

# FOSTERING PERFORMANCE MANAGEMENT BY IDENTIFYING KEY PERFORMANCE INDICATORS FOR HUMAN CAPITAL IN INTEGRATED REPORTING

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**Abstract.** Human capital is widely recognized as a pivotal factor in driving economic development and ensuring the sustained success of organizations. In efforts to enhance transparency in reporting and elucidate the mechanisms through which organizational value is generated, businesses might turn to the integrated reporting framework, encompassing six key capital dimensions, including human capital. However, a notable gap exists in the standardization of essential performance indicators within this framework. Therefore, the primary aim of this research was to identify the fundamental concepts underlying key performance indicators specific to human capital within integrated reports. These identified indicators not only enhance the usability of integrated reporting frameworks but also resonate with the perspectives of economic theory on human resource management, delving into various facets of employee performance and well-being. Moreover, the study delved into how transformational and benevolent leadership styles can harmonize with both the integrated reporting framework and the suggested key performance indicators of human capital, offering insights into effective organizational management and sustainable value creation.

**Keywords:** human capital indicators, integrated reporting, performance management, leadership, sustainability.

**JEL Classification:** J24, M12, M14.

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## 1. Introduction

The concept of performance management (henceforth – PM) embodies the capacity of a management team to effectively organize and oversee both financial and non-financial organizational practices and procedures to leverage business acumen, and according to Gruman and Saks (2011), to yield employee performance to increase workplace productivity. One of the central aspects of PM is employees, their job satisfaction and job productivity. Effective PM is believed to have the capacity to boost job satisfaction, ultimately resulting in higher performance outputs (Akanpaadgi et al., 2024). While there are various PM systems that have been used to address various aspects of workplace productivity challenges (Siraj & Hagen, 2023), one of them offers a comprehensive approach to all types of operations of a business – financial and non-financial, tangible, and non-tangible activities. It is the Integrated Reporting Framework (henceforth – <IR>). Such a holistic approach to business management not only aligns with Titko et al.'s (2023) view that economic objectives should support social and environmental goals within

sustainability contexts, but also with Business 4.0 and Industry 4.0 objectives to enhance economic sustainability through improved financial, environmental, and social performance (Uzule & Verina, 2023).

By integrating financial and non-financial information within a single business model, <IR> enhances transparency in operations and value creation outputs (Uzule, 2023), aligning with the core objectives of PM. <IR> is structured around six capitals, serving as both inputs and outputs within the business model (Uzule, 2023), which is why it could be considered a type of sustainability reporting. Even European Central Bank advocates for <IR> as a more efficient form of reporting as it reduces redundancies, improves the quality of data and helps to standardize reporting particularly in case of operations across borders (European Central Bank, 2024).

While all these capitals contribute to the generation of business assets, human capital is particularly important for generating innovation, engaging with stakeholders, boosting organizational resilience, and ensuring the capacity of an organization to create long-term value. Some aspects of the human capital pertain to intangible nature

of human activities, which is why it might be challenging to generate human-related indicators and their measurements for universal applications in contrast to various components of financial performance. Furthermore, given the association of human capital development with economic growth (Zhang et al., 2023), and recognizing that consumer behavior is influenced by various factors, including psychological ones (Ma et al., 2023) through the prism of the consumer mindset-to-sales (Valenti et al., 2023), it becomes imperative to delve into human-related capitals.

Having to address increasingly intricate business challenges like diverse stakeholder interests and dynamic environments, PM employs various methodologies and frameworks. However, the key driver of the design and implementation of PM systems is the organizational leadership because leadership aspirations will either promote or hinder PM across various sectors of the economy, for example, in hospitality (Jaaffar et al., 2023), and different types of enterprises, such as SME (Chaithanapat et al., 2022). Generally, leadership styles in alliance with effective PM aim at promoting knowledge, innovation, and productivity through the prism of Sustainable Development Goal 8 “Decent Workplace and Economic Growth” (United Nations [UN], n.d.), which focused on increasing employee motivation, introducing the principles of transparency in operations and decision-making, and continuous improvement, thus, forming the foundation of performance sustainability.

While PM models contain various performance indicators (Gruman & Saks, 2011), there remains a critical gap in the identification and standardization of key performance indicators (henceforth – KPIs) within <IR>. This gap stems partly from the voluntary nature and global reach of the framework (Uzule, 2023). Consequently, our research aim was to address this gap by identifying the concepts typically used about KPIs of human capital in integrated reports across various industries. The research aim led to the following two research questions:

How might the identified concepts related to KPIs of human capital in integrated reports contribute to organizational performance transparency and value creation?

How might the human-centric leadership styles, such as transformational and benevolent leadership, use these KPIs to improve performance management?

The inclusion of the research question on leadership is grounded in the role of leadership as a driver of performance management, change, and sustainable development under a specific perspective, for example, that of SDG8. As Rodrigue et al. (2024) argue, reporting on sustainable development will not automatically yield improvement. To achieve the aim, the text analysis method of distant reading was employed. It focused on identifying keywords related to human capital and links between them, examining relationships between them.

The importance of this research lies in its threefold contribution. First, because the concept of <IR> is quite vague (Gerwanski et al., 2021), by providing usable human capital KPIs, this research renders applied aspects of

<IR> in terms of human capital planning, assessment, and management, which bridges the gap between <IR> and effective performance management. Although there are various models of human capital indicators, ranging from 4 to 53 (Abdullah et al., 2013), the KPIs proposed in this research are suggested for integrated models of business performance. Second, this research contributes to the perspectives of economic theory on human resource management (Nordhaug, 2004) by providing a spectrum of human capital KPIs adaptable to diverse employee groups within an integrated thinking system of performance management, offered by <IR>. Third, this research provides a tool, which is human capital KPIs of <IR>, for the enhancement of practices of transformational and benevolent leaders, who strive to improve employee performance (Piwowar-Sulej & Iqbal, 2023) through employee-centric approaches. Ultimately, through this research, we aim to deepen the understanding of how <IR> can effectively complement PM strategies concerning human-centric KPIs.

## 2. Literature review

Human capital indicators are a component of PM, which could be encoded in various ways depending on the business strategy and leadership aspirations. Therefore, the literature review encompassed the discussion of PM as well as transformational and benevolent leadership as drivers of PM for human capital. The section ends with a description of relevance of <IR> to the research aim.

### 2.1. Concept of performance management

Performance management (PM) is a system for controlling organizational operations and performance (Delise et al., 2023) to increase the levels of productivity and effectiveness (Gruman & Saks, 2011). The concept of PM is multifaceted inclusive of the evaluation of practices stimulating employee performance according to the set objectives (Ehmann et al., 2023) and the levels of employee engagement (Gruman & Saks, 2011). In fact, employee performance can be viewed as a key driver of PM (Gruman & Saks, 2011). Employee performance is formed not only by organizational objectives and contexts, but also by the uniqueness of human capital professional experience and competences, which are difficult to replicate (Aman-Ullah et al., 2022) and which are tight to a specific organization (Marchiori et al., 2022). Organizational human capital co-creates the organizational market value (Meszek, 2015) as well as the organizational competitive advantage (Marchiori et al., 2022; Meszek, 2015) through employees’ new ideas that foster the development of new products and services (Nguyen & Dao, 2023). Therefore, proper employee management is directly linked to organizational competitive advantage (Kokkaew et al., 2022).

