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## Article

# Effects of integrated reporting on corporate disclosure practices regarding the capitals and performance

Amfiteatru Economic Journal

## Provided in Cooperation with:

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*Suggested Citation:* Almășan, Alina; Circa, Cristina; Dumitru, Mădălina; Gușe, Raluca Gina; Mangiu, Dragoș Marian (2019) : Effects of integrated reporting on corporate disclosure practices regarding the capitals and performance, Amfiteatru Economic Journal, ISSN 2247-9104, The Bucharest University of Economic Studies, Bucharest, Vol. 21, Iss. 52, pp. 572-589,  
<https://doi.org/10.24818/EA/2019/52/572>

This Version is available at:

<https://hdl.handle.net/10419/281461>

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**EFFECTS OF INTEGRATED REPORTING ON CORPORATE DISCLOSURE  
PRACTICES REGARDING THE CAPITALS AND PERFORMANCE**

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<b>Please cite this article as:</b> Almășan, A., Circa, C., Dumitru, M., Gușe, R.G and Mangiuc, D.M., 2019. Effects of Integrated Reporting on Corporate Disclosure Practices regarding the Capitals and Performance. <i>Amfiteatru Economic</i> , 21(52), pp. 572-589.  <b>DOI: 10.24818/EA/2019/52/572</b>	<b>Article History</b> Received: 29 March 2019 Revised: 12 May 2019 Accepted: 10 July 2019
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**Abstract**

Integrated reporting promotes changing the internal processes of companies to generate improved performance. One way toward this goal is to use integrated thinking as a tool to achieve a 'better understanding of the factors that materially affect an organization's ability to create value over time', that is the six capitals, as suggested by the International Integrated Reporting Council. Our goal is to identify 'effects of learning' in the field of integrated reporting on the performance and reporting practices of companies. More specifically, we aim to identify how and to what extent integrated thinking translated into their reporting practices and performance, while companies implemented the International Integrated Reporting Framework. Therefore, we analyse and compare the reporting practices and performance of European companies included in the International Integrated Reporting Council's Pilot Program for two moments in time: 2013 and 2016. We use a set of nineteen indicators, considered as the most important for the presentation of the six capitals. Thus, we provide insights about how integrated reports disclose information concerning the capitals. Results show improvements in performance and the diversification of indicators disclosed in the reports. However, changes are not exclusively attributable to integrated reporting; reporting experience is also a contributing factor. The study contributes to the literature on the impact of integrated reporting in practice.

**Keywords:** Integrated reporting, integrated thinking, capitals, performance, key performance indicators.

**JEL Classification:** M14, Q56.

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## **Introduction**

Sustainability reporting is a valuable way for managers to identify and address the sustainability challenges (KPMG, 2013), and drive improvements in company operations (Higgins and Coffey, 2016). During the past fifteen years, sustainability reporting has undergone significant changes. The initial motivations for sustainability reporting, namely social pressure and the pursuit of legitimacy (Deegan, 2002; Tilling and Tilt, 2010) are being replaced by new ones, such as the improvement of organizational performance and management practices, proving the strategic importance of reporting (Higgins, Milne and van Gramberg, 2015). Sustainability reports have been criticised for not being integrated into day-to-day management activities, and for not advancing sustainability (Gray, 2010), which motivated our research.

The most sophisticated answer of corporate disclosure to the existing sustainability challenges is Integrated Reporting (IR). IR is not only ‘an evolution of corporate reporting, with a focus on conciseness, strategic relevance and future orientation’; it is also advertised as potentially leading ‘to behavioural changes and *improvement in performance* throughout an organization’ (IIRC, 2019). The International Integrated Reporting Council (IIRC) promotes integrated thinking, which enables ‘a better understanding of the factors that materially affect an organization’s ability to create value’. The capitals are key concepts of IR and are used in the value creation process (IIRC, 2013). The IIRC suggests the following six types of capital: financial, manufactured, intellectual, human, social and relationship, and natural. The improvement of performance in the context of integrated thinking involves all types of capital.

Rinaldi, Unerman and de Villiers (2018) state that ‘IR practices have now had time to mature and become more widely adopted’. Still, the interest in IR shown by organizations, accounting professionals and academics (Robertson and Samy, 2015; Barth et al., 2017; Zhou, Simnett and Green, 2017; Adams and McNicholas, 2007; Mio, Marco and Pauluzzo, 2016; Ojo, Mbohwa and Akinlabi, 2015) is balanced by the debate around the challenges associated with the implementation of the International <Integrated Reporting> Framework (IIRF).

