

Internet-supported sustainability reporting.
Empirical findings from the German DAX30

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Abstract

Internet use for corporate sustainability reporting represents a complementary approach to consolidated, printed sustainability reports which have increasingly been published, in particular, by large companies in recent years. It enables companies to overcome the restrictions of printed sustainability reports regarding the extent of the information, its accessibility and comprehensibility as well as the interactivity and the engagement of stakeholders in a continuous dialogue. The paper explores the question whether and to what extent German companies have been using the internet for sustainability reporting since 2004. Based on three studies of the German DAX30 the paper analyses trends over a four year period and identifies areas where there is potential for further improvement.

Keywords

Internet-supported sustainability reporting, corporate sustainability communication, German DAX30 companies

1. Introduction

Financial reporting, which focuses on purely monetary precepts and primarily looks at the past, has been gradually expanded over recent decades, as a result of the increasing importance of intangible assets (such as market positioning or human capital, for example) as well as ecological and social value drivers (Herzig & Schaltegger, 2006). Large companies in particular have set up their reporting in such a way as to take account of the information needs of relevant stakeholders inside and outside the company, in terms of the company's social and ecological performance, as well as to provide a more complete and future oriented picture (Kolk, 2004; KPMG, 2005; Sustainability et al., 2006). At the present time, the most integrated format for corporate reporting is sustainability reporting. With this type of reporting, companies place a balanced focus on the backwards and forwards-looking (economic, ecological and social) impact dimensions of their activities and their interaction, explaining synergies and conflicts of interests between the different dimensions (GRI, 2006). Over recent years, there has been a constant spread of sustainability reports in Germany (BMU, 2007; Gebauer et al., 2007; Quick & Knocinski, 2006) and worldwide (KPMG, 2005; Sustainability et al., 2006). However, limitations of printed reports, such as one-way communication or 'one size fits all' reports (Isenmann et al., 2007), encourage companies to fall back on the more expansive possibilities provided by the Internet. A statement of accounts on the economic, ecological and social aspects of business activity, produced on an Internet platform, facilitates a broader provision of information, makes for greater accessibility and improves comprehension of information (ACCA, 2001; Adams & Frost, 2006; Lodhia, 2004). Additionally, it makes it possible for information to be exchanged interactively, and supports dialogue between companies and their

stakeholders, as well as between stakeholders themselves (GRI, 2006; Isenmann & Kim, 2006; SustainAbility & UNEP, 1999; Wheeler & Elkington, 2001).

The status of Internet-supported sustainability reporting in Germany had not yet been subject to empirical study. The research carried out by Blanke et al. (2004, 2007) and Ahsen et al. (2006) on companies within the DAX30 were an exception to this rule. The contribution of those studies represents key results of this paper. Particular focus is laid on the questions (i) to what extent the media-specific potential of the Internet for external accounting procedures is used by companies to serve their stakeholders and (ii) how the use of Internet-supported sustainability reporting has changed since 2004.

The rest of this paper is structured as follows: the next Section provides an overview of research work carried out to date on Internet-supported sustainability reporting, particularly looking at developments in Germany. The essential advantages of Internet-supported sustainability reporting are discussed in Section 3. Section 4 explains the research design. In the following Sections, 5 and 6, the central results are presented and discussed. The paper ends with a concluding summary and a presentation of research limitations.

2. Work to Date

In past years, there has been rising interest in researching the use and scope of Internet-supported sustainability reporting. On an international level there are already several studies which take a closer look at sustainability reporting using the Internet, mostly based on criteria-led content analysis (e.g. Jungle Rating 2007; Lodhia, 2004; Rikhardsson, 2002). The criteria used in these studies have seen a continuous expansion, as a result of the sharp rise in use of Internet technology and the increasing spread and use of this medium. Even if the authors use

different conceptual approaches and distinctions to these criteria, the criteria can be generally placed into one of the following four categories: “Provision of Information“, “Accessibility of Information“, “Comprehensibility of Information” and “Dialogue possibility/ Communication”. These categories can be seen as an appropriate framework with which to carry out a criteria-led investigation of websites.

One deficit with these studies is their one-off coverage. Unlike with printed sustainability reports (Kolk, 2004), there is no comparison with Internet-supported reporting practices over time.

In Germany, studies into sustainability reporting have for a long time concentrated on the analysis of printed sustainability reports, whereas Internet-supported reporting were only included to a small extent. One of the most recent studies into the status quo of sustainability reporting in Germany was published by the German Federal Ministry for the Environment (BMU, 2007). This report comes to the conclusion that sustainability reports in Germany are mainly produced by large companies. German companies, therefore, who publish separate sustainability reports, represent 2.5 million staff, and around nine percent of all workers in Germany, and have a turnover of more than 500 billion Euros, representing twelve percent of the total turnover of German companies (BMU, 2007). Of the 100 companies which publish independent sustainability reports, 22 belong to the DAX30 group (see also Blanke et al., 2007). This report also shows that almost half of German companies publishing sustainability reports, also use the Internet. No comprehensive analysis of Internet usage has been forthcoming, however.

Gebauer et al. (2007) make a clearer case for the increasing relevance of the Internet for sustainability reporting in Germany. In their current study into sustainability reporting in

Germany, they have surveyed the 150 largest companies and researched 58 sustainability reports. The focus point for the Content Analysis and Ranking of sustainability reports comprises the printed reports published by the companies. Information published over the Internet is only considered by the study if the sustainability report contains a concrete or direct reference to the Internet (a reference such as “further information on our commitment to sustainability can be found on the Internet” is no longer enough, for example) and where a complete report can be called up with one click from the Internet. A criteria-led, detailed appraisal of the websites has not yet been conducted, however. Nonetheless, the analysis of current forms of sustainability reporting shows that on the one hand, two thirds of companies (76%) are still clearly focused on the printed version, but on the other hand even here additional information is provided on the company’s homepage. Furthermore, 24% follow an integrated Internet/ printed reporting system or use the Internet for all of their communications (12% each). In summary, the authors conclude that the added value of the Internet is often not used to its full potential. In addition to the content analysis, a survey has been conducted. The comparison with the 2005 survey (Loew et al., 2005) shows that the number of companies considering the Internet approach and the printed report as equal, has risen considerably (35% compared to 9% in 2005). Almost no company gives greater importance to printed reports. In 2005, however, this was still the case for over half of all companies interviewed (52%). In their own reporting, companies are even attributing a higher relevance to the use of the Internet over the next three years than the use of printed reports.