In general, the application of the human resource analytics to PM is expected to lead to higher levels of organizational elasticity in market adaptation, higher competitiveness on the market (Samson & Bhanugopan, 2022)

and improved organizational sustainability. Failure to do so might lead to a disconnect between the achieved results and organizational strategy (Samson & Bhanugopan, 2022), which reduces the level of organizational sustainability and the competitive advantage of a firm.

The emphasis on sustainability is paramount due to its dual role in PM. Sustainable practices in production and consumption can leverage PM effectiveness (Yanine & Campos, 2023), and conversely, proper PM ensures sustainability (Yanine & Campos, 2023), establishing a bidirectional relationship between sustainable development and PM. Viewing sustainability and PM within one network, a clear connection emerges between Enterprise Sustainability Management (ESM) and Business Process Management (BPM), as highlighted by Yanine and Campos (2023). ESM, on the one hand, integrates distinct operational and business traits to safeguard overall integrity and business success. BPM, on the other hand, strives to optimize processes for efficiency and effectiveness to drive long-term success. BMP aims to enhance the quality of all business processes, such as their design, speed, resource use (Iovanella, 2024). In essence, the synergy between sustainability and PM fosters a virtuous cycle wherein sustainable practices enhance performance, and effective PM reinforces sustainability objectives. By embracing this connection, organizations can faster achieve their business objectives, while contributing to the well-being and prosperity of their stakeholders.

There are various models of PM, which include stages of activities, performance monitoring, performance evaluation and feedback as well as enhanced performance (Gruman & Saks, 2011). The models include diverse indicators, including employee engagement, performance objectives, performance agreement, job design, performance facilitation, training, and leadership style (Gruman & Saks, 2011), the latter being a critical factor in organizational development.

## 2.2. Leadership as a driver of performance management

Leadership is an indispensable factor of organizational performance (Aman-Ullah et al., 2022; Nguyen & Dao, 2023; Semuel et al., 2017) due to its effects on human capital productivity (Aman-Ullah et al., 2022; Nguyen & Dao, 2023) and the generation of innovations (Semuel et al., 2017). For example, PM has been found to affect teacher quality (De Hoyos et al., 2024). There is a spectrum of leadership styles geared toward fostering sustainability, with transformational and benevolent leadership principles prominently featured due to their emphases on change and innovation, and responsibility and support for employees, respectively.

According to Piwovar-Sulej and Iqbal (2023), the development of an organization depends on the characteristics of the leader. Transformational leadership prioritizes organizational motivation, transformation, and continuous improvement. Similarly to other leaders, transformational leaders focus on boosting performance,

but the aspects that they emphasize are somewhat different. They engage employees by creating connections (Nguyen & Dao, 2023), which evolve into networks of communication and performance areas, which ultimately support operations throughout these networks. More specifically, transformational leaders explain their vision to employees and support them on the path towards the attainment of organizational objectives, thus, increasing job satisfaction, the sense of self-value and confidence among employees (Lee et al., 2023). By providing social support to employees, transformational leaders promote employee engagement, and in doing so, increase job satisfaction (Gruman & Saks, 2011). By cultivating a corporate culture of adaptability and collaboration, transformational leaders adeptly navigate the intricacies inherent in project management adoption. They empower employees to embrace new methodologies and frameworks, including (<IR>), and encourage them to align their efforts with organizational goals and values. Thus, not only do transformational leaders enhance performance and promote innovation, they also promote organizational transformation at the overall corporate culture level. Their effects spread throughout 4 dimensions of leadership influence: idealised influence, inspirational motivation, intellectual stimulation, and individual consideration (Nguyen & Dao, 2023).

Overall, through their visionary approach and commitment to excellence, transformational leaders play a pivotal role in driving the successful implementation of PM initiatives, ultimately enhancing organizational performance and competitiveness. Finally, transformational leadership is aligned with SDG8, in particular Target 8.3. focusing on the creation of decent work environment, promotion of creativity, innovation and entrepreneurship, and Target 8.5. promoting equality at the workplace within the framework of decent work contexts (UN, n.d.).

As for benevolent leadership principles, it is constructed around morale, spirituality, vitality, and community (Karakas & Sarigollu, 2012), which makes it relevant to PM. By focusing on empathy and ethical decision-making, installing meaning to operations, inspiring positive action, and positively impacting external stakeholders (Karakas & Sarigollu, 2012), benevolent leaders prioritize the well-being of both internal stakeholders (e.g. employees) and external stakeholders (e.g. wider community), creating a supportive and inclusive work environment conducive to innovation and growth. Benevolent leaders foster a culture of resource sharing and cultivate a mindset among employees centred on fostering genuine interest and commitment to their work (Shen et al., 2023). They promote trust and mutual respect, encouraging open dialogue and collaboration across all levels of the organization. By demonstrating integrity and genuine concern for the welfare of others, benevolent leaders inspire loyalty and commitment among employees, facilitating the successful adoption of PM practices. Through their ethical leadership approach, they contribute to building a culture of accountability and social responsibility, ultimately driving sustainable organizational performance and value creation.

Overall, both transformational and benevolent leadership styles focus on boosting organizational productivity, competitiveness, sustainability, impact on stakeholders, and work commitment through the lens of employee performance, employee engagement, employee satisfaction, organizational creativity and innovation, there are some differences in their approaches to addressing the issues. Transformational leaders tend to focus on the attainment of organizational objectives, promotion of entrepreneurship, implementation of change (Esteves et al., 2024), and generation of innovation (Aman-Ullah et al., 2022). In contrast, benevolent leaders emphasize psychological aspects of well-being of employees and the creation of positive emotions (Erkutlu & Chafra, 2016). Yet, both leadership types require indicators to design, monitor, and assess performance comprehensively in order to foster PM. Although there are various models of PM (Gruman & Saks, 2011), one such model could be designed within the <IR> framework.

### 2.3. Integrated Reporting Framework as a model for enhanced performance management

Integrated Reporting (<IR>) stands apart from conventional reporting methods by embracing a forward-looking evaluation of an enterprise's current and future capacity to create value and business growth through six capital types – financial, manufacturing, environmental, intellectual, social and relationship capitals, human capital (Tanaka & Tsuda, 2022; Uzule, 2023), thus, aligning with the aims of PM, transformational and benevolent leadership as well as SDG8. The relevance of <IR> to PM is multifaceted. By employing integrated thinking (Tweedie, 2024), <IR> fosters long-term value creation by showing how various types of information (both financial and non-financial) and capitals are interconnected (Gerwanski et al., 2021; Sun et al., 2023) to impact growth of each capital (Parfitt, 2024) and to generate transparency, and accountability of performance. By including environmental and social issues (Rodrigue et al., 2024; Tanaka & Tsuda, 2022), <IR> emphasizes sustainability, the creation of a competitive advantage, identification of opportunities and risks, economic growth (Parfitt, 2024), employee engagement, improved relationships with stakeholders (De Graaff, 2023). On such grounds, <IR> is a useful tool for presenting an overall picture of business management of an enterprise (Tanaka & Tsuda, 2022).

For these and other reasons, such as the loss of trust in financial reporting, there has been a growing interest among investors in non-financial reporting (Gerwanski et al., 2021) of which <IR> is one such type. No wonder that integrated reports and their publications have been found to induce positive reactions from investors (Kuzmina-Merlino & Abdurakhmanova, 2024), including institutional investors (Tanaka & Tsuda, 2022), and even financial markets (Kuzmina-Merlino & Abdurakhmanova, 2024). Having acknowledged both financial as well as environmental, social, & governance (ESG) values, there

have been established awards for outstanding integrated reports in Japan, for example, an annual award *Excellent Integrated Report* of the Government Pension Investment Fund (Tanaka & Tsuda, 2022).

