# Implementing CSR-related KPIs into Business Intelligence Landscapes

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## Abstract

This paper will outline some of the main possibilities and research challenges of implementing Corporate Social Responsibility (CSR) indicators (e.g. CO2-consumption and gender balance) in existing Business Intelligence landscapes. The process of reporting CSR data is a legal requirement in some countries, while in other countries its publication is accepted as a useful indicator of the ethical behaviour of companies with respect to their clients or customers. For this reason, many software companies have launched systems to assemble and report CSR data, thereby expanding the market for such software. For example, one year ago, SAP launched the Sustainability Performance Manager system to facilitate tracking of CSR data. However, from the author's point of view, this data can be treated much like any other company data (financial data, HR-related data, etc.) and, as such, it may make sense to integrate this data into existing business intelligence landscapes.

With regards to industry practice many companies try avoid the effort associated with using their Business Intelligence platforms to integrate such data and implement special CSR solutions. However, there remain a few companies who desire to use their data warehouses as "single sources of truth" and, therefore, implement support for CSR data.

## Keywords

Corporate Social Responsibility, CSR, Sustainability, Business Intelligence, BI, Integrated Social Responsibility

## 1.  Introduction

The parsing of necessary information from a massive quantity of unsorted company data is a challenge that entrepreneurs had to face since the first companies were formed. A well-known term for this is business intelligence (BI). BI "can be defined as the ability to extract actionable insight from data available to the organization, both internal and external, for the purpose of supporting decision making and improving corporate performance" (Canes and Mark, 2009).

This definition indicates the implementation of both standard financial key performance indicators (KPIs) as well as non-financial KPIs, such as those pertaining to the field of corporate social responsibility (CSR).

CSR is sometimes also referred to as corporate responsibility (CR) or simply "sustainability." These terms seek to describe the ethics of a company and its social responsibilities with respect to its employees, clients, shareholders, etc. In this context, this paper focuses on reportable CSR data.

KPIs are important measures by which to evaluate the target achievements of a company. CSR is one of the major challenges faced by the top management of companies in recent years. Although there are numerous scientific studies concerning CSR, most of them (e.g., Journal of Business Ethics, The Paradox of Power in CSR: A case study on implementation) primarily focus on specific topics (e.g. the energy branch (Barkemeyer and Ralf, 2009)). Only a limited amount of literature and research conducted to date deals with the general implementation of CSR in BI systems. And this literature is often focused more on the financial aspects (Cochran, Philip L.; Wood, Robert A, 1984).

The market is replete with special products by which to collect and present CSR data. However, one of the basic principles of BI systems is that they should act as a "single source of truth" (Baars *et al.* 2008). This means that all data should be collected and linked to the metadata in one metadata repository. Therefore, the actual trend of implementing new software specifically for CSR data controverts the basic principle of modern data warehousing.

Rooted within the tradition of classical management support, BI applications usually revolve around the analysis of "structured data" (Baars *et al.* 2008).

This means that if a company wants to use BI systems to provide CSR data, the data has to be structured and integrated into the company data warehouse.

This paper defines the basic requirements for CSR with respect to BI systems. With this in mind, the author analyses various BI frameworks. Based on the identified phases (e.g., design and implementation), the technical and functional implementation requirements of CSR are described.

In summary, this work will describe an implementation strategy for CSR data in BI landscapes to achieve the main targets of BI, that is, providing "intelligent exploration, integration, aggregation and a multidimensional analysis of data originating from various information resources" (Yeoh *et al.* 2010).

## 2. Related Research and Industry Practice

The nature of this research is two pronged. The first stream of work entails a literature review and the second stream is the adoption of the author's professional experience.

Many journals describe the best approaches to publishing and managing corporate social responsibility (CSR), corporate responsibility (CR), sustainability, etc.;

however, only a few provide indications on how to implement the tracking and analysis of such data.

There is much information available on Business Intelligence (Bonde, Allen; Kuckuk, Matthew, 2004) and the implementation of key performance indicators (KPIs). However, these publications mostly refer to implementing financial KPIs (Schiff and Craig, 2005).