The first broad approach to the use of environmental reporting over the Internet in Germany was dealt with by Isenmann and Lenz (2002). They analyse the corporate environmental reports of 121 companies on the Internet, based on content and representation criteria. The content criteria involve the establishment of target groups and the choice of topics

within the framework of reporting. The representation criteria include online/offline availability, user menu prompts, hypermediality as well as extended communication. A central result of this study is that companies were only introducing Internet technology and services to a small extent at that time (similar to IÖW & future 2000). The research was limited to environmental reporting and did not include social aspects.

With this research, the intention is to fill two gaps in current research into Internet-supported sustainability reporting. Firstly, the use of the Internet for corporate sustainability reporting in Germany will be analysed. This will tie this study in with previous research which has focused mostly on printed reporting among German companies and which has recently limited their empirical studies to environmental aspects of Internet-supported reporting. Secondly, this paper will investigate the development of Internet-supported sustainability reporting in Germany over the last three years and will thereby, for the first time, show trends in the use of Internet-supported sustainability reporting. In the next section, the framework will be laid out for the criteria-led investigation into sustainability websites.

3. Internet-supported Sustainability Reporting

The Internet has a whole series of media-specific advantages in comparison to a print-based reporting system. The following four categories provide a heuristic framework for comparison of the possibilities of Internet-supported sustainability reporting with printed sustainability reports and for criteria-led website analyses.

3.1 Provision of Information

Companies face the challenge of having to satisfy the multiple information requirements of countless stakeholders, particularly in the context of sustainability reporting. This is only possible to achieve in a limited way, given the fact that a sustainability report has a finite number of pages. Furthermore, relevant information from previous report periods may only be partially portrayed given the limited scope of a printed report (e.g. in the form of a timeline in a data division), which makes it difficult to compare sustainability performances of companies, for instance. Furthermore, sustainability reports are a snapshot of a given point in time for the organisation (GRI, 2002) which by definition is limited to the present situation, and they serve to provide an account of the goals, activities and performance of the company in terms of sustainable development for stakeholders, for a given point in time.

The Internet offers countless possibilities to serve up data in digital format, and makes information available, where it could not be included in a printed report. As there is an almost unlimited provision of information – either in the form of ongoing, additional or updated information – companies can convey a complete and whole vision of their sustainability performance. Additionally, the Internet also provides for communication which goes beyond geographic borders and times (Lymer, 1999). This makes it possible to get access to millions of Internet users, with the same information at the same time – putting aside aspects such as the Digital Divide Phenomenon (ITU & UNCTD, 2007; SevenOne Media, 2005; UNCTD, 2005).

3.2 Accessibility of Information

In the field of sustainability reports, there are difficulties when searching for information, largely due to the variety of issues related to sustainability and the additional reporting on

ecological, economic and social aspects, which can lead to very complex, broad and unclear printed reports (“carpet bombing syndrome”, SustainAbility & UNEP, 2002). The problem of a volume of information which is left unclear arises where information from the printed version is simply “stored” 1:1 in the Internet version. This volume of information can only be strengthened by additional information being made available, which goes beyond that of the printed version.

The more information is made available on the Internet, the more importance is given to approaches which result in an information search requiring less outlay, namely where information is made easily accessible (Adams & Frost, 2006). Analogue to the printed reporting (e.g. content lists or key word lists), there are formats among the Internet-supported sustainability reports, which make it easier to find the information. The advantage of these formats is the hypertextuality of the WWW. Direct and concrete references (in the form of hyperlinks) to the appropriate areas of the company’s homepage which deal with issues of sustainability, search functions, sitemaps and navigation alternatives (e.g. linked indexes) can make the information accessible with one click.

3.3 Comprehensibility of Information

Aside from their accessibility, the information provided must also be comprehensible. In the case of sustainability reporting, this is a particular challenge for companies, as communication in the field of sustainability topics is complicated and difficult (Signitzer & Prexl, 2008). In order to make printed versions user friendly and clear, it is recommended that the introduction to the sustainability report should contain guidelines on interpreting the report and references to graphic representations, or clarifications of concepts, for instance, in the form of a glossary (e.g. Clausen et al., 2001; GRI, 2006; OIN, 2003). Often, it is advisable to focus the

report on a limited number of stakeholders within target groups, accompanying it with thematic focus points and alternative strategies for the reporting format (e.g. separate environmental, social, corporate citizenship or other reports or integrated forms such as sustainability reports or extended business reports (Clausen et al., 2001).

For Internet-supported sustainability reporting, there are also specific requirements of the text and website structure (e.g. in the form of paragraphs, titles or emphasis). Furthermore, the comprehensibility of the information can be increased using non-linear connections of information, using hyperlinks. They allow users to deal with information individually, in association or intuitively (Burkhart, 2002; Wolters, 2005) and allow contexts to be portrayed more comprehensibly. Using appropriate links, approaches which are used in printed versions (such as glossaries) can also be used to aid comprehension and usability. Furthermore, Internet-specific approaches are firstly the medial spread of information (e.g. in the form of audio, video or other interactive tools) which both raises awareness and help to convey complex ideas in a comprehensible way. Secondly, the individualisation of information provided is a specific form of including stakeholders in the process, as the report, or parts thereof, are structured by them. They can select information that they consider relevant from the full range available and also define the scope and level of detail. The user-specific creation and interactive information choice and communication (e.g. using individually composed and evaluable data sets, password protected areas) are also known as Customised Reporting (Brosowki & Lenz, 2004; Isenmann & Lenz, 2001; Jensen & Xiao, 2001).

3.4 Dialogue Possibilities/ Communication

One of the key differences between a purely printed report and Internet-supported sustainability reporting is that of the communication possibilities between the companies and their stakeholders (Financial Accounting Standards Board, 2000; GRI, 2006; Isenmann & Kim, 2006; Isenmann & Lenz, 2001; SustainAbility & UNEP, 1999; Williams & Pei, 2000). Dialogue with stakeholders also plays a major role with printed reports, in order to satisfy the information needs, opinions and expectations of stakeholders and to be able to take this into account when structuring the report. The inclusion of the stakeholders serves the purposes of reporting itself, above all, and takes place prior to the production of the report (GRI, 2006). Results of stakeholder dialogues as well as comments from individual stakeholders can then be included in the sustainability reports, in order to document communication with stakeholders. Further possibilities to initiate stakeholder dialogue with the help of the sustainability report are limited to nominating contact persons or asking for feedback on the sustainability report or on the company's performance (e.g. in the form of a postcard included in annex).