The applicability and usability of <IR> in relation to PM are affected by leadership style, organizational strategy, and key performance indicators (KPIs). As there is no universally accepted set of KPIs for <IR> due to the voluntary nature of <IR>, they tend to be tailored to specific strategies and profiles of enterprises. While financial, manufacturing, and environmental indicators are often tied to financial and other type of information that can be easily encoded in numbers, human capital indicators might be more challenging to identify and encode due to their dependence on the size and market niche of an enterprise as well as intangible assets that might not have a direct impact on performance.

Despite the multifaceted benefits of <IR> for PM, there exist various areas in need of improvement, including the gap in the identification and standardization of human capital KPIs within integrated reports. While <IR> offers a comprehensive framework encompassing various capital types and fostering long-term value creation, the incorporation of human capital KPIs remains underexplored. Given the significance of human capital in the creation of innovations (Danta & Rath, 2024; Marchiori et al., 2022), organizational performance (Marchiori et al., 2022), identifying these KPIs becomes imperative. Thus, the aim of this research was to identify the concepts used in reference to human capital KPIs in integrated reports, bridging the gap between <IR> and effective PM strategies.

## 3. Methodology

### 3.1. Research method

The aim of this research was to identify KPIs used to evaluate human capital in <IR> across various industries. To achieve this aim, a text analysis method of distant reading was employed. This method studies units of text that are either larger or smaller than the scope of the entire text (Wang, 2022) by tapping into the abstract representation of text, specifically, higher-level themes and their networks (Lafia et al., 2021).

At the practical level, a focal point of text analysis is extracting specific types of information, for example, historical flora from a collection of text (Nundloll et al., 2022). By extracting information from text, researchers identify specific concepts (Qiu et al., 2024). Specific concepts can function as keywords for specified objectives, which is in line with Liu et al. (2024a), who argue that a common approach to information extraction involves the extraction of keywords, which effectively encapsulate the essence of the text. So, this research first employed the method of extraction of keywords related to human capital.

However, keywords do not exist in isolation. They belong to a network of concepts guided by a specific



objective of an author, which is why the next research analysis method, deployed in this study, was the keyword links, or else collocates, which are the lexical items that tend to co-occur with specified keywords. The identification of the keyword links is consistent with information extraction purposes because by extracting information from text, researchers can identify relationships between concepts (Espada et al., 2023; Qiu et al., 2024). The extraction of keywords is associated with keyword nodes and relationships between them (Espada et al., 2023). Typically, a relationship between words is established on the grounds of co-occurrence considering the frequency of co-occurrence (Espada et al., 2023). Overall, the research employed the keyword and keyword link analysis for the identification of KPIs of human-related capitals of <IR>.

### 3.2. Selection of materials

Various criteria were put forward for the selection of materials (see Table 1).

**Table 1.** Selection criteria for materials  
(source: Authors' research)

Criterion area	Criteria specification	Justification
Report type	Integrated reports	Research aim
Identification of report type	Title or methodology inclusive of <IR>	Exclusion of the necessity to prove the report being <IR>
Report type	Open access	Public accessibility
Industrial areas	Diverse but important for national development	Exclusion of the focus on one industry
Companies	<IR> available for 2020–2022	Consistency of text analysis
Geographical areas	Different regions of the world	Exclusion of the focus on one region
Representativeness of <IR> samples	Combination of relative importance, increasing interest, on the one hand, and the random selection factor, on the other hand	Association between importance and quality of reports; random choice
Language	English	Analysis of reports from different world locations as one corpus
Time period	2020–2022	The increased demand for <IR> since the COVID-19 outbreak
Number of reports	4 per industry per year (except for the category <i>Miscellaneous</i> )	Limitations of the text analysis platform. Limitations of applications of <IR>

### 3.3. Identification of keywords

Consistent with PRISMA 2020 Checklist (Prisma, 2024), the authors designed a protocol for the identification of key-

words related to human-involving capitals of <IR>. Keywords are typically selected using the knowledge of the research area (Nagpal & Petersen, 2021), which is why the keyword selection criteria in this study were based on the literature review of keyword selection criteria. Not one but multiple keyword-selection criteria were applied to ensure reliable identification of keywords (Chen & Chang, 2024; Noh et al., 2015) (see Table 2).

**Table 2.** Selection criteria for keywords  
(source: Authors' research)

References	Criteria in general	Criteria adapted for this research
Chen and Chang (2024); Noh et al. (2015)	Frequency of occurrence excluding frequency "noise"	0.2%–1% (considering the diversity of themes of <IR>)
Noh et al. (2015)	Number of keywords in text-mining research (30–130 items)	30
Chen and Chang (2024); Noh et al. (2015)	Relevance to the theme	Human-related, performance related
Chen and Chang (2024)	Lexical precision (specificity)	<i>Primary keywords (8):</i> Employee, staff, personnel, human, performance, productivity, indicator, measurement <i>Primary keyword phrases (2):</i> human capital, key performance indicators. <i>Secondary keywords associated with primary keywords (20):</i> rights, value, development, benefits, engagement, satisfaction, revenues, costs, profits, risks, tasks, capacity, turnover, compliance, liabilities, strategy, wellness, sustainability, management, opportunities.

In case of lexical precision (see Table 2), primary keywords were identified based on definitions of human capital, whereas secondary keywords were the concepts associated with the primary keyword measurements, which were essential for the encoding of indicators for employee performance measurements. In total, 30 items were selected for the analysis as keywords to be consistent with the number of keywords in text mining searchers (Noh et al., 2015).

### 3.4. Data analysis

The selected reports were analyzed using two open-access digital text analysis tools – a platform Voyant Tools and software AntConc. Voyant Tools was used for keyword frequencies and keyword links (see 2.1., 2.3.; Figures 4–6),

while AntConc was employed for concordances of keyword phrases (see Figures 3, 7, 8). Although either tool could perform all analyses, both were used to obtain a higher quality of visual outputs.

Due to the text volume restrictions of *Voyant Tools* and *AntConc*, analysing the entire corpus simultaneously was unfeasible. As a result, the corpus was divided into 8 parts: 2 bank sub-corpora, 2 transportation sub-corpora, 2 university sub-corpora, and 2 miscellaneous sub-corpora covering communications, energy, and construction industries. Each part was analysed individually before aggregating the results.

## 4. Results

### 4.1. Selection of materials

In total, 54 reports from diverse industries and world regions were analysed based on material selection criteria (see Figures 1–2).

Figure 1 shows that the reports from Europe, Asia, Africa, and America were selected for the analysis to obtain an overall insight into integrated report practices. The list of countries is mostly linked to a higher level of use of integrated reports in comparison to other countries in the region. The choice of industries was based on the some of

the key industries for national development and included transportation, banking, higher education, media and telecommunication, construction, and ICT services.

The highest concentration of companies, with five from each, was observed in Japan and South Africa, which pertains to the significance and prevalence of <IR> within these nations. As previously indicated, Japan has established numerous <IR> awards (Tanaka & Tsuda, 2022). In the survey on corporate reporting in Japan, one of the global leading consultancy firm KPMG Sustainable Value Services Japan (2023) highlighted the growing adoption of <IR> in Japanese businesses with a fourfold increase in <IR> utilization from 2018 to 2022, with 884 companies opting for this reporting format in 2022. The positive aspects of this trend were included in the Foreword co-written by Kerrie Warring, CEO of the International Corporate Governance Network (KPMG Sustainable Value Services Japan, 2023a). As for South Africa, it is one of the leaders in adopting <IR> due to the requirement for listed companies to produce integrated reports (WBCSD, 2014a) because in South Africa <IR> is perceived as a tool for improved performance management, platform for continuous engagement with stakeholders, an insight into the quality of leadership of companies (WBCSD, 2014b) as well as an instrument to impact ESG issues (KPMG South Africa, 2023).