The IIRC has taken steps towards a broader IR adoption and the acceptance of the IIRF as a reporting norm (IIRC, 2017). In our view, the institutionalization of IR is linked to its ability to positively affect the internal processes of organizations, leading to improved performance. In this context, our paper focuses on the evolution of performance, as reflected in the integrated reports of European companies included in the IIRC’s Pilot Program (PP). We examine and compare key performance indicators (KPI) disclosed in the integrated reports published for two reference years, 2013 and 2016, in respect of their variety, consistency of reporting, and value. The sample consists of European companies, as this area is the most active in terms of sustainability reporting (Habek and Wolniak, 2013).

We focus on the disclosure of performance in integrated reports and use the following proxies to assess performance development: number of reported KPIs, consistency of reporting, availability to report new KPIs, increased values of KPIs in the analysed period. We used previous studies to identify the KPIs companies typically use to report on each of the six capitals.

We consider that our paper fills a gap in the literature, as there are few studies on the effects of IR adoption (Barth et al., 2017; Lee and Yeo, 2015; Hoque, 2017). In addition, research addressing how to measure sustainable performance at organizational level is still limited and remains in an exploratory stage (George et al., 2016). Our research contributes to the literature by addressing the ‘effects of learning’ about IR on the companies’ performance and reporting practices. Results show improvements and diversification in the reporting practices of entities that implemented the IIRF, and an increased performance. Although the positive developments observed are not spectacular, they indicate an incremental progress associated with the integrated thinking that the IIRF promotes more explicitly than other sustainability reporting frameworks through its approach centred on the six-capitals. However, changes are not exclusively attributable to IR; the reporting experience seems to be an influential factor.

The next section of the paper is the literature review, and discusses the issues of sustainable performance, KPIs, IR, and integrated thinking. After the methodology presentation, results are analysed from several perspectives: the variety of the reported KPIs, the consistency of reporting, the availability of companies to report new KPIs, and the KPI values. Finally, there are discussed the ‘learning effects’ of institutionalizing IR on the reporting practices regarding the capitals and the performance of entities.

## **1. Literature review. What does (integrated) reporting bring to sustainability and performance?**

Even before IR became an area of interest for organizations and academics, a significant body of literature associated the success of sustainability reporting with corporate performance and strategy (George et al., 2016; Antolin-Lopez, Delgado-Ceballos and Montiel, 2016; Cucek, Klemes and Kravanja, 2012). This paper uses a similar logic to associate IR and company performance. It is based on the idea that the improvement of corporate performance through the integrated thinking embedded in IR is a key motivator for large-scale implementation of IR; it adds momentum to the current steps taken by the IIRC in order to advance IR.

### **1.1. Sustainability reporting and corporate performance**

One way to change the traditional reporting paradigm toward sustainability reporting is to extend the accountability relationship between a company and its shareholders to a relationship between a company and its stakeholders. If they are accountable for social and environmental outcomes, managers will presumably equally focus on these as they do on economic outcomes (Adams and McNicholas, 2007).

Studies show that managers are increasingly paying attention to corporate sustainability performance in terms of assessment and reporting (Antolin-Lopez, Delgado-Ceballos and Montiel, 2016; Cucek, Klemes and Kravanja, 2012). This is caused by the fact that, in the new stakeholder paradigm, companies are urged to behave in sustainable ways and to be transparent about their sustainability practices (Lozano and Huisinigh, 2011). It has been argued that ‘you cannot manage what you do not measure’ (Cooper and Edgett, 2008; Ehrenfeld, 2008), and ‘you are what you measure’ (Hauser and Katz, 1998). In this context, ‘anybody pursuing sustainable development as a corporate goal will sooner or later face questions about the metrics used to operationalize sustainability, and how these are

communicated' (Burritt and Schaltegger, 2010: 377). Although several studies introduced multi-stakeholder, multi-objective, and multi-level models for measuring corporate sustainability performance (Bonacchi and Rinaldi, 2007), no balanced single measure has been designed and generally accepted so far, able to embed the economic, environmental, and social dimensions, and management control systems. Therefore, the development of a comprehensive measure of performance, as well as of instruments for managing multiple objectives are significant and current challenges.

*Economic sustainability* is operationalized as production or manufacturing costs (Cruz and Wakolbinger, 2008). *Environmental sustainability* refers to companies' resource consumption and footprint on the planet's resources (natural and others), which is usually expressed in terms of a reduction in waste, emissions, energy efficiency, a decrease in the use of hazardous/harmful/toxic materials, a decrease in the frequency of environmental accidents, etc. *Social sustainability* focuses on internal and external communities (Pullman et al., 2009), in the meaning of equitable opportunities for employees and potential employees, diversity, connectivity within and outside the community, quality of life, democratic processes and accountable governance structures (Elkington, 1994). Gray and Milne (2004) believe that companies should disclose information about the company's relationship with its stakeholders, data that is required through law and quasi-law. Norman and MacDonald (2004) split the social performance indicators into the following categories: diversity, unions/industrial relations, health and safety, child labour, and community.