In the second stream of work, the author relied upon his professional experience dealing with CSR, and he developed a CSR integration maturity assessment, helping companies to measure the maturity of the integration of their CSR-related key performance indicators (KPIs). This maturity assessment was based upon the ISO 26000 codec issues. The ISO 26000 is used to help companies to organize and concentrate on the relevant CSR-KPIs. Although many companies are using special CSR-Software to collect and analyse their CSR-Data, the aim of the maturity assessment was to show that it is possible to include CSR-Data into Business Intelligence Platforms. Additionally the author did many BI-projects, such as Software decisions, BI accelerating projects and implementation of new software solutions like dashboards etc.
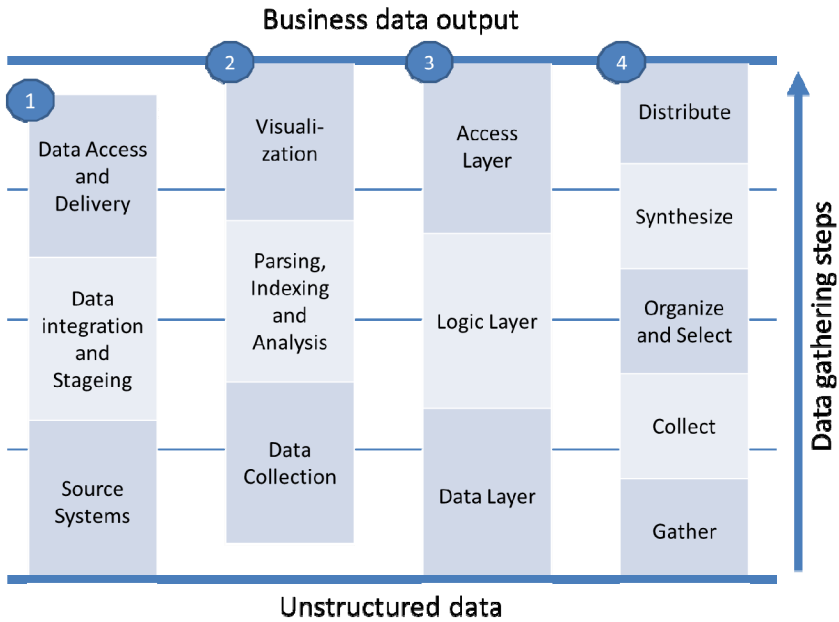
## 3. BI Frameworks

IBM researcher Hans Peter Luhn first used the term "business intelligence" in a 1958 article (Luhn, 1952). He defined intelligence as "the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal."

As a term, BI has been in use now for over 50 years. Today, BI has come to be defined as follows:

BI can be defined as the ability to extract actionable insight from data available to the organization, both internal and external, for the purpose of supporting decision making and improving corporate performance (Canes and Mark, 2009).

This definition indicates that BI does not merely refer to data processing using information technology (IT) systems. Additionally, this definition indicates that as yet, there are no standard definitions for CSR (and nonfinancial KPIs).

The objective of this paper is to develop a framework by which to implement CSR-related KPIs. With this in mind, the framework analysis was primarily focused on BI frameworks. Because the topic of BI has been researched over many years, the considered frameworks seem very similar. The following figure shows the differences between the earliest and most recent BI frameworks. The objective of this diagram is to show that in fact, most of the standard BI-Frameworks are very similar. They are all beginning with the data collection, ending at the point of delivery of data to the customer. Only the wording and the level of detail differ, like shown in the following diagram.

Business data output

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Data Access and Delivery | Visuali-zation | Access Layer | Distribute |
| | | | Synthesize |
| Data integration and Stageing | Parsing, Indexing and Analysis | Logic Layer | Organize and Select |
| | | | Collect |
| Source Systems | Data Collection | Data Layer | Gather |

Data gathering steps

Unstructured data

**Figure 1: Evolution of four different BI-Framework approaches**
**(compiled by the author)**
**(1: Swarbrick and Brian, 2007, 2: Chung *et al.* 2005,**
**3: Baars and Kemper, 2008 4: Gonzales, 2004)**

## 4. Requirements for CSR Implementations projects on the Basis of BI Frameworks

Historically, BI systems have been used for the presentation and analysis of numerical business data. For instance, BI systems might be used to determine

-        How many employees are working for a company?

-        What were company earnings before interests and tax (EBIT) in 2010?

CSR data should refer to both structured and unstructured data. However, this is not the only challenge a BI architect has to face when dealing with CSR data. A company might, for instance, want to know how it can use CSR data to ensure that there is no child labour in its factory in Malaysia. All data-gathering processes start by turning unstructured data into structured data.

However this is a rather simplified view of the implementation challenges associated with CSR-related KPIs. In the following section, a detailed framework is built, proposing methods on how to implement CSR Indicators in BI landscapes.

The topics that are analysed in general BI implementations are as follows (Yeoh *et al.* 2010):

- Organization (vision and business case-related factors, management and championship related factors)

- Process (team-related factors, project management- and methodology-related factors, change management-related factors)

- Technology (data-related factors and infrastructure-related factors)

These general topics can be used for the first approach. However, if a company or a nongovernmental organization (NGO) is willing to implement sustainability indicators, a project has to be established, defining which KPIs are most important, and, in particular, which KPIs are worth implementing (cost benefit analysis).