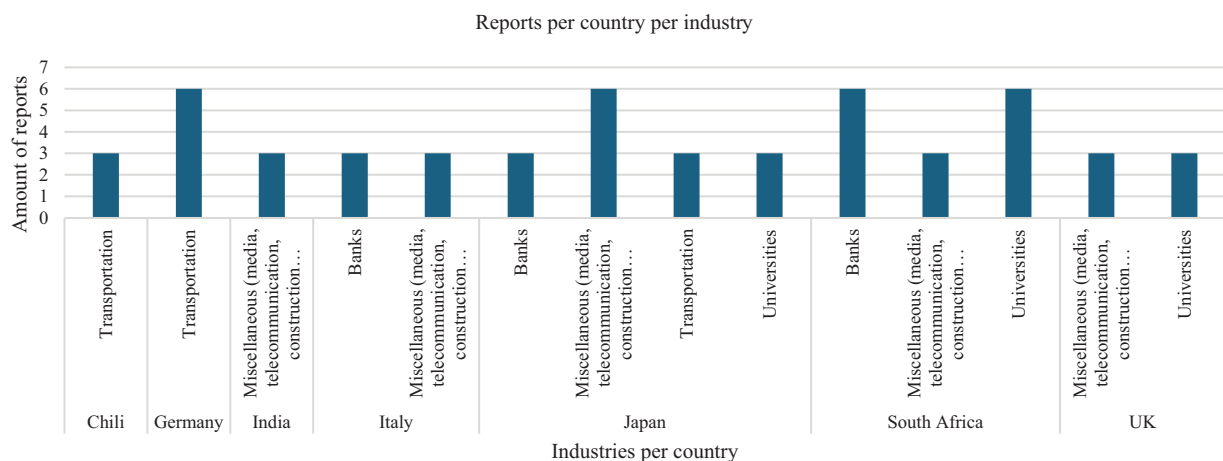


Figure 1. Characteristics of analysed materials: countries per industries (source: Authors' research)

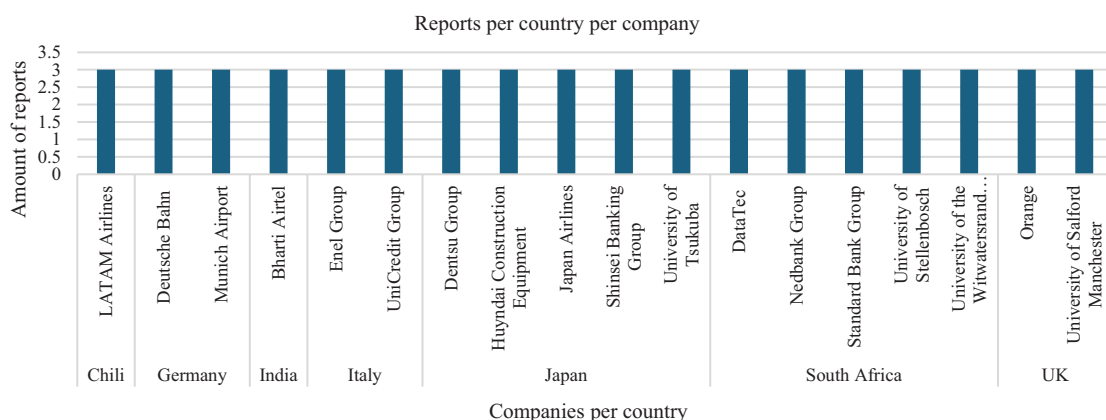


Figure 2. Characteristics of analysed materials: companies per countries (source: Authors' research)

In contrast, in Europe, 147 listed companies were found to publish integrated reports in English from 2013 to 2020, which resulted in 665 reports in total over the same period (Nada & Gyori, 2023). Similarly to Japan, there was an increase in adaptability of <IR> with 18 reports in 2013 increasing to 139 in 2020 (Nada & Gyori, 2023), which is why the choice of European countries was random. While the integrated reports from India were included due to the country's significance in Asia, Chile's selection was based on its average characteristics in terms of the population and territorial size. Overall, such report selection criteria aimed to combine focused and random material selection.

## 4.2. Analysis of keyword frequency

The total size of the corpus comprised 2,449,535 lexical tokens. The total number of primary keywords (see Table 2) is summarized in Table 3. Because the concepts of employees, staff, personnel, and human are related in this context, their frequencies were summarized under the concept of employees. The same procedure was applied to the concept of performance, which was merged with productivity, and the concept of indicator merged with measurements. The concept of human capital was not merged with any other concept because it denotes the primary capital in <IR> (see Table 3).

**Table 3.** Summary of primary keyword frequency (source: Authors' research)

Merged keywords	Frequency of the keywords in the total corpus
Human capital	0.01%
Key performance indicators	0.14%
Indicators	0.25%
Employees	0.56%
Performance	0.21%

Although the concept of human capital was mentioned 256 times, the concepts of employees occurred on 13,667

occasions. In the context of integrated reports, both human capital and employee-related concepts denote the same referent – workforce of an organization. A higher frequency of occurrence of the lexical items *employees*, *personnel* and *staff*, in contrast to *human capital*, might be related to the need to create reports that are unambiguous to stakeholders.

As for the term *indicator*, it was utilized in 0.25% of the text. Among these occurrences, two of the most typical collocations were *key performance indicators* (0.14%) and *financial indicators*, encompassing aspects of assurance and valuation (0.07%). The remaining collocates with *indicator* constituted 0.04% of the total, including terms like quality, risk assessment, circular economy, transformation, service provision, management, ethics, environment, safety, and health (see an example in Figure 3).

The frequency of occurrence of the keywords throughout the corpus was subsequently checked through a relative frequency line diagram and the importance of each keyword in a bubble diagram (see Figures 4–5).

This analysis demonstrated that all concepts were used throughout the corpus, which means that the keywords of this research were important throughout text, not just in selected chapters.

## 4.3. Analysis of keyword links and concordances

To establish human capital KPIs, it is important to examine the connections of the keywords to other concepts, which is why they next research stage encompassed the creation of links between the primary and secondary keywords (see Table 2). A sample of a link diagram for sub-corpora of 6 integrated reports of banks and 6 integrated reports of universities are provided in Figure 6, in which the keywords are shown in blue circles, the size of which demonstrates the frequency of occurrence of the keyword. The words that are most frequently collocated with the keywords are connected by lines.