In addition to the variety of options for sustainability reporting from the voluntary reporting frameworks, practices and the literature, large undertakings in Europe must observe the Directive 2014/95/EU, amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups (ED). The ED requires specific and separate disclosures covering the economic, social and environmental dimensions of corporate reporting. The structure of the ED reporting model includes four main reporting items, as follows (European Union, 2014):

- Business model, policies, risks related to CSR issues: brief description of the business model; policies related to environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters; principal risks related to environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters; non-financial KPIs.
- Environmental matters: impacts on the environment; impacts on health and safety; use of renewable energy; use of non-renewable energy; GHG emissions; water use; air pollution.
- Social and employee-related matters: actions taken to ensure gender equality; implementation of fundamental conventions of the International Labour Organisation; working conditions; respect for the right of workers to be informed and consulted; respect for trade union rights; health and safety at work; the dialogue with local communities; actions taken to ensure the protection and the development of the local communities.
- Ethical matters: prevention of human rights abuses, instruments in place to fight corruption and bribery.

Previous research indicates inconsistencies in sustainability measurement and reporting practices. One problem is that companies do not know what to disclose, as there are about 400 sustainability reporting instruments (KPMG, GRI, UNEP and Centre for Corporate Governance in Africa, 2016). Cucek, Klemes and Kravanja (2012) also revealed high variability and lack of standardization among existing performance measurement instruments included in the sustainability footprint methodologies. The most frequently used sustainability frameworks worldwide (such as GRI Guidelines, United Nations Commission on Sustainable Development Framework, ISO 26000, Dow Jones Sustainability Index) do not integrate the three dimensions of the sustainability reporting (Antolin-Lopez, Delgado-Ceballos and Montiel, 2016). This leads to an incomplete presentation of sustainability performance.

## **1.2. Integrated reporting and corporate performance**

From the cited sustainability reporting literature, it follows that the context in which IR emerged as ‘an evolution of corporate reporting’ is one of inconsistent reporting practices and frameworks for economic, social and environmental aspects of sustainability performance.

The IR initiative received interest and support from organizations, professional bodies and standard-setters around the world (de Villiers et al., 2017b; Dumay et al., 2016). It generated ample and ongoing debates in the academic environment regarding its challenges and benefits. IR is contested (Brown and Dillard, 2014; Higgins et al., 2014) especially because of challenges associated with its implementation (Dumay and Dai, 2017; McNally et al., 2017). According to Rinaldi et al., (2018), ‘despite IR being adopted internationally by a network of organizations [...], the framework has not yet achieved the IIRC’s vision of becoming the corporate reporting norm’. Tweedie and Martinov-Bennie (2015) argue that for IR to make a difference in organizations and broader society, it should contribute to a broader social transformation in corporations and financial markets, rather than becoming another reporting framework; they also notice that IR has moved away from the key tenets of prior social and environmental reporting frameworks.

The ‘philosophical framework’ of IR is the concept of integrated thinking, defined as ‘the active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects’. IIRC does not incorporate the concept of economic, social and environmental reporting into the IIRF. Instead, it employs the concept of capitals defined as ‘any store of value used by organisations in the production of goods and services’. IIRC introduces the idea of structuring information based on the six types of capital: financial, manufactured, intellectual, social and relationship, human, and natural. While the measures used to report on some of these capitals are well-established in previous reporting frameworks, for other capitals there are no reporting patterns yet, as indicators are not used frequently.

IR is associated to management practices from the beginning: an integrated report can be successfully created only if the management fully embeds and shares integrated thinking, which is able to change business processes, leading to an increase in company value and improved organizational performance. IR should lead to the integration of sustainability into performance management and control systems (George et al., 2016). In fact, IIRC requires companies to describe how they deal with different dimensions of sustainability, referring not merely to their performance, but also to actions taken to achieve it (IIRC,

2013). Hence, IR could favour the integrative management of sustainability (Stacchezzini, Melloni and Lai, 2016).

There are previous studies underlying the impact of IR in practice and the importance of the six capitals. Stubbs and Higgins (2014) found that the adoption of IR produced an incremental change of the organizations' processes and structures; yet, they did not detect any radical or transformative changes. Adams (2017) found that the IIRF generated awareness of the importance of environmental, social and governance issues, together with a broader view of value creation. Adams et al. (2016) showed that organizations are starting to think about their social investment activities in terms of value creation in different ways, and are linking these activities to strategy. Haji and Hossain (2016) analysed how companies reported and integrated multiple capitals in various organizational reporting channels. Coulson et al. (2015) addressed tensions between multiple capitals. However, according to de Villiers et al. (2017a) there is not much literature investigating the economic effects associated with IR. From this body of literature stems the motivation of our research. By identifying the 'effects of learning' about IR in the form of the disclosure of KPIs framed around the six capitals, we search for evidence that management practices assimilated integrated thinking.