The range of communication possibilities with Internet-based reporting extends much further. A dialogue-based "Online-Relation" (Wehmeier, 2002) for instance, can include a range of mutual, asynchronous forms of dialogue, whereby either response to feedback (e.g. mail-to-functions, guest books, online surveys) or long-term and continuous dialogue (e.g. discussion forums, bulletin boards) take pride of place. Also, mutual, synchronous dialogue, with a high degree of spontaneity (see Elvins, 2002) is possible through Internet sustainability reporting (e.g. chats, audio and video-conferencing). The Internet not only offers a dialogue between companies and stakeholders, therefore, but also between stakeholders themselves. This multiple array of communications possibilities is a key reason that the Internet is considered here to have

particular strengths in the field of information provision, accessibility and comprehensibility. The online dialogues can lead to helpful understanding of the attitudes and information requirements of stakeholders, as well as contributing to a target-group oriented provision of information (although the Internet cannot replace other stakeholder dialogue forums, such as round tables, for instance, it merely complements them). Furthermore, a process of gaining greater understanding of sustainability issues is achieved through dialogue (Burkhart, 2002). All in all, Internet-supported sustainability reporting differs from printed reporting in the sense that stakeholders are more closely included in the reporting process, in which they play a more active role in promoting understanding of the business issues relating to sustainability aspects. The following section describes the research design for the investigation into Internet-supported sustainability reporting in Germany.

4. Research Design

The paper is based on three studies into Internet-supported sustainability reporting of DAX30 companies (see Table 1). The following section firstly explains the method used to research the DAX30 companies, by Blanke et al. in both 2004 and 2007. The comparative content analysis of websites of DAX30 companies shows trends in the use of media-specific support potential for the Internet-supported sustainability reporting. Then, the study by Ahsen et al. (2006) is presented, which, compared to the other studies, analyses only some selected media-specific advantages. However, this study goes further in content than the other two studies by analysing the topics of sustainability reporting using the Internet. It also includes an E-Mail-based survey of the DAX30 companies and thus goes beyond content analysis.

- Table 1 -

The studies by Blanke et al. (2004, 2007) look into the issue of to what extent German companies use the Internet specific support potential of sustainability reporting. In researching this question, the study develops a broad catalogue of criteria (see Appendix A), whereby for each criterion a four-class scale of specific noteworthy features is defined (see Appendix B). For each criterion, companies could score between zero (no criterion completed, class 0) and three points (criteria fully met, class 3). The criteria, which form the basis for the current content analysis of sustainability features via Internet as used by DAX30 companies in 2007, are derived from the four previously sketched areas of media-specific advantages of Internet-supported sustainability reporting (see Section 3) and provide an update of and extension to the catalogue of criteria produced by the prior study (Blanke et al., 2004). As the individual classes of the criteria have changed in many cases, comparability is limited. The comparable study does allow, however, to draw general trends from the use of Internet-supported sustainability reporting by DAX30 companies. An appraisal of the content quality of the information published by the companies was not undertaken. The data group for both studies included companies listed in the DAX30 on 1st May 2004 and 23rd July 2007. Each of the independent sustainability areas covered by the company's Internet service was researched. As not all companies use the terms sustainability or sustainability reporting, areas including terms such as corporate responsibility, corporate social responsibility, and environment, for example, were also included. All websites were researched and appraised by two investigators.

The third study on the use of Internet-supported sustainability reporting was carried out by Ahsen et al. (2006). It focused on analysing the use of the technical support potential provided

by the Internet, in two specific aspects. The cornerstone for this was firstly the use of frequently mentioned literature on “Customised Reporting” (see Ahsen et al., 2006; Brosowki & Lenz, 2004; Isenmann & Lenz, 2001; Jensen & Xiao, 2001). Secondly, the question was asked, whether the DAX30 companies use the Internet to analyse the information needs of their stakeholders and to monitor their usage patterns (company screening). The other part of the study by Ahsen et al. (2006) investigated the topics referred to within the framework of sustainability. In doing so, specific attention was paid to the interdependence connections between economic, ecological and social topics. The data basis for the content analysis of websites was the companies listed on the DAX30 on 1st August 2005. Unlike the studies by Blanke et al. (2004, 2007), which investigated the sustainability area in the companies’ Internet service, this study looked at the whole of the company homepage (e.g. when analysing the environment and social themes). The content analysis was complemented via an e-mail survey of the DAX30 companies, in order to gain a “sender-perspective”. Companies were asked to name the main target groups of their Internet-supported sustainability reporting and to indicate how they judge or measure the use of the website by these stakeholder groups. Furthermore, research was carried out into what the surveyed companies thought about the possibility of individual information generation by the user (customised reporting). Then, the companies were surveyed about their communication of conflicts between economic, ecological and social sustainability factors. The survey was carried out in August and September 2005. After a telephone follow-up action, a total of 19 processed questionnaires were sent back. The respondents were mainly members of the sustainability department (5), environment department (3) or combined departments (7) (e.g. various “sustainability and environment”); in four cases, members of the PR department responded.

5. Results

The results of the three DAX30 studies are presented in the following four areas: provision of information, accessibility of information, comprehensibility of information and dialogue possibilities/ communication. For each category, firstly the results of the researched criteria in both Blanke et al. (2004, 2007) studies are compared. In the next phase, detailed results are given from the current study (Blanke, 2007), mostly resulting from the selected classes of the 21 criteria (see Annexes A and B). The trend results are complemented in several places using information from the Ahsen et al. (2006) study.

5.1 Provision of Information

Internet Usage to Provide Sustainability Information

The comparison of results relating to the spread of Internet-supported sustainability reporting between 2004 and 2007 shows that the number of reporting DAX30 companies has risen (see Table 2). While in 2004 there were still four companies in the DAX30 that did not have sustainability reports on their company homepage, which could be investigated based on the methodology requirements of the study, every company, with only one exception, now uses its own Internet site to provide information for the stakeholders on the sustainability activities of the company (Table 2).