KWIC	Plot	File	Cluster	N-Gram	Collocate	Word	Keyword	Wordcloud
Total Hits: 52 Page Size: 100 hits 1 to 52 of 52 hits								
		File	Left Context			Hit		Right Context
16		Huyndai Constructi...	then the implementation of environmental management initiatives, key performance			Indicators (		KPIs) are established for evaluating executives and staff members involved in the initiatives, and they are linked to
17		Huyndai Constructi...	nal teams are appointed in each headquarters and department, and Key Performance			Indicators (		KPIs) are established and managed. The process of implementing the strategy 1 Selecting strategic tasks 4 ESG Manag
18		Huyndai Constructi...	ESG assessment indicators to enhance the identification of ESG risks. The assessment			indicators		will cover five key areas: ethics, environment, labor and human rights, safety and health, and management systems. We
19		Huyndai Constructi...	rs and provide on-site ESG consulting for key suppliers. The supplier ESG assessment			indicators		will focus on aspects relevant to the construction equipment industry, such as managing conflict minerals and liability r
20		Huyndai Constructi...	: Framework Accelerating ESG Management Vision Mission Key Areas Strategy Major			indicators		A workplace to be proud Strengthening co-prosperity and win-win growth A respected company in society Establishin
21		Huyndai Constructi...	anager separately assigned at partner companies Company-wide safety performance			indicator -		Accident rate (accidental industrial injuries) Category worksite Expiration Date ISO 45001 Ulsan factory of HCE Gunsan
22		Huyndai Constructi...	corporations - HSE promoter at each department Company-wide safety performance			indicator -		Amount of GHG emissions reduction - No. of violations of the environmental laws/regulations 2020 Achievements - Rec
23		Huyndai Constructi...	lex Risk identification and evaluation process Risk mitigation measures Management			Indicators		and Evaluation of Effectiveness Quality Risks and Opportunities for Suppliers To mitigate supplier quality risks and leve
24		Orange.2020.pdf	nge in revenues 20% EBITDAaL Non-financial criteria 33% 17% employee experience			indicators		BtoC and BtoB customer experience indicators 2020-2022 LTIP Performance indicators 40% 40% 20% total shareholder
25		Orange.2020.pdf	3 on a country-by-country basis in Europe. After a while, monitoring the public health			indicators		enabled us to anticipate capacity upgrades when different countries passed the thresholds they'd set to bring in
26		Huyndai Constructi...	modification to this report. 104 105 HCE INTEGRATED REPORT 2021 Key Performance			Indicators		Enhancing Corporate Value through Sustainable Growth R&D 1 Category R&D expenses R&D expenses (relative to rev
27		Huyndai Constructi...	sed at a level of approximately 5% of relevant executive and employee performance			indicators,		evaluating metrics such as GHG intensity (ton/unit) and the establishment of climate change response systems. GHG En
28		Orange.2020.pdf	performance that benefits everyone 124 126 131 134 136 138 142 — Key Performance			Indicators —		Financial results and performance — Non-financial results — Orange's contribution to the UN 2030 Agenda — Assessir
29		Huyndai Constructi...	322) Strategic Direction Establishing a climate change response system Management			Indicators		GHG emissions (Scope 1,2) Creating eco-friendly operations Energy consumption of the operations (Intensity)1) Climat
30		Huyndai Constructi...	ation ESG Committee: Reporting 2 Developing action plans 3 Establishing evaluation			indicators		Implementation by Division/Department Setting KPI of executives and operational teams in charge ABOUT HCE ESG G
31		Huyndai Constructi...	ting in 2023, to develop new models, we intend to add emission reduction targets as			indicators,		In addition to fuel efficiency, and go through an approval process to evaluate the achievement of these targets.
32		Orange.2020.pdf	or women, accident frequency rates and the Employee Barometer, and environmental			indicators,		including the renewable electricity rate and the change in CO2 rate per customer use. Non-financial criteria help
33		Huyndai Constructi...	nd overseas entities Executive in charge - Head of Quality Dept. Quality management			indicator -		Initial quality index improvement - Durability index improvement Management of Quality Failure Cost For a systematic

**Figure 3.** Example of collocates with the term *indicator* (source: Authors' research)

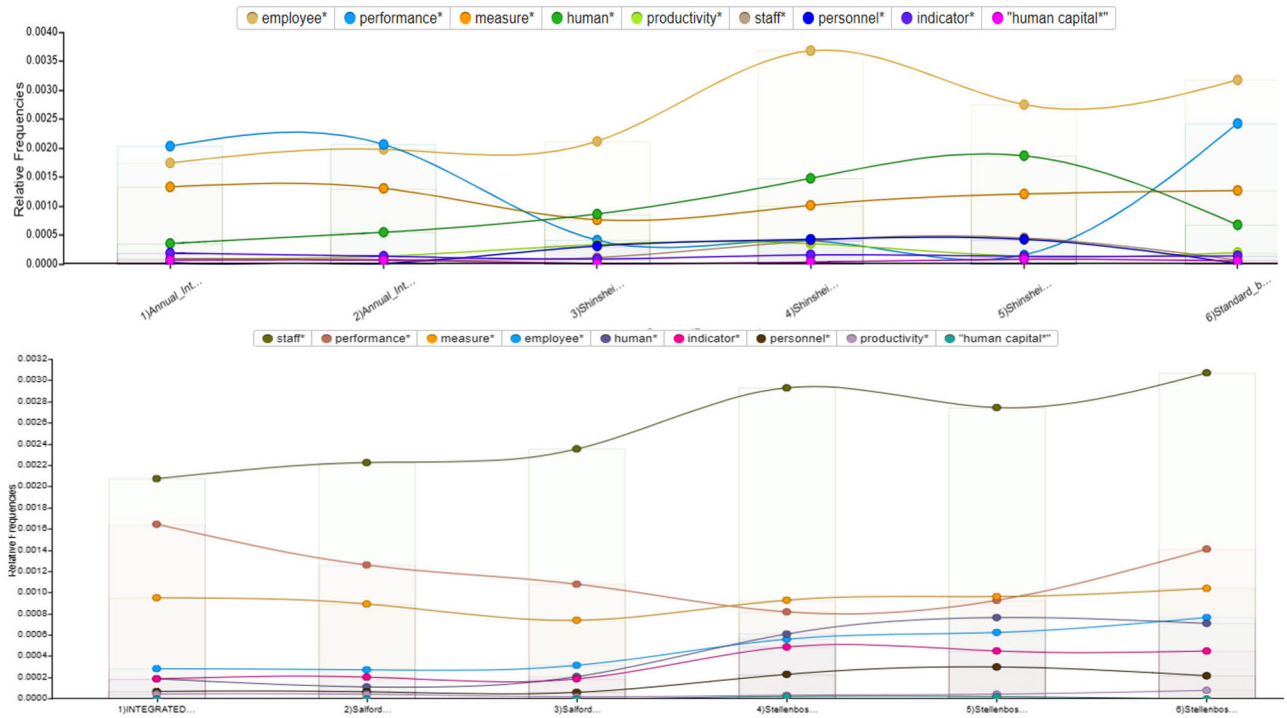


Figure 4. Samples of keyword use frequencies throughout sub-corpora (source: Authors' research)