We acknowledge that 'external reporting [...] frequently corresponds with what is measured and reported internally [...]. However, the decision on the actual information to be disclosed is inherently judgmental so that the selection of the information to be reported is inevitably up to the discretion of the directors of each company' (Bennett, Schaltegger and Zvezdov, 2013, p.4). This fact creates comparability issues, in both time and space. Therefore, in our research, we selected a set of KPIs, organized them based on the classification of the six capitals, and we followed their disclosure over time. We believe that using the same set of indicators for all companies, unlike the analysis of separate and different sets of KPIs for each company (method used by Nichols et al., 2012) can potentially signal the sample-wide generalization and/or elimination of indicators. We extracted and selected, from the existing sustainability reporting frameworks, practices, regulations, and literature the KPIs presented in table 4 (absolute values) and table 5 (relative values, computed). We used the IIRC recommendations to identify the main KPIs used to describe each type of capital and we proposed a similar number of KPIs for each type of capital.

## **2. Research method**

The main purpose of our research is to establish how, and to what extent, the reporting practices of companies that adhered to the PP assimilated integrated thinking. More specifically, we use the IIRF approach regarding the association between performance and capitals to identify the variety of KPIs, the consistency of reporting, the companies' availability to report new KPIs and the values of the KPIs.

We analyse integrated reports by looking at performance as 'outcomes in terms of effects on the capitals' and 'the organization's effects (both positive and negative) on the capitals' (IIRC, 2013, p.28). We focus on the KPIs extracted from integrated reports because it is the IIRC view that 'KPIs and monetized metrics [...] can be very helpful in explaining how an organization [...] uses and affects various capitals' (IIRC, 2013, p.8). Even if the IIRF 'does not prescribe specific key performance indicators' (IIRC, 2013, p.4), it advocates the

usefulness of 'suitable' KPIs in measuring performance, provided that they are relevant, consistent with governance practices, connected with financial information, and reported consistently over successive periods (IIRC, 2013, p.31).

Therefore, we used the literature, the existing sustainability reporting frameworks and European regulations (ED) to compile a list of relevant indicators in terms of performance measurement that are typically used by companies to report on each of the six capitals. We then assigned the indicators to each type of capital suggested by the IIRC, as presented in table 1 and table 4. We use KPIs extracted from the reports in absolute values, as well as indicators computed as relative values, based on the idea that 'KPIs that combine financial measures with other components (e.g., the ratio of greenhouse gas emissions to sales) [...] demonstrate the connectivity of financial performance with performance regarding other capitals' (IIRC, 2013, p.28).

We searched for evidence that management practices assimilated integrated thinking, as we believe that positive effects of IR on company performance is a key motivator for IR implementation.

Accordingly, we based the research on the following questions:

- How did the number of reported KPIs evolve in the analysed period?
- Is the reporting of KPIs by the entities included in the sample consistent?
- Did the entities add new KPIs during the analysed period?
- Did the entities remove KPIs during the analysed period?
- How did the value of reported KPIs evolve during the analysed period?
- Did the use of IR generate 'effects of learning' in the analysed entities?
- Did the institutionalization of IR entail a change in the internal processes of the analysed entities?

The final sample includes 49 European companies from the PP that published integrated reports written in English in 2013 and 2016. We started the selection of our sample from the 104 companies included in the PP. We selected the 52 European companies, as Europe is the most active region in the world in terms of CSR reporting (Habek and Wolniak, 2013). We were not able to find reports issued by three of the 52 companies. Thus, we excluded these companies from the sample. We analysed two reports written in English for each of the remaining 49 companies (2013 and 2016).

We compared the information from the 2013 and 2016 integrated reports of European companies included in the PP, thus providing insights about how integrated reports disclose the information concerning the six capitals. 2013 is the year the IIRF was introduced and the starting point, as our interest is to explore the manner the continued use of the IIRF influences the companies' internal processes and performance. The analysed companies were already a part of the PP in 2013 and they were in a position to benefit from the IIRF development. We selected 2016 as we considered the three years a sufficient period for the effects of IR implementation on company performance to be observed.



We collected data from the reports during the July – September 2017 period. One of the authors first examined a number of five companies, extracted the absolute values of KPIs from table no. 1 and compiled the data using Excel. The other authors received the reports, verified the collected data and discussed the inconsistencies, thus ensuring the consistency of data collection techniques. Once all authors validated the method and made decisions for each identified situation, each author collected the remaining data from an equal number of the remaining reports.

We used coding to facilitate comparisons between 2013 and 2016. We assigned the code 1 to a KPI if its value increased in 2016 as compared to 2013, and the code -1 if the value decreased. We used the code 0 for KPIs that were not available for comparison: the KPI was missing in one or both of the reports.

We encountered the following repetitive difficulties in the data collection process:

- One and the same company did not always report the same indicators to describe one type of capital (this is mainly true for the natural capital);
- Several issues (e.g. social contribution, volunteering, patents, customer satisfaction) are reported in a descriptive manner or based on examples, with no exact quantification;
- As the selected companies have different areas of operation, they tend to favour some indicators over the others, depending on the industry.