The following section describes the basic steps for setting up a BI system using CSR data. These steps are developed using the reviewed literature, researched BI frameworks (as mentioned above) and the author's experience with BI implementation.

These steps have to be managed and controlled by a designated project manager who must have knowledge of the specific needs of the business, business intelligence knowledge, and CSR knowledge.

Organizational conditions must be defined at all stages in the process. This can be done using the corporate governance framework of the company or organization:

Definition: The definition of corporate governance refers to a "framework of rules and practices by which a board of directors ensures accountability, fairness, and transparency in the firm's relationship with all its stakeholders" (Smith and Frank O., 2007).

After defining and considering the corporate governance framework, the process steps can be elaborated upon:

1. Definition of a base structure and clustering of requirements (basic definition of the CSR requirement):

    At this point, it is necessary to answer the following question: Why is it necessary to report CSR data? This question can be considered as the first step in the CSR implementation process.

    The company or NGO must then assess the following questions to structure their approach:

a.    Ecological requirements: Do we want to show the growing impact of our economic activities on the ecological system?

b.    Social requirements: Do we want to publish the social impacts of our economic activities on individuals, stakeholders, and society?

c.    Economic requirements: Is the achievement of economic goals our highest priority? Or do we want to demonstrate the sustainability of our projects, employees, and the like?

In Germany, many companies integrate only the ecological impacts of their business activity into their BI systems. However, the increasing unhappiness of German employees is compelling these companies to consider social KPIs as well.

2.    Definition of a stakeholder:

Nowadays, CSR reporting is mainly used as a form of image campaign. However, there are many more advantages of reporting these nonfinancial indicators. To identify these advantages, it is first necessary to identify stakeholders who are interested in CSR-related KPIs. A stakeholder is defined as

"a person, group, or organization that has a direct or indirect stake in an organization because it can affect or be affected by the organization's actions, objectives, and policies. Key stakeholders in a business organization include creditors, customers, directors, employees, government (and its agencies), owners (shareholders), suppliers, unions, and the community from which the business draws its resources" (Business Dictionary, Stakeholder Definition).

This means that relevant recipients may also comprise juristic persons, organizations, and many others, including shareholders, banks, linked companies, legal entities, etc.

As already mentioned, identifying stakeholders can mean discovering greater advantages, beyond simple image campaigns. For example, if a company designs a report and sends it to the shareholders, thereby publishing the sustainable project approach, that company's shareholder value might increase.

3.    Definition of legal requirements:

Currently, many companies are not required to publish CSR-related data (e.g., Germany). However, in the case of multinational companies (MNCs) with subsidiaries, it is necessary to consider the legal requirements of each country. If a company has a subsidiary in Denmark, for example, there are implementation guidelines for special KPIs that have to be implemented by

law. In Denmark, for example, more than 1200 companies are obligated to announce an annual environment report, the so called "green accounts". These reports also include the statement that no human rights abuses were done by the companies and their subsidiaries.

4. Definition of basic KPIs, required scope, and identified stakeholders:

For this step, a matrix illustration is recommended to show the specific needs of the company. For example, if a company wants to report on the $CO_2$ consumption of their employees, the level of detail of disclosure has to be defined: Is there a need to know this information for every employee, or is it sufficient if this information is only reported on an "office level"?

Further, the level of detail for each KPI must also be defined. Defining the level of detail also means that if data is needed at a more granular level, implementation costs will increase. Therefore, it may be useful to define a more granular level for KPIs, keeping in mind that in case of budget constraints, a more aggregated level can be acceptable. Regarding this example, that may mean the company has to analyse if they only need the $CO_2$-Footprint (the overall $CO_2$ –Consumption per employee) or if detailed information on how the $CO_2$ is expended (e.g. for flights, for the car pool, electricity).

Here, consulting developed frameworks (such as the Global Reporting Initiative (GRI) in Germany) may prove useful. (The actual codex can be downloaded at: www.globalreporting.org)

5. Definition of data requirement/calculation logic:

While the previous steps comprise the planning process (typically drawn on paper), it is now necessary to consider the existing IT landscape.

When considering the IT system, it is necessary to differentiate between the following:

a. Data available in existing systems (e.g., HR systems, CRM systems):

The data has to be identified very precisely in the company's Enterprise Resource Planning (ERP) systems. Afterwards, the data has to be linked, using standard channels, to the company's reporting system (data warehouse).

b. Data unavailable in existing systems:

If data is not available in existing systems, a cost benefit analysis has to be performed. The effort required to implement (or gather) the necessary data

has to be compared with the revenue the KPI's usage may generate. Sometimes, the effort to integrate data is not that high. For example, the €-amount on an energy invoice is digitalized, but the consumed energy amount is not, even though it is reported in the company invoice. In this case, only the process of digitalizing the invoice has to be changed such that it reflects the energy amount.