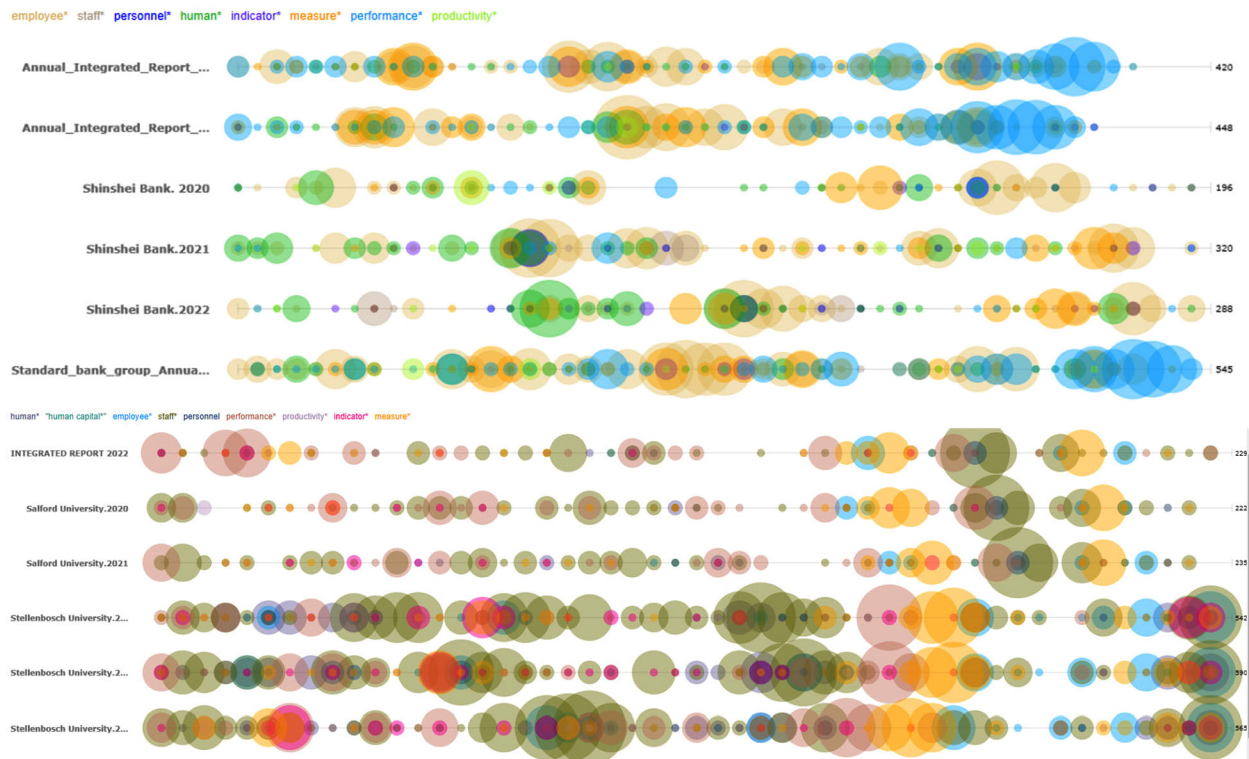


Figure 5. Samples of keyword use importance throughout sub-corpora (source: Authors' research)





**Table 4.** Identified keyword collocates (source: Authors' research)

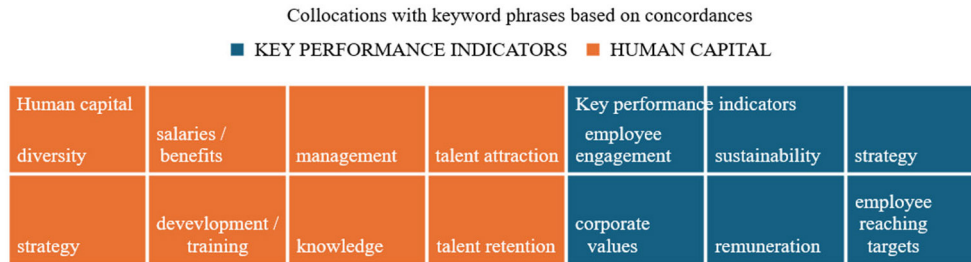
Proposed factors	Identified keyword collocates (16)	Proposed factors	Identified keyword collocates (14)
Employee competences	Employee skills / knowledge	Employee well-being	Employee well-being
	Employee abilities / capacities		Employee interests
	Employee training		Employee commitment
Performance	Employee growth / development		Employee engagement
	Employee innovation		Employee satisfaction
	Employee performance by strategy		Employee rights
	Employee productivity		Employee health
	Employee services	Sustainability	Employee value
	Employee quality of performance		Employee diversity
	Employee diligence		Employee inclusion
	Employee turnover		Talent acquisition
Risk estimation	Employee compliance and liabilities	Financial aspects	Opportunities for employees
	Employee security-oriented actions		Employee costs (remuneration, perks)
			Investment into employee development