### 3. Results

#### 3.1. Variety of KPIs

We analysed the disclosure of 19 indicators in 2013 and 2016, by each of the 49 companies in the sample. We began by looking at the number of indicators reported consistently. The results are summarised in table no. 1.

**Table no. 1. Number of companies reporting each indicator**

Indicator	2013		2016		Differences	
	Count	%	Count	%	Count	%
<b>Financial capital (average)</b>	<b>46.33</b>	<b>94.56</b>	<b>47.33</b>	<b>96.60</b>	<b>1</b>	<b>2.04</b>
Sales	47	95.92	48	97.96	1	2.04
Operating income	46	93.88	47	95.92	1	2.04
Net income	46	93.88	47	95.92	1	2.04
<b>Human capital (average)</b>	<b>37.00</b>	<b>75.51</b>	<b>38.33</b>	<b>78.23</b>	<b>1.33</b>	<b>2.72</b>
Number of employees	48	97.96	49	100.00	1	2.04
Number of female employees	34	69.39	38	77.55	4	8.16
Number of overseas employees	29	59.18	28	57.14	(1)	(2.04)
<b>Natural capital (average)</b>	<b>28.33</b>	<b>57.82</b>	<b>31.00</b>	<b>63.26</b>	<b>2.67</b>	<b>5.44</b>
Emissions of CO <sub>2</sub>	36	73.47	39	79.59	3	6.12
Waste	23	46.94	26	53.06	3	6.12
Energy consumption	26	53.06	28	57.14	2	4.08
<b>Manufactured capital (average)</b>	<b>29.33</b>	<b>59.86</b>	<b>29.00</b>	<b>59.18</b>	<b>(0.33)</b>	<b>(0.68)</b>
Amount of capital investment/ expenditure	38	77.55	38	77.55	0	0.00

Indicator	2013		2016		Differences	
Number of production bases/ sales offices	16	32.65	18	36.73	2	4.08
Number of companies in the group	34	69.39	31	63.27	(3)	(6.12)
<b>Intellectual capital (average)</b>	<b>14.33</b>	<b>29.25</b>	<b>13.33</b>	<b>27.21</b>	<b>(1.00)</b>	<b>(2.04)</b>
Research & development expenses	23	46.94	23	46.94	0	0.00
Ratio of research & development expenses	12	24.49	12	24.49	0	0.00
Number of patents	8	16.33	5	10.20	(3)	(6.13)
<b>Social and relationship capital (average)</b>	<b>11.50</b>	<b>23.47</b>	<b>13.00</b>	<b>26.53</b>	<b>1.50</b>	<b>3.06</b>
Social contributions	21	42.86	22	44.90	1	2.04
Social contribution events	1	2.04	2	4.08	1	2.04
Customer satisfaction	19	38.78	20	40.82	1	2.04
Number of volunteers	5	10.20	8	16.33	3	6.13
<b>Average</b>	<b>26.95</b>	<b>55.00</b>	<b>27.84</b>	<b>56.82</b>	<b>0.89</b>	<b>1.83</b>
<b>Maximum</b>	<b>48</b>	<b>97.96</b>	<b>49</b>	<b>100.00</b>	<b>4</b>	<b>8.16</b>
<b>Minimum</b>	<b>1</b>	<b>2.04</b>	<b>2</b>	<b>4.08</b>	<b>(3)</b>	<b>(6.13)</b>
<b>Standard deviation</b>	<b>14.66</b>	<b>29.91</b>	<b>14.87</b>	<b>30.36</b>	<b>1.85</b>	<b>3.78</b>

*Source: Compiled by the authors*

We notice that an increased number of 528 indicators was disclosed in 2016 (56.71%) as compared to 515 indicators disclosed in 2013 (55.32%). 29 indicators were only reported in a narrative form in 2013 (27 in 2016), or were presented incompletely (not quantified). Consequently, they are not included in the analysis. For the total sample, an average of 26.95 (55%) companies in 2013 and 27.84 (56.82%) companies in 2016 reported the selected indicators. This means that, on average, 0.89 more companies (1.83%) reported the indicators selected for our study in 2016 as compared with 2013.

Companies' reporting practices regarding the indicators associated with the six capitals did not undergo significant changes in terms of variety. Thus, this approach did not signal any major changes in reporting practices. However, for 16 items there is an increased number of reporting entities, which indicates that companies assimilated new KPIs in their integrated reports. Meanwhile, the number of reporting instances for the three indicators related to intellectual capital (Number of patents), manufactured capital (Number of companies in the group) and human capital (Number of overseas employees) decreased.