6.     Definition of conversion and processing:

When data is available in the first layer of BI systems (that means the layer where data is collected from the source systems without calculating currencies etc.), metrics have to be defined to evaluate data processing. For example, at this point, units of measure have to be selected. This has to be done to compare data from different sources (e.g., energy consumption in watts and kilowatts; In this case the system has to get data to know that 1 kilowatt means 1000 watts). Data can be processed only after defining these metrics.

7.     Access layer definition:

The project manager has to attach importance to this step. User (and stakeholder) acceptance is substantiated in this step. To begin with, the defined list of stakeholders as well as legal requirements must be considered. The legally acceptable methods of data publication are often defined at this point. For other stakeholders, the data reporting approach has to also be defined.

In addition, it is now necessary to establish a role model, defining who can have access to which reports.

This framework is a process cycle, and so, the steps can be performed iteratively.

The following figure clarifies the whole framework and the process which was described in the preceding paragraph.
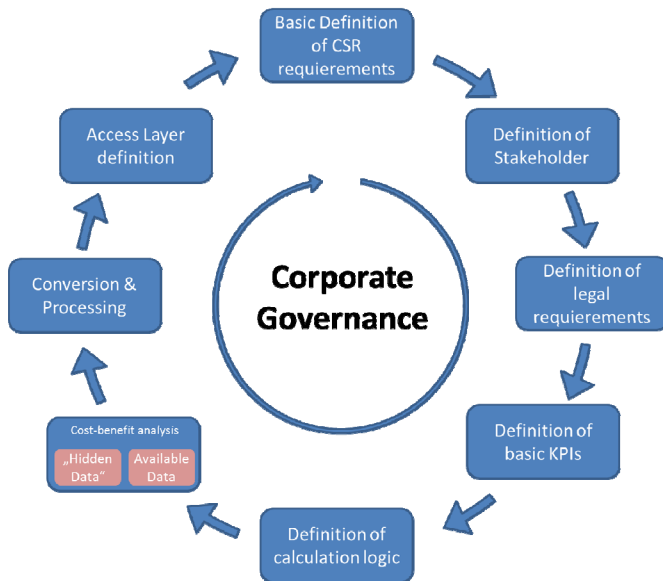
**Figure 2: CSR-DATA Implementation Framework (compiled by the author)**

From the perspective of a project, there are further requirements. CSR implementation projects can be very expensive because there could be many KPIs that have to be implemented. As a result, it might be very difficult and expensive to gather the necessary data (Smith and Frank O. , 2007). For example, if a company wants to know if its employees' human rights are not being violated, an additional department must be set up to monitor this. To get the budget approved for these projects, the publication requirements of the CSR-related KPIs have to be determined. The presented framework can be used for this purpose. It will be very helpful to organize the whole project approach in advance. Consider, for example, a scenario in which IT is used for the first time at a very late stage in the process. In the beginning, a big planning cycle has to be executed, which can be done roughly, with a notebook. However, within this process cycle, further cost benefit analyses will also have to be conducted so that the cost of the CSR implementation project can be shown to the decision maker at any point in time.

## 5. Conclusion

As already mentioned, the difficulties in implementing CSR-related KPIs are not only technical in nature. This means that the first step in the process cycle has to be planned in great detail. It is also possible to go back a step to change the scope, which was defined a step prior.

Because of the difficulties in such an implementation approach, it is also very important to focus on the correct KPIs. This means, for example, that in the first cycle, only a few very relevant Indicators can be implemented. Therefore, by

building on the experience of the first implementation, further indicators can be integrated in the next cycle.

In the author's professional experience and regarding to discussions held with CRS-Professionals, there are few companies in Germany that have incorporated all of their CSR data into their BI systems. However, with the technical elaboration of these systems, the business requirements are becoming clearer and a higher level of performance should always be sought after.

Although it has to be considered if it really pays off, using a classic BI-Solution to implement CSR-Data. Maybe in some cases it might be useful to use special CSR-Software, because they are easier to use and often the used codices (like GRI) are included.

Regarding to the authors industry practice there are even more challenges. Beside having the focus on technical and contextual questions, there are organizational questions as well. In many companies the organizational question of responsibility for the CSR-data processing is still to do and also who has the ownership for CSR Data; Controlling or IT.

Although sustainability reports are often seen as useful in image campaigns, in the author's professional experience, the reputation of CSR data can only increase if the company can prove that the data is revisable and accurate.

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