KWIC	Plot	File	Cluster	N-Gram	Collocate	Word	Keyword	Wordcloud	
Total Hits: 63		Page Size	100 hits			1 to 63 of 63 hits			
File		Left Context				Hit	Right Context		
40	Nedbank...	about how we created and protected value for our employees on page 83, as well as in our				human capital,	diversity and inclusion chapter within our 2022 Society Report available at nedbankgroup.co.za. Re		
41	Nedbank...	vision of climate-related financial risks (June 2022) • Sustainable-development finance inclusion •				human capital,	diversity and • Human rights and community development • Client responsibility • Financial inclusi		
42	BNP Paribas...	s dynamic of change, while making its own transformation towards greater agility. With regard to				human capital,	a major achievement was the launch, in October 2022, of the Sustainability Academy, whose missi		
43	BNP Paribas...	inable finance. To achieve this vision, the strategy focuses on three themes: employee experience,				human capital,	and ethics and inclusion. 57 EMPLOYEE EXPERIENCE: A GREATER FOCUS ON TEAMS There is a sym		
44	Nedbank...	ment capabilities, innovation capacity, knowledge and expertise, as well as strategic partnerships.				Human capital	Our culture and our people, our collective knowledge, skills and experience to enable innovativ		
45	Nedbank...	small-business services, retail vehicle finance, card acquiring, digital CVPs and asset management.				Human capital	Our culture and our people, our collective knowledge, and our skills and experience enable innova		
46	Nedbank...	ategic execution 6 Organisational resiliency 7 Operational 9 Reputational and conduct 10 Capital				human capital	Our culture, employees, collective knowledge, skills, and experience enable innovative and compe		
47	Nedbank...	s score of 19, the support we provided for our employees during Covid-19, ongoing investment in				human capital	development and training, solid progress on transformation metrics and a low attrition level of 9.3		
48	Nedbank...	into account, among other things, an improved employee NPS score of 22, ongoing investment in				human capital	development and training, the successful implementation of hybrid work practices, a 4.6% average		
49	Nedbank...	ernance Report on our group website at nedbankgroup.co.za. 67 Our Human Capital Strategy Our				Human Capital	Strategy leverages the evolving world of work and is a key enabler of the group'		
50	Nedbank...	igital adoption and the promotion of greater levels of flexible work practices by our employees (				human capital).	Expansion into Africa remains a longer-term opportunity, but we are increasingly looking to levera		
51	Nedbank...	igital adoption and the promotion of greater levels of flexible work practices by our employees (				human capital).	Expansion into Africa remains a longer-term opportunity, but we are increasingly looking to levera		
52	Nedbank...	has been on ensuring the health, safety and well-being of our employees and clients (social and				human capital).	We invoked business continuity plans (BCPs) and enabled remote working across the enterprise as		
53	Nedbank...	rding and ecosystem solution IT modernisation programme (Managed Evolution): 91% complete				Human capital	Percentage salary increase for unionised employees greater than management Diversity metrics in		
54	Nedbank...	n solution (Avo) implemented IT modernisation programme (Managed Evolution): 85% complete				Human capital	R18.0bn paid in salaries and benefits Percentage salary increase for unionised employees greater t		
55	Nedbank...	ervices (manufactured capital) are increasingly digitised, there is a trade-off between employees (				human capital,	physical outlets (manufactured capital) and digital products and services (manufactured and intell		
56	Nedbank...	ervices (manufactured capital) are increasingly digitised, there is a trade-off between employees (				human capital,	physical outlets (manufactured capital) and digital products and services (manufactured and intell		
57	Nedbank...	strength of our balance sheet The value of Nedbank Group as a company on the JSE Our				human capital	Return on equity 12.5% 2020: 6.2% 2019: 15.0% The return on capital that shareholders have invest		
58	Nedbank...	26,861,2020,28,371,2019,29,213,215,216,217,218,219,220,221,222,223,224,225,226,227,228,229,230,231,232,233,234,235,236,237,238,239,240,241,242,243,244,245,246,247,248,249,250,251,252,253,254,255,256,257,258,259,260,261,262,263,264,265,266,267,268,269,270,271,272,273,274,275,276,277,278,279,280,281,282,283,284,285,286,287,288,289,290,291,292,293,294,295,296,297,298,299,300,301,302,303,304,305,306,307,308,309,310,311,312,313,314,315,316,317,318,319,320,321,322,323,324,325,326,327,328,329,330,331,332,333,334,335,336,337,338,339,340,341,342,343,344,345,346,347,348,349,350,351,352,353,354,355,356,357,358,359,360,361,362,363,364,365,366,367,368,369,370,371,372,373,374,375,376,377,378,379,380,381,382,383,384,385,386,387,388,389,390,391,392,393,394,395,396,397,398,399,400,401,402,403,404,405,406,407,408,409,410,411,412,413,414,415,416,417,418,419,420,421,422,423,424,425,426,427,428,429,430,431,432,433,434,435,436,437,438,439,440,441,442,443,444,445,446,447,448,449,450,451,452,453,454,455,456,457,458,459,460,461,462,463,464,465,466,467,468,469,470,471,472,473,474,475,476,477,478,479,480,481,482,483,484,485,486,487,488,489,490,491,492,493,494,495,496,497,498,499,500,501,502,503,504,505,506,507,508,509,510,511,512,513,514,515,516,517,518,519,520,521,522,523,524,525,526,527,528,529,530,531,532,533,534,535,536,537,538,539,540,541,542,543,544,545,546,547,548,549,550,551,552,553,554,555,556,557,558,559,560,561,562,563,564,565,566,567,568,569,570,571,572,573,574,575,576,577,578,579,580,581,582,583,584,585,586,587,588,589,590,591,592,593,594,595,596,597,598,599,600,601,602,603,604,605,606,607,608,609,610,611,612,613,614,615,616,617,618,619,620,621,622,623,624,625,626,627,628,629,630,631,632,633,634,635,636,637,638,639,640,641,642,643,644,645,646,647,648,649,650,651,652,653,654,655,656,657,658,659,660,661,662,663,664,665,666,667,668,669,670,671,672,673,674,675,676,677,678,679,680,681,682,683,684,685,686,687,688,689,690,691,692,693,694,695,696,697,698,699,700,701,702,703,704,705,706,707,708,709,710,711,712,713,714,715,716,717,718,719,720,721,722,723,724,725,726,727,728,729,730,731,732,733,734,735,736,737,738,739,740,741,742,743,744,745,746,747,748,749,750,751,752,753,754,755,756,757,758,759,760,761,762,763,764,765,766,767,768,769,770,771,772,773,774,775,776,777,778,779,780,781,782,783,784,785,786,787,788,789,790,791,792,793,794,795,796,797,798,799,800,801,802,803,804,805,806,807,808,809,810,811,812,813,814,815,816,817,818,819,820,821,822,823,824,825,826,827,828,829,830,831,832,833,834,835,836,837,838,839,840,841,842,843,844,845,846,847,848,849,850,851,852,853,854,855,856,857,858,859,860,861,862,863,864,865,866,867,868,869,870,871,872,873,874,875,876,877,878,879,880,881,882,883,884,885,886,887,888,889,890,891,892,893,894,895,896,897,898,899,900,901,902,903,904,905,906,907,908,909,910,911,912,913,914,915,916,917,918,919,920,921,922,923,924,925,926,927,928,929,930,931,932,933,934,935,936,937,938,939,940,941,942,943,944,945,946,947,948,949,950,951,952,953,954,955,956,957,958,959,960,961,962,963,964,965,966,967,968,969,970,971,972,973,974,975,976,977,978,979,980,981,982,983,984,985,986,987,988,989,990,991,992,993,994,995,996,997,998,999,1000					human capital 5.		What differentiates Nedbank? While financial services, in general, have become increasingly com

**Figure 7.** Concordance sample of human capital (source: Authors' research)

KWIC	Plot	File	Cluster	N-Gram	Collocate	Word	Keyword	Wordcloud
Total Hits: 29	Page Size	100 hits	1 to 29 of 29 hits					
File		Left Context				Hit		Right Context
9 Orange...		What are sustainability bonds? Orange 2021 Integrated Annual Report 72 Social				Key performance indicators		As a telecommunications operator, we have a social responsibility to our stakeholders and
10 Orange...		arbon emissions mean? Orange 2021 Integrated Annual Report 60 Environment				Key performance indicators		In response to the climate challenge, Orange aims to achieve net zero carbon
11 Orange...		What are TowerCos? Orange 2021 Integrated Annual Report 28 Infrastructure				Key performance indicators		Orange has been heavily investing in new-generation digital infrastructure for many years.
12 Orange...		cial performance targets Orange 2021 Integrated Annual Report 86 Governance				Key performance indicators		Orange's governance team develops and implements a long-term growth strategy combining
13 Orange...		urity services in Europe Orange 2021 Integrated Annual Report 44 Growth areas				Key performance indicators		Our networks are the foundation for developing innovative and responsible digital services relating
14 Hyundai...		formance to executive compensation based on their roles and responsibilities.				Key performance indicators		are composed at a level of approximately 5% of relevant executive and employee performance
15 Hyundai...		ey executives, constituting approximately 5-10% of their overall compensation.				Key performance indicators		are determined based on the roles and responsibilities of management regarding accident prevention
16 Hyundai...		ENVIRONMENTAL SOCIAL GOVERNANCE APPENDIX Metrics & Target				Key Performance Indicators		and Objectives Restructuring Product Portfolio HD HYUNDAI CONSTRUCTION EQUIPMENT is currently undertaking
17 Hyundai...		ts. To strengthen the implementation of environmental management initiatives,				key performance indicators (		KPIs) are established for evaluating executives and staff members involved in the initiatives,
18 Hyundai...		nd operational teams are appointed in each headquarters and department, and				Key Performance Indicators (		KPIs) are established and managed. The process of implementing the strategy 1 Selecting strategic
19 Hyundai...		olidated Statements of Financial Position 103 Independent Auditor's Report 106				Key Performance Indicators 114		GRI Content Index 118 Third-Party Assurance Statement 120 Membership Status & Information Disclosure Activities
20 Orange...		ual Report 124 Performance that benefits everyone Key Performance Indicators				Key Performance Indicators 125		Number of active Orange Money customers Number of Orange Bank customers in Europe 21.9
21 Orange...		ce and Purpose 12 — Trends 14 — Our strategy 16 — Our business model 20 —				Key performance indicators 22 —		Our contribution to the UN 2030 Agenda for Sustainable Development 24 — The meaning behind our
22 Orange...		all of Tech. Performance that benefits everyone 124 126 131 134 136 138 142 —				Key Performance Indicators —		Financial results and performance — Non-financial results — Orange's contribution to the UN 2030
23 Orange...		ch Interview with CEO Christel Heydemann — Lead the Future, strategic plan —				Key performance indicators		Our strengths 22 — 26 — 28 — 30 — 34 — 38 — 44 — 46 — 48 — 50 — A best-practice governance model An Ex
24 Hyundai...		le for promoting activities in each division • Establishing evaluation indicators (				key performance indicators)		for executives and practitioners responsible for promoting activities in each division • Promoting tasks
25 Hyundai...		responsible executives and staff members • Establishing evaluation indicators (				key performance indicators)		for responsible executives and staff members • Executing tasks by relevant departments Evaluating performance
26 Hyundai...		ay result in modification to this report. 104 105 HCE INTEGRATED REPORT 2021				Key Performance Indicators		Enhancing Corporate Value through Sustainable Growth R&D 1 Category R&D expenses R&

**Figure 8.** Concordance sample of key performance indicators (source: Authors' research)



**Figure 9.** Collocations with the keyword phrases (source: Authors' research)

Based on the analysis of the created link clusters, there were identified 30 keyword collocates in the research corpus (see Table 4).