Companies display the most consistent reporting practices for financial and human capital (with an average of more than 90% and 75% of consistent reporters, respectively), followed by manufactured and natural capital (over 50%). For the natural capital, the average number of reported indicators recorded the most significant increase (from 57.82% to 63.26%).

The maximum and minimum number of indicators reported is presented in table no. 2.

**Table no. 2. Number of indicators reported per company**

Indicator	2013	2016
Maximum number of indicators analysed	19	19
Maximum number of indicators reported by a company	17	17
Minimum number of indicators reported by a company	2	5
Average	10	11
Standard deviation	3.23	2.82

Source: Compiled by the authors

We notice that no company reported more than 17 out of 19 analysed indicators (89.47% of in 2013 and 2016); the minimum number of reported items increased from two (in 2013) to five (in 2016), generating an increase of the average number of indicators reported by a company.

### 3.2. Consistency of reporting

We then searched for indications regarding positive developments of management practices/performance, using each company's displayed availability to report new indicators as a proxy. This approach is justified by the idea that companies are motivated to develop indicators in order to report improved performance or because of an update in their internal processes. We identified the three possible types of behaviour: A – consistency (company maintains the reporting practice in both analysed years), B – change of reporting practices in the sense of adding KPIs, and C – change of reporting practices in the sense of removing KPIs from the reports. The results are shown in table no 3.

**Table no. 3. Consistency of reporting practices**

Capitals	Indicators	Behaviour type		
		A	B	C
<b>Financial capital</b>	Sales	48	1	0
	Operating income	46	2	1
	Net income	45	3	1
No. of changes in reporting financial capital		-	<b>6</b>	<b>2</b>
<b>Human capital</b>	Number of employees	48	1	0
	Number of female employees	38	8	3
	Number of overseas employees	43	3	3
No. of changes in reporting human capital		-	<b>12</b>	<b>6</b>
<b>Natural capital</b>	Emissions of CO <sub>2</sub>	40	6	3
	Waste	32	10	7
	Energy consumption	40	5	4
No. of changes in reporting natural capital		-	<b>21</b>	<b>14</b>
<b>Manufactured capital</b>	Amount of capital investment/ expenditure	41	4	4
	Number of production bases/ sales offices	43	4	2
	Number of companies in the group	42	2	5
No. of changes in reporting manufactured capital		-	<b>10</b>	<b>11</b>
<b>Intellectual capital</b>	Research & development expenses	43	3	3
	Ratio of research & development expenses	45	2	2
	Number of patents	46	0	3
No. of changes in reporting intellectual capital		-	<b>5</b>	<b>8</b>

Capitals	Indicators	Behaviour type		
		A	B	C
<b>Social and relationship capital</b>	Social contributions	34	8	7
	Social contribution events	48	1	0
	Customer satisfaction	36	7	6
	Number of volunteers	43	5	1
No. of changes in reporting social and relationship capital		-	<b>13</b>	<b>7</b>
Total number of instances indicators were added/removed		-	<b>67</b>	<b>48</b>

Source: Compiled by the authors

The results show that most changes in reporting practices involve adding KPIs to the reports (67 indicators added and 48 removed from the reports in 2016 as compared to 2013). *Financial capital* is the most stable area of the reports, which indicates maturity of the financial reporting practices. The overall tendency is to add indicators to the reports, with six new reporting instances, as compared to two items removed from the reports. The most dynamic reporting areas at company level, where a high number of companies added KPIs to their 2016 reports are those of *human, natural and social and relationship capital*, with a total number of 12, 21 and 13 additions, respectively. Ten companies added Waste, eight companies added Number of female employees and Social contributions and seven companies added Customer satisfaction. As is the case with financial capital, in these areas the number of added KPIs exceeded the number of removed KPIs. Companies seem more open to perfecting their reporting practices in these areas. Reporting for *manufactured and intellectual capital* seems to be heading in the opposite direction, with more KPIs removed than added. Using a similar logic to the one employed for the other four types of capital, this result might contribute to the idea that reporting experience is an important factor of reporting behaviour. Therefore, companies are not as experienced in making specific disclosures related to intellectual and manufactured capital, since the approaches related to these types of capital are not as explicit in the previous sustainability reporting frameworks.

On average, for the entire sample, there were added 0.39 indicators to the reports from 2016 as compared to the reports from 2013. The maximum number of new indicators reported by an entity was 10, and the maximum number of indicators removed from an entity's reports was four. A company from the financial industry discontinued the reporting of all environmental indicators. This situation is unique, as it has not been recorded for any other company or type of capital.

### 3.3. KPIs values

In order to assess the performance of the companies included in the sample, we compared the recorded amounts in the two years for each indicator. We used the codes described in the methodology section to signal the evolution of the computed KPI (-1 indicates a decrease of value, 0 indicates the lack of information and 1 indicates an increase of value).