The usage analysis of Internet-specific advantages of providing sustainability information shows that download services for sustainability reports have become common practice (22 companies in 2004 and 2007). Furthermore, the provision of past data and current information could hardly be improved. Simply there has been a slight rise in the number of companies (+2) which uses the Internet site to publish current information (from the last three months). The

comparison also shows, however, that the use of archive functions, which contain information published on the Internet, has declined from 15 companies in 2004 to 10 companies in 2007. There continues to be little use made of the possibility of keeping stakeholders regularly informed by way of a newsletter or e-mail on subjects related to sustainability, or to inform them of the publication of a sustainability report (3 in 2004 and 2007).

- Table 2 -

The deep analysis of the criteria examined in the 2007 study showed the following (see also Appendix B):

Of the companies, which provided current sustainability reports in PDF format (22), most of them (16) made it possible to select older reports, too. Of the other companies, which had no download service (8), seven published no printed version and one company provided its report only in HTML format.

Providing information, which has exclusively been published on the Internet, for a longer time period, using the archive function, is only used by a small minority. In two cases, there was information available from the last twelve months. Eight companies allow information to be called up, which was published more than two years ago. Indeed, the available archive functions were mostly related to ad-hoc published information, and only in four cases were the complete sustainability Internet pages from the previous year available.

In terms of using current information to complete the periodically published printed report, the picture is divided in two. Nearly two thirds of cases (19), the last visible update was longer than six months ago, or no date indication was given on the Internet site, whereas in one

third of cases (10) the companies had very recent information from the last month available, or parts of the existing information had been updated and this was indicated on the site. Although this third of companies published updated information on sustainability relatively regularly, only very few companies informed their stakeholders actively using a newsletter on explicitly sustainability-related topics (2) or with e-mail notification of the publishing of a sustainability report (1). No company has a newsletter which can be adapted by topic in order to meet the information needs of individual or groups of stakeholders in a targeted way.

Topics of Internet-Supported Sustainability Reporting

Analysis of the topics in the field of Internet-supported sustainability reporting shows a large spectrum of ecological and social topics. Among the main topics, on which most companies reported using the Internet, are social topics such as training and further education (97%), donations and sponsoring (80%) or wages and reward systems (77%), as well as environmental issues related to the supply chain (87%) or product development (80%). While the companies generally report on the individual environmental and social aspects of their business in a broad way, the interdependence points between sustainability criteria are very seldom dealt with and analysed. There is usually a general reference to all three dimensions being considered and harmonised, no more. The sensitive topic of possible conflicts between the three dimensions is practically not mentioned, let alone dealt with using examples. Companies were asked about the reasons for this (see Figure 1). No company indicated, by way of reasoning, that it is difficult to identify such conflicts; only three times did companies indicate that there were rarely any conflicts between these business areas. The main reason for not making a point of the conflicts was the reason cited by 13 of the surveyed companies, namely that the conflicts in question were

difficult to convey and communicate. Six companies admitted that this type of information would be “damaging to their image”. A conspicuous number (nine companies) use the heading “other” for this question, in order to address additional statements. In one case, sensitivity relating to this issue is dealt with openly, whereby: “from the point of view of “classical” communication responsibilities, the description of too many conflicts would damage our image, and the change of culture towards an increasingly open willingness to dialogue must be brought to the fore!” One company stressed that the “Use of information to the detriment of the company by competitors and partly also by customers“ was feared; another claimed “in Germany, naming conflicts is considered to be a blemish, rather than transparency towards stakeholders. The main target group of investors in DAX30 companies expects the company to have all risks under control.” Three companies indicated that conflicts were not dealt with on the Internet site itself, but could be seen in the downloadable printed version. One company admitted that “conflicts were mostly dealt with in direct dialogue with stakeholders, or in specific cases in media we have at our disposal”.

- Figure 1 -

5.2 Accessibility of Information

Accessibility of information in Internet-supported sustainability reporting has improved in many areas since 2004 (see Table 3). Considerable improvement has been seen in the links to sustainability from the homepage. While the sustainability areas could be reached in one click in 2004 in around one third of cases, this is now possible in more than half of all cases (17). A similar figure is achieved for sustainability reports making reference to Internet sustainability

areas (18), which represents a slight improvement on 2004 (+13%). Search functions, which can be refined to the field of sustainability and sustainability indexes as navigation alternatives, are provided more frequently (8) than they were three years ago (4). They are still unused, however, in more than two thirds of companies. The listing of sustainability issues in the sitemap has become a regular feature, however (25 companies, compared to 23 in 2004).

- Table 3 -

Detailed analysis of the results relating to Accessibility of Sustainability Information brings further interesting features to light (see also Appendix B). Firstly, the link between the sustainability area and other Internet areas is described, before detailed results are presented in print/ online connections. Finally, findings from the investigation of internet-specific “Guided-Help” are shown.

In 2004, the sustainability section could only be reached in one click in eleven cases, and in two cases could only be reached with six or more clicks. However, the sustainability section could be reached directly from the homepage for most of the DAX30 companies researched since then (17), or could be reached with less than four clicks (12). In the 2007 study, research was carried out for the first time into the extent to which the sustainability section was referenced in other areas of the company’s Internet site. Both from the investor relations pages and from the press pages in most cases there were no link, or the topic of sustainability was not dealt with there at all. Only five companies place a direct link from investor relations pages to the sustainability section in a central location (from press area: 2), and a further five use the possibility to make reference to further information on sustainability in a context sensitive way in

different places (press area: 1). A central reference from the investor relations pages to the sustainability area without using hyperlinks can be found in two cases (press area: 1). It is interesting that in the other direction, more than half of the DAX30 companies have a link from the sustainability area to the investor relations pages (and business report).

Additionally, analysis is made of the link to the sustainability area on the Internet from other printed report formats. The results show that links from the printed sustainability reports to the Internet has become commonplace. Half of companies have context sensitive and decentralised references in the printed sustainability report, sending the user to additional information on the Internet. This is a contrast to the business report, the link to which from the sustainability report was studied for the first time in 2007. Despite the fact that there are many pages on the subject of sustainability in the printed reports, only three companies use the opportunity to make reference to additional information in context sensitive or decentralised ways in different places. 12 companies have no link to additional information on sustainability on the Internet in their business report areas, or do not broach the subject at all. The remaining companies simply give the address of the company website or refer to the address of the sustainability area on the Internet in a central place.