Then, the concordance analysis was run for the keyword phrases – human capital (Figure 7) and key performance indicators (Figure 8) to verify the outcomes of the link cluster analyses.

The summary of the obtained outcomes of the collocations with *key performance indicators* and *human capital* is provided in Figure 9.

The outcomes of the link cluster analysis (see Table 4) and keyword phrase concordances (see Figure 9) point to some overlaps, which is why we suggested to reduce 30 KPIs to 15 human capital KPIs grouped in 6 categories (see Table 5).

**Table 5.** Proposed human capital indicators (source: Authors' research)

Factors	Proposed human capital indicators (8)	Factors	Proposed human capital indicators (7)
Employee competences	Relevance of skills (experience) and knowledge (education) to performance	Employee well-being	Employee well-being (job satisfaction, commitment, growth opportunities)
	Quality of training (relevance, frequency)		Observance of employee rights
Performance	Quality of performance		Employee health dynamics
	Produced innovations (new/enhanced projects, prototypes, services, etc.)		Current employee value (competences + performance quality)
Risk estimation	Employee turnover rate	Sustainability	Equal opportunities
	Employee compliance with performance protocol, strategy, code of ethics		Engagement in decision-making
			New talent acquisition
Financial aspects	Employee costs		
	Investment into employee development		

Overall, having analysed the corpus of integrated reports comprising over 2.4 million lexical items via the keyword frequency, link and concordance analyses, 6 areas of human capital KPIs and 15 human capital KPIs (see Table 5) were retrieved and subsequently proposed as <IR> human capital KPIs.

## 5. Conclusions and discussion

The research aim was to identify the concepts used to report on human capital KPIs in integrated reports. Although various models of human capital measurements offer varied amounts and types of indicators (Abdullah et al., 2013), not all of them could be equally applied for the implementation of <IR>, which, according to Dimes and de Villiers (2024), is a challenging approach to business management due to its integrating thinking requirement. Importantly, the KPIs that emerged in this research have been proposed for structuring, management and reporting on human capital within <IR>.

In total, 30 concepts were identified concerning human capital KPIs, the amount of which was subsequently reduced to 15 KPIs measuring 6 areas, such as employee competences, performance, wellness, sustainability, financial aspects, and risk estimation. The identified KPI areas could further be grouped into 2 pivotal categories of SDG8 – economic growth (performance, risk assessment, financial aspects, sustainability, employee competences) and employee wellness (employee well-being). Various methods (e.g. formula, questionnaires) measuring these KPIs might be used depending on the nature of KPIs and organizational needs. For example, employee well-being could be measured through a questionnaire, while financial indicators by financial formula.

The alignment of the suggested KPIs into 2 pivotal categories of SDG8 resonates with the findings of Liu et al. (2024b) and Rai et al. (2019), who assert that SDG8 encapsulates both the social and economic dimensions of sustainable development and with Jain et al. (2024) and Rai et al. (2019), who advocate for safeguarding employee well-being by ensuring decent workplace and providing pertinent training for fostering sustainable economic and human development. Furthermore, having both economic and social work-related KPIs included in one capital type is consistent with the very definition of the concept of <IR>, which, according to Dimes and de Villiers (2024), is based on integrated rather than silo thinking.

The proposed integration of 15 economic and social KPIs of human capital also aligns with the perspectives of economic theory on human resource management two-fold. First, the distinction between collective and individual performance can pose challenges (Nordhaug, 2004), which is why it is important to use diverse (both economic and social) metrics to structure and evaluate human capital performance and interrelations. Second, this theory calls for systematic, long-term planning in human resource management to align with the internal governance structure of the obligational market and relational team (Nordhaug, 2004), which highlights the importance of encompassing all suggested areas of human capital within this framework.

The application of the research outcomes relates to the research questions of this study (see Introduction). The first research question addressed the potential of using the proposed KPIs to boost organizational performance transparency and value creation. The application of the proposed human capital KPIs relates to the creation of the performance management system integrating various aspects of business performance, encompassing human capital activities, into a cohesive network of interrelated operations. The establishment of such a network hinges on the application of integrated thinking from <IR>, wherein KPIs, including those concerning human capital, serve as foundational and interconnecting elements, ensuring the sustainability of operations. Reliable reporting on such networks of operations is hardly possible without the development of such systems, and reporting on such networks requires the description of both components and multi-directional relationships within and between them, which automatically taps into value-creation algorithms of organizational operations. This perspective aligns with the findings of Dimes and de Villiers (2024), who advocate for the notion that integrated thinking, which in their opinion is a business management approach within <IR>, fosters sustainable value creation.

The second research question addressed the issue of how human-centric leadership styles, such as transformational and benevolent leadership, might use the identified human capital KPIs of integrated reports to enhance performance management. In general, the effectiveness of utilizing any KPIs, including those identified in this research, is affected by the leadership style within an organization because the leadership decisions impact the structure and management of business management systems. Transformational leadership (Nguyen & Dao, 2023) and benevolent leadership (Shen et al., 2023) are among the leadership styles that have been found to significantly impact organizational performance (Nguyen et al., 2023; Shen et al., 2023), organizational culture and pomote change (Nguyen et al., 2023). Transformational leaders, driven by a vision of change and heightened productivity, may seek to bolster their organization's appeal to potential investors, making use of frameworks like <IR> to communicate organizational values effectively. Through the articulation of a compelling vision and the provision of unwavering support for employees, transformational leaders can leverage the

suggested KPIs to uplift employee competences, performance levels, and overall wellness. Furthermore, their dedication to fostering a culture of collaboration and adaptability seamlessly aligns with the sustainability and risk management dimensions inherent in these identified KPIs.

Likewise, benevolent leadership, characterized by its emphasis on empathy, ethical decision-making, and the cultivation of trust and mutual respect, naturally aligns with the objective of enhancing employee well-being and sustainability metrics. Benevolent leaders inherently prioritize improving employee performance and well-being through open dialogue and supportive interactions. By embracing such leadership approaches, organizations can effectively integrate these KPIs into their operational strategies, fostering a culture of holistic well-being, sustainable growth, and organizational success.

While this research has provided valuable insights into the concepts used in pertinence to KPIs of human capital in integrated reports, it is important to acknowledge certain limitations. Firstly, the reduction of 30 identified concepts to 15 KPIs may have oversimplified the complexity of human capital measurement, potentially overlooking nuanced aspects of employee performance and well-being. Second, the effectiveness of these KPIs in measuring organizational value and transparency may vary depending on the context and nature of the organization, which is why further research is required into the standardization of the identified KPIs across various types of organizations.

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## Contribution

K. Uzule: conceptualization, introduction, literature review, co-creating the corpus, data analysis, methodology, results, discussion, conclusions, references. V. Zarina: abstract, co-creating the corpus, co-writing introduction. I. Shina: co-creating the corpus, co-writing introduction.

## Disclosure statement

The authors do not they have any competing financial, professional, or personal interests from other parties.

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