Considering the selected indicators, an improved performance is shown by an increase in all the analysed indicators, except for the ones related to natural capital (Emissions of CO<sub>2</sub>, Waste, Energy consumption). The evolution of the indicators is presented in table no. 4.

**Table no. 4. Evolution of indicators in absolute amounts**

<b>Indicator</b>	<b>Total</b>	<b>Not measurable</b>	<b>Improved (a)</b>	<b>Worsened (b)</b>	<b>Difference (a-b)</b>
<b>Financial capital</b>	49	<b>1</b>	<b>28.67</b>	<b>19.33</b>	<b>9.34</b>
Sales	49	1	32	16	16
Operating income	49	1	27	21	6
Net income	49	1	27	21	6
<b>Human capital</b>	49	<b>8.67</b>	<b>26.33</b>	<b>14</b>	<b>12.33</b>
Number of employees	49	0	32	17	15
Number of female employees	49	8	28	13	15
Number of overseas employees	49	18	19	12	7
<b>Natural capital</b>	49	<b>13</b>	<b>19.33</b>	<b>16.67</b>	<b>2.67</b>
Emissions of CO <sub>2</sub>	49	7	22	20	2
Waste	49	16	18	15	3
Energy consumption	49	17	18	14	4
<b>Manufactured capital</b>	49	<b>17.67</b>	<b>16</b>	<b>15.33</b>	<b>0.67</b>
Amount of capital investment/ expenditure	49	7	20	22	(2)
Number of production bases/ sales offices	49	31	11	7	4
Number of companies in the group	49	15	17	17	0
<b>Intellectual capital</b>	49	<b>33.33</b>	<b>7</b>	<b>8.67</b>	<b>(1.67)</b>
Research & development expenses	49	24	12	13	(1)
Ratio of research & development expenses	49	35	7	7	0
Number of patents	49	41	2	6	(4)
<b>Social and relationship capital</b>	49	<b>39.75</b>	<b>10</b>	<b>6.75</b>	<b>4.33</b>
Social contributions	49	19	18	12	6
Social contribution events	49	47	2	0	2
Customer satisfaction	49	23	13	13	0
Number of volunteers	49	40	7	2	5
<b>Average</b>	<b>49</b>	<b>18.42</b>	<b>17.47</b>	<b>13.11</b>	<b>4.37</b>
<b>Percentage</b>	<b>100</b>	<b>37.59</b>	<b>35.66</b>	<b>26.75</b>	<b>8.92</b>
<b>Maximum</b>	<b>49</b>	<b>47</b>	<b>32</b>	<b>22</b>	<b>16</b>
<b>Minimum</b>	<b>49</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>(4)</b>
<b>Standard deviation</b>	<b>0</b>	<b>14.8</b>	<b>9.23</b>	<b>6.38</b>	<b>5.74</b>

*Source: Compiled by the authors*

We notice that, in absolute values, for most companies and indicators, the performance is better in 2016 than in 2013. A higher number of companies (17.47, representing 35.66%) recorded an improved performance after issuing the integrated reports, as compared to the number of companies with a lower performance. However, for a relatively similar number

of companies (18.42, representing 35.66%) the lack of consistency did not allow the evolution of performance indicators to be established. Performance decreased for Amount of capital investment/Expenditure (manufactured capital), Research & development expenses, and Number of patents (intellectual capital). This leads to a decrease in the overall performance of *intellectual capital* and to a low performance of *manufactured capital*. These results are in line with those regarding the consistency of reporting, which indicate the lowest reporting quality in terms of variety of KPIs for the same two capitals.

In line with the specialized literature (Antolin-Lopez, Delgado-Ceballos and Montiel, 2016) we considered that the absolute values of the indicators are not enough to show that a company improved its performance. Therefore, we computed the relative measures for the indicators presented in table 5 and used the same coding system to signal the evolution of performance (- 1 for decreased performance, 0 – no measure, 1 for increased performance). Results are presented in table no. 5.

**Table no. 5. Evolution of indicators in relative amounts**

<b>Indicator</b>	<b>Total</b>	<b>Not measurable</b>	<b>Improved (a)</b>	<b>Worsened (b)</b>	<b>Difference (a-b)</b>
Emissions of CO <sub>2</sub> /Sales	49	9	23	17	6
Emissions of CO <sub>2</sub> /Net income	49	12	21	16	5
Emissions of CO <sub>2</sub> /No. of employees	49	7	23	19	4
Number of employees/Sales	49	2	26	21	5
Number of employees/Net income	49	5	29	15	14
Energy consumption/Sales	49	19	19	11	8
Energy consumption/Net income	49	21	14	14	0
Energy consumption/No. of employees	49	17	20	12	8
Waste/Sales	49	18	16	15	1
Waste/Net income	49	21	15	13	2
Waste/No. of employees	49	16	18	15	3
Social contributions/Sales	49	20	15	14	1
Social contributions/Net income	49	20	15	14	1
<b>Average</b>	<b>49</b>	<b>14.38</b>	<b>19.38</b>	<b>15.23</b>	<b>4.15</b>
<b>Percentage</b>	<b>100</b>	<b>29.36</b>	<b>39.56</b>	<b>31.08</b>	<b>8.48</b>

*Source: Compiled by the authors*

The only indicator that has not changed was the Energy consumption/Net income. For all the other indicators, companies registered an improvement in their performance. This

shows that companies became more efficient in terms of environmental and social actions. As the only thing that all the companies had in common was the disclosure of integrated reports, we believe that IR helped the companies improve their internal processes and, consequently, their performance. However, for 31.08% of the companies the performance was not improved.

