

Panel A presents the value relevance models where companies are partitioned by whether they disclose or do not disclose non-financial KPIs. *Dum_NonDisc* is assigned the value of 1 if the company does not provide non-financial KPIs, and 0 otherwise. Panel B presents the value relevance models where companies are partitioned based on the extent and quality of their use of non-financial KPIs. *Dum_Lo* is assigned the value of 1 if the company has a disclosure score less than the country median, and 0 otherwise.

* = 10%, ** = 5% and *** 1% levels of significance.

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