A detailed investigation into the internet-specific “Guided Help”, which can be used to search for information in a targeted way, shows a positive picture. In 2007 nearly all companies offer a sitemap on their website, which in more than two thirds of cases (18) provides a user-side map of the website structure as well as two additional entry levels for the sustainability section. Seven companies provide a sitemap with one itemised level (4) or without any itemisation (3). Another frequently used instrument to provide greater access to information is the search function, which is provided by all companies, but in less than one third of cases is this search

function equipped with a tool to allow users to limit the search to the sustainability area (7) or to include or exclude the contents of PDF (1). Regarding the use of navigation alternatives, the picture varies. While a two thirds majority (21) use absolutely no index, the remaining companies provide guidance and entrance help in the form of a dynamic GRI-Content-Index, for instance, or a dynamic list of the ten principles of Global Compact (9). In one case, an additional alphabetical list of central aspects to sustainability-oriented business management is given, with links to the appropriate areas of the website.

5.3 Comprehensibility of Information

The use of Internet-specific support potential to improve the comprehensibility of information increased considerably between 2004 and 2007 in some areas (see Table 4). There was an increase of more than 50% in the number of companies, which used internal (+63%) and external links (+60%). In the new study, nearly all companies used such links (26 and 24 companies, respectively). The hypermediality of the Internet is used only seldom, in comparison, however, to link to glossaries and to thereby improve the comprehensibility of information. The use of dynamic glossaries has hardly risen since 2004 (in 2007: 8, in 2004: 7). In remaining Internet-based dealings with sustainability topics, the improved text formation is noticeable. More than twice as many companies as in 2004 (21 against 10) prepare the text in a media-specific way, taking into consideration at least two of the four criteria: paragraphs, titles, structure points and/or emphasis. Individually adjustable data displays (1) or multimedia processing of sustainability topics in the form of animations, interactive tools or video and audio elements (5) are still only the exception (in 2004: 2 and 4, respectively).

- Table 4 -

The detailed results on the use of hypermedia approaches, which increase the comprehensibility of information, are as follows (see also Appendix B):

External links can be found on 80% of the websites (24), although in most cases links to external sources and organisations are not extensively used (15). Internal links to sustainability areas or to another area of the company's Internet service are slightly more commonplace (87%, 26). Research also looks at the internal links to the Investor Relations / Business Report, Product Range and Applicant Portal areas. It shows that every other company (15) has links to at least two of these areas. A hypermedia glossary link, which explains technical terms, foreign words and abbreviations, and which makes it easier to understand the content, is used seldom (8). Mostly several clicks are needed (6) and only in exceptional cases (2) can the glossary be reached with one link from each site.

To structure and improve the legibility of the texts, almost all companies use paragraphs, titles, structure points and emphasis. 90% of companies use at least two of these elements to build their texts (in 2004: 73%), 70% even use three of four elements (in 2004: 33%). It is still seldom, however, to use interactive or adaptable data display so that users can process the information themselves (see also Elvins, 2002). Although precisely this type of customised reporting helps the user to have a very broad set of manageable data. Only one company currently has the option for users to take a given set of data and choose what is relevant to view, being able to see the data set or statistics in the required units and the chosen display format (table or diagram), as well as choosing individually the data format, e.g. a graph or excel file. For most companies (19) data displays cannot be altered. One third of the companies (10) do not

provide any separate data display. The studies by Ahsen et al. (2006) and Blanke et al. (2004) show similar results. Other forms of preparing information in the sustainability field on company homepages include static pictures (15). Rare or unused are animations, video or audio elements (5) and interactive tools (0). One third of companies do not have any multimedia information processing.

The clear discrepancy between the user-specific formation and interactive choice and communication of information, discussed several times in the literature, and described as Customised Reporting (Isenmann & Lenz, 2001; Jensen & Xiao, 2001; Brosowki & Lenz, 2004), and the low usage of these technical possibilities by DAX30 companies, is investigated further in the e-mail survey carried out by Ahsen et al. (2006). Faced with the question of how useful Customised Reporting is, respondents painted a heterogeneous and controversial picture (see Figure 2): the financial and personnel expenditure is considered to be too high (seven) and the companies are worried that with selective and individual compounding of information parts, other information which is relevant to the context may be lost (seven). Less commonly, technical implementation problems were cited (four). The question of how stakeholders could benefit from this is still unclear: two companies believe that the stakeholders would hardly use it. Two other companies admit that such an application would be very useful for the stakeholders.

- Figure 2 -

5.4 Dialogue Possibilities/ Communication

Investigation into the communication tools used for Internet-supported sustainability reporting shows considerable improvement in only one field (see Table 5). While only every

other business had e-mail contacts listed on their Internet site in 2004, in order to allow stakeholders to contact the company, this form of communication is now, with only a few exceptions, used by nearly all DAX30 companies (87%). Open dialogue with stakeholders on the subject of sustainability topics, in the form of chat or discussion forums, for instance, is still not undertaken by any company on their own website. Furthermore, feedback possibilities, which extend beyond e-mail contact, and which would make it possible to ensure systematic exchanges of information interests and to take into account stakeholder views on sustainability issues, are also not used.

- Table 5 -

Stakeholders are not offered any open dialogue possibilities regarding the sustainability websites of the companies – in 2007 there are neither asynchronous dialogue formats such as discussion forums nor synchronous dialogue formats such as topic-specific or moderated chats (see also Appendix B). Also, simple stakeholder surveys in the form of polls, which only ask one question, or more encompassing feedback possibilities / surveys (with or without published results) play no role in the process (in 2004 one company conducted a poll). Additionally, the current detailed results qualify the essentially positive picture, where there has been an increase in e-mail contact possibilities since 2004. In almost half of the cases (12 out of 26), in which e-mail contacts have been listed on the website, the contact indicated is not a personal contact detail. Only eleven companies give the name of a contact person, and only three companies have nominated contact persons for different sustainability topics.

The low usage in 2004 of feedback and communication possibilities raised the question, of whether companies analyse the information usage patterns of stakeholders in a different way, in terms of Internet-supported sustainability reporting. The Internet provides statistical evaluations, for instance, which serve to measure the usage patterns of stakeholders and thereby allow companies to improve their information supply based on this information. In 2005, the DAX30 companies were asked by e-mail, whether and how they analyse usage patterns (see Figure 3). Only three of the companies which took part in the survey admitted that they did not implement any measurement or monitoring of usage patterns. Thirteen companies used hit statistics or cookies in order to make the necessary appraisals. Of these companies, seven (and a further two) use the online feedback possibilities, such as e-mails, for the same purpose. In total, six companies carried out their own research, for example using broader stakeholder surveys.