The analysis of the association between performance and industry is not part of the paper, as it did not yield significant results. There are no significant differences between the results for sensitive and non-sensitive domains (as defined by Barbu et al., 2014). However, we noticed that the best-performing industry is professional services. This is an expected outcome, as companies from the professional services industry are trying to acquire competences in the IR field in order to assist their customers to implement this type of reporting.

### **Conclusions**

Our study started from the idea that the incorporation of integrated thinking in companies' management and reporting practices should lead to an improvement in their performance. Improved performance, in turn, can be a lead motivator for the large-scale implementation of IR. We tested this idea by selecting and analysing the reports of 49 European companies included in the PP in two moments in time: 2013 and 2016, in terms of variety and evolution of reported KPIs.

The overall results support the hypothesis that companies diversified their reported indicators for the types of capitals defined by the IIRC and improved their performance. The identified positive evolutions in terms of reporting practices variety and performance for four of the six capitals (financial, human, natural, social and relationship) have more significant values than the negative evolutions recorded for manufactured capital and intellectual capital. However, the value of differences between 2013 and 2016 is not high enough to support the idea of transformative changes. Instead, we notice incremental but consistent changes, in line with Stubbs and Higgins (2014). The described developments support the idea that integrated reporting practices are institutionalized in the analysed entities and an 'effect of learning' in the field of IR is manifested.

A first conclusion is that the adoption of IR generated an increase in the number of presented KPIs for the majority of companies in the sample. This indicates that companies assimilated new practices, either in terms of reporting, or management, or both. However, we think that this result is not fully attributable to the effects of IR implementation. On one hand, IIRF is the first guideline suggesting the presentation of the capitals, and the selected indicators were representative for the six capitals. On the other hand, there are many other initiatives that have developed KPIs or suggested the use of non-financial KPIs before the IIRC (GRI, WICI, CDP, CDSB). The improvements in reporting practices were not uniform across the six capitals; instead, they focused around financial, human, natural, social and relationship capitals, which are more easily associated with the other frameworks than are manufactured and intellectual capital. Therefore, to include the reporting models adopted by the analysed companies before implementing IR in the research could provide results that are more robust.

In addition, there is an improvement in the variety of reporting practices, indicated by the increase of the minimum number of reported indicators. The results regarding the individual behaviour of companies support this idea. With the exception of two indicators related to manufactured capital and intellectual capital (Number of companies in the group and Number of patents, respectively), in all other cases the number of companies that introduced the indicator was higher than the number of companies that removed it from their reports.

Companies display more maturity and flexibility in the reporting areas that can be associated with previous financial and sustainability reporting experiences (economic, social and environmental dimensions). The fact that the only industry-based analysis result relates to the professional services also supports the positive influence of reporting experience.

Sustainability reporting experience did not have the same impact as traditional financial reporting experience. The environmental (corresponding to the natural capital) and social indicators (corresponding to the human and social and relationship capitals) are still less represented than the economic indicators (representing the financial and manufactured capitals). On a more optimistic note, experience in economic, environmental and social disclosures seems to have contributed to companies' displaying maturity and flexibility in reporting about financial, human, natural and social and relationship capital, as opposed to the areas of manufactured and intellectual capital. Even though there are so many initiatives involving the intellectual capital (for instance, the ones conducted by WICI), and so many agree that it should be presented in better ways, there is a decrease in the disclosure of the indicators associated with this type of capital during the analysed period.

The overall performance improved for only a third of the companies included in the sample for both types of indicators (collected from the reports or computed as relative values).

The current research has certain limitations. First, the research sample is limited to 49 companies, which does not allow for the use of more sophisticated statistical methods or the extrapolation of conclusions to the entire population. Second, while the adopted content analysis method provides a number of advantages, it also has its limitations – the most important being the coders' subjectivity. A third limit is the selection of the indicators: there is no guideline in the IIRF regarding what the companies should report.

Despite the above limitations, this paper adds to a relatively small number of studies that discuss the issue of the overall 'effects on learning' about IR and, specifically, its effects on corporate performance.

### **Acknowledgement**

We gratefully acknowledge the constructive comments of Professor Aileen Pierce. We would like to thank her for the support she provided in the early stage of our study.

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