- Figure 3 -

6. Discussion

On the whole, the results of the studies from the last four years, investigating the reporting of sustainability topics using the Internet, show that this has become common practice for DAX30 companies, and the question is no longer whether, but how companies report on sustainability using the Internet.

If we look more closely at the trends in Internet-supported sustainability reporting, it is a surprise to see at first that there has been no considerable improvement since 2004 in the use of Internet-specific approaches to information provision. Indeed, almost all DAX30 companies provide their old sustainability reports as downloads. Access to information, which is stored on

the Internet 1:1, and provided as a PDF download, is no longer particularly unique these days, however. Archive functions to store documents containing older information on the website or more recent information, on the other hand, are barely available and are even to a certain extent less commonplace than four years ago.

In terms of the quality of the reported content, the research can only provide limited evidence. The results of the research do make it clear, however, that at least the practice of reporting on interdependencies between environmental, economic and social aspects of corporate activities and negative company incidents in order to raise the credibility of the sustainability reporting, which has often been recommended by literature (GRI, 2006; OIN, 2003), has not (yet) been seen in reporting practice to any noticeable effect. The content analysis of the websites and the company survey both show that companies see the mentioning of conflicts between ecological, economic and social topics as more of a risk than an opportunity. Furthermore, they have difficulties conveying and communicating clearly these complex contexts. It should be taken into account from a critical perspective, however, that trade-offs and conflicts between ecological, economic and social aspects tend to be the rule rather than the exception. It should be considered, on the one hand, the extent to which regulations and standards can have an influence on improving the balance of sustainability reporting. On the other hand, the results indicate that there is a need for research and development of approaches and strategies to ensure a successful transmission of trade-offs and conflicts. Conflict with trade-offs between sustainability dimensions has so far been a largely neglected area of research in the field of corporate sustainability in general and corporate sustainability communication in particular.

Accessibility of information on sustainability has developed positively since 2004. While in 2004, the topics within the field of sustainability were often “hidden” deep in the company

website, Internet services are now convincing in terms of access from the homepage and the sustainability report, as well as implementing guided help such as search functions or site maps. In this sense, the result of the study gives the impression that most DAX30 companies are greatly concerned with conveying reputation-enhancing sustainability information in a transparent way, and with giving stakeholders easy access to the information related to sustainability. However, the results of the connection between the sustainability areas and other Internet areas (investor relations, press) are divided, and raise the question of whether the importance of sustainability in the “expert community” is currently higher than it is considered to be by those who are “affected”. While in most cases, there is a connection between sustainability and these other areas, in only a few cases of those companies investigated were there links from the areas in question to the sustainability section.

Some of the key media-specific elements of the internet for the improvement of comprehensibility of information are already being used a great deal. This is the case for the general use of internal and external links, which have seen a considerable increase since 2004. The results relating to text formation have also increased considerably since the first study. All in all, the “proximity to the printed version” in Internet-supported reporting, which was still overwhelming in 2004, has declined notably. The media-specific processing indicates a trend towards professionalization of Internet-supported sustainability reporting. Internet-specific approaches to improving the comprehensibility of the reporting are still not playing as prominent a role as they could, however. With very few exceptions, the DAX30 companies use neither the technical possibilities provided for customised reporting, nor the multi-media elements provided by the Internet. The results on customised reporting leave the impression that companies do not want to give up control of how the information flow is governed. The worry was expressed that

if information is compounded individually, it could lead to an abbreviation of information and technical issues may not be represented in their true light, for instance.

Finally, the results of the investigation show that the Internet-supported sustainability reporting of DAX30 companies is not being considered as an opportunity for improving understanding through dialogue with the stakeholders. As such, restricted dialogue provision such as e-mails is provided by most companies, but they hardly fulfil the basic requirements for credible dialogue. Open forms of dialogue, such as chats or discussion forums, are not taking place at all in the framework of sustainability reporting for DAX30 companies, as was the case in 2004. In this field, further research should be carried out into the constraints and reasons for the low usage of these communication possibilities. The first indications in this field are provided by research carried out by Adams and Frost (2006). In this study, the possibility for open dialogue provision in some companies was investigated, looking at the various reasons for this being rejected. One of these reasons, according to a German company, was that it presumed there was only a very low level of interest from stakeholders in such provision of dialogue (see Adams & Frost, 2006). Furthermore, the question arises whether developments under the key words “Web 2.0”, “Social Internet” and “Participative Web”, which is seen to grow in importance in the next years (Zerfaß et al., 2008), will mean that stakeholders begin to play a more active role in Internet-supported sustainability reporting, and move from simply receiving information towards helping to shape the information and becoming active dialogue partners. So far, only a few companies have used these opportunities to bring stakeholders closer into the reporting process. On an international level, some companies are gathering together their first experiences. The first pioneering work in this field in Germany is being carried out by Allianz, for instance, with its Online-Portal, which has dealt with questions relating to the future such as

climate change or the topic of micro-financing. It should be assumed that DAX30 companies will not be able to avoid this question in coming years. As important as the broad usage of Web 2.0 applications is a scientific appraisal of the possibilities and usage of Web 2.0 for stakeholder management, as well as to develop further applicable concepts for business practice.

7. Conclusions

This paper has sought to investigate the use of the Internet for the purpose of sustainability reporting among companies in Germany. The first question that arose was the extent to which DAX30 companies use the Internet, within the framework of their reporting on economic, ecological and social activities, in order to improve information provision, improved accessibility to information and comprehensibility of information, as well as to foster interactive and dialogue-focused processes of understanding with the stakeholders. Based on the results of three studies, carried out over a period of four years, trends were analysed in the use of the media-specific support potential of the Internet. On the whole, the results show that sustainability reporting has become a cornerstone of corporate communication among DAX30 companies. Companies have paid particular attention to easy access to sustainability information. Some basic approaches are already well used by DAX30 companies, to improve the provision and comprehensibility of information. Internet-specific approaches such as multi-media information processing, customised reporting or information updates, still have high potential to be fulfilled. Other multiple communication possibilities offered by the Internet remain completely unused, however, so far. It remains to be seen whether developments such as Web 2.0 will change the willingness to enter into dialogue in the future.

The study has several limitations. Aside from the use of an e-mail survey in 2005, the research was limited to content analysis of the websites. Moreover, mainly the media-specific support of the Internet for sustainability reporting has been analysed so far. The results can only be used in a limited way, therefore, to comment on the quality of the content provided and the differences and similarities established between the printed and online reporting methods. Furthermore, the results of the study only show the first trends in the use of the Internet for sustainability reporting. Additional follow-up studies would be required in order to be able to analyse the process of development over a longer time period.

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Appendices

Appendix A: 2007 Research Criteria (Blanke et al. 2007)

	Nr.	Criterion	Description
A – Provision of information	A1	Download offer	Availability of download possibilities for sustainability report, as well as previous reports as PDF
	A2	Archive function	Availability of an archive function for sustainability information only available on the Internet (subject to the time span of archived information)
	A3	Current Information	Availability of current sustainability information (subject to update date)
	A4	Newsletter	Availability of the possibility to order a newsletter on sustainability issues (e-mail notification of the publishing of a sustainability report, newsletter on sustainability issues, with and without thematic adaptability)
B – Accessibility of information	B1	Homepage links	Number of clicks required to get from the company’s homepage to the sustainability area on the company website
	B2	Investor Relations link	Investor relations link on the Internet, to the sustainability area on the company website (central reference to sustainability with and without link, context sensitive references and additional information)
	B3	Press link	Link from the press area on the Internet to the sustainability area on the company website (central reference to sustainability with and without link, context sensitive references and additional information)
	B4	Search function	Availability of a search function (on the whole company website or specifically for the sustainability area and depending on the refinement functions in the sustainability area, and content of documents)
	B5	Sitemap	Availability of an overview of the structural setup of the sustainability area in a sitemap (on the general company website or on the area specific to sustainability and depending on the number of entry levels)
	B6	Navigation alternatives	Availability of sustainability indexes, which list the central concepts and demands external to the organisation, and connect these to the appropriate information on the company website using links
C – Comprehensibility of information	C1	External Links	Use of links in the sustainability area, which send users to external websites relating to sources and additional information
	C2	Internal Links	Links within the field of sustainability, as well as to other areas of the company website, to explain the contexts and to refer to additional information
	C3	Glossary	Availability and ability to access a glossary, which explains technical terms, foreign words and abbreviations, and makes it easier to source the content (depending on the link to the sustainability area)
	C4	Multimedia usage	Use of multimedia elements to demonstrate / explain complex technical points (still pictures, animations, video and audio elements, interactive tools)
	C5	Data display	Availability of static and adaptable data depiction, and the possibility of adjusting the output format for individual data
	C6	Formation of text	Use of paragraphs, titles, structures, emphasis in order to make the text easier to read
D – Dialogue possibility	D1	Feedback possibility	Availability of a possibility to provide feedback on sustainability performance / reporting (polls, online survey with and without publishing of results)
	D2	Contact possibility	Availability of a possibility to enter into contact with sustainability spokespeople (anonymous contact form, general named spokespeople and spokespeople on specific sustainability topics)
	D3	Dialogue provision	Availability of dialogue provision, which makes it possible to have an exchange between stakeholders and the company, as well as between stakeholders (discussion forums/chats with and without specific topics, as well as moderation or expert participation)

Appendix B: 2007 Results (Blanke et al. 2007)

A – Provision of information

A1 Download service

Level	Description	absolute	in %
0	No provision of downloads	8	27%
1	Download for current reports	6	20%
2	Additional downloads for previous report	1	3%
3	Additional downloads for at least two older reports	15	50%

A2 Archive function

Level	Description	absolute	in %
0	No archive function	20	67%
1	Archive function for information (< 12 month)	2	6%
2	Archive function for information (< 24 month)	0	0%
3	Archive function for information (> 24 month)	8	27%

A3 Current information

Level	Description	absolute	in %
0	No current information or > 6 month old	19	64%
1	Updates within 4-6 month	0	0%
2	Updates within 2-3 month	1	3%
3	Updates within < 1 month	10	33%

A4 Newsletter

Level	Description	absolute	in %
0	No Newsletter with sustainability information	27	91%
1	E-Mail notification of sustainability report	1	3%
2	Newsletter with sustainability information	2	6%
3	Adaptable newsletter with sustainability information	0	0%

B – Accessibility of information

B1 Homepage links

Level	Description	absolute	in %
0	No service or > 7 clicks	1	3%
1	4-6 clicks	0	0%
2	2-3 clicks	12	40%
3	1 click	17	57%

B2 Investor Relations link

Level	Description	absolute	in %
0	No reference to sustainability area	18	60%
1	Central reference to sustainability area (no link)	2	6%
2	Central reference to sustainability area (with link)	5	17%
3	Context sensitive reference to sustainability information	5	17%

B3 Press link

Level	Description	absolute	in %
0	No reference to sustainability area	26	88%
1	Central reference to sustainability area (no link)	1	3%
2	Central reference to sustainability area (with link)	2	6%
3	Context sensitive reference to sustainability information	1	3%

B4 Search function

Level	Description	absolute	in %
0	No search function	0	0%
1	Search function which cannot be limited	22	73%
2	Search function which can be limited to sustainability area	7	24%
3	Search function which can be limited including/excluding	1	3%

B5 Sitemap

Level	Description	absolute	in %
0	No sitemap	5	17%
1	Sitemap without itemisation	4	15%
2	Sitemap with one itemised level	3	8%
3	Sitemap with two itemised levels	18	60%

B6 Navigation alternatives (indexes)

Level	Description	absolute	in %
0	No index	21	70%
1	Alphabetical index (key word index)	0	0%
2	Index of external organisations	8	27%
3	Alphabetical index and index of external organisations	1	3%

C – Comprehensibility of information

C1 External links

Level	Description	absolute	in %
0	No external links to sources and organisations	6	21%
1	Partial external links to sources and organisations	15	50%
2	Extensive external links to sources and organisations	3	8%
3	Extensive external links to sources, organisations and additional information	6	21%

C2 Internal links

Level	Description	absolute	in %
0	No internal links	4	15%
1	Internal links in sustainability field or to other areas	9	29%
2	Internal links in sustainability field and to other areas	2	6%
3	Internal links in sustainability field and to at least two other areas	15	50%

C3 Glossary

Level	Description	absolute	in %
0	No glossary	22	73%
1	Glossary can be reached indirectly	6	21%
2	Glossary can be reached from each page	1	3%
3	Glossary can be reached from each page, and contains links to the place in which the term is found	1	3%

C4 Multimedia usage

Level	Description	absolute	in %
0	No multimedia	10	33%
1	Static pictures	15	50%
2	Animation, video or audio elements	5	17%
3	Interactive tools	0	0%

C5 Data display

Level	Description	absolute	in %
0	No separate data display	10	33%
1	Static display of data	19	64%
2	Interactive data display	0	0%
3	Interactive data display and output format can be freely chosen	1	3%

C6 Text formation

Level	Description	absolute	in %
0	No basic criteria fulfilled, or no service	1	3%
1	One basic criterion fulfilled	2	6%
2	Two basic criteria fulfilled	6	21%
3	Three or more basic criteria fulfilled	21	70%

D – Dialogue possibility/ Communication

D1 Feedback possibility

Level	Description	absolute	in %
0	No feedback possibility	30	100%
1	Simple feedback possibility	0	0%
2	Extensive feedback possibility without publishing results	0	0%
3	Extensive feedback possibility, results published	0	0%

D2 Contact possibility

Level	Description	absolute	in %
0	No contact possibility	4	15%
1	Non-personal contact possibility	12	40%
2	Named spokesperson	11	37%
3	Named spokesperson for different topics	3	8%

D3 Dialogue possibility

Level	Description	absolute	in %
0	No dialogue possibility on the site	30	100%
1	Discussion forums or chats	0	0%
2	Topic-specific discussion forums or chats	0	0%
3	Moderated topic-specific discussion or chats	0	0%

Table 1

Overview of the studies into Internet-supported sustainability reporting of DAX30 companies

Authors of Study	Description	Research Methods	Survey Date
Blanke, Godemann, Herzig, Nierling, Rauer (2004)	Investigation into the use of media-specific support potential of the Internet, based on 19 criteria, with four classes each	Content Analysis	May 2004
Ahsen, Herzig, Pianowski (2006)	Investigation into the websites based on three criteria of Customised Reporting; Analysis of the topics of reporting and the picking up of interdependencies between the sustainability dimensions; Investigation into the use of screening possibilities to analyse stakeholder information needs and usage patterns	Content Analysis, E-Mail-based corporate survey	August/ September 2005
Blanke, Godemann, Herzig (2007)	Follow up study to Blanke et al. (2004)-Study, which is based on an updated and extended catalogue of criteria; Investigation into the media-specific support potential of the Internet based on 21 criteria, with four classes each	Content Analysis	July 2007

Table 2

Provision of Information (2004 and 2007; n=30)

Criterion	2007		2004		Difference	
	absolute	in %	absolute	in %	absolute	in %
Sustainability areas on company homepage	29	97%	26	87%	+3	+12%
Download service for sustainability reports	22	73%	22	73%	0	0%
Archive function for additional sustainability information	10	33%	15	50%	-5	-33%
Current sustainability information	11	37%	9	30%	+2	+22%
Newsletter/e-mail notification on sustainability issues	3	10%	3	10%	0	0%

Table 3

Accessibility of Information (2004 and 2007; n=30)

Criterion	2007		2004		Difference	
	absolute	in %	absolute	in %	absolute	in %
Link to sustainability areas from homepage	17	57%	11	37%	+6	+55
Reference in sustainability report to sustainability areas	18	60%	16	53%	+2	+13
Sitemap containing sustainability areas	25	83%	23	77%	+2	+9
Search function which can be refined to sustainability areas	8	27%	4	13%	+4	+100
Sustainability indexes	9	30%	3	10%	+6	+200

Table 4

Comprehensibility of Information (n=30)

Criterion	2007		2004		Difference	
	<i>absolute</i>	<i>in %</i>	<i>absolute</i>	<i>in %</i>	<i>absolute</i>	<i>in %</i>
Internal Links	26	87%	16	53%	+10	+63%
External Links	24	80%	15	50%	+9	+60%
Glossary	8	27%	7	23%	+1	+14%
Text Formation	21	70%	10	33%	+11	+110%
Individual adjustment of data display	1	3%	2	7%	-1	-50%
Use of multimedia	5	17%	4	13%	+1	+25%

Table 5

Communication Tools Compared over Time (2004 and 2007; n=30)

Criterion	2007		2004		Difference	
	<i>absolute</i>	<i>in %</i>	<i>absolute</i>	<i>In %</i>	<i>absolute</i>	<i>in %</i>
E-Mail contact possibility	26	87%	15	50%	+11	+73
Dialogue provision (chats, forums)	0	0%	0	0%	0	0
Feedback possibility (surveys)	0	0%	1	3%	-1	-100

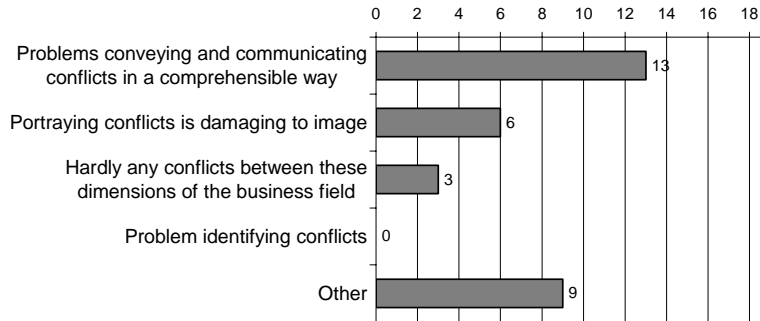
Figure Captions

Figure 1: Reasons against the portrayal of conflicts in areas related to sustainability (2005; n=19; Multiple nominations possible)

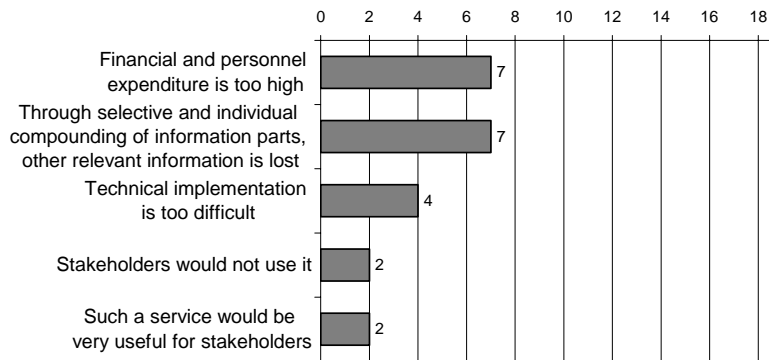
Figure 2: Judgement of the Provision of Individual Information Generation (2005, n=19; Multiple answers possible)

Figure 3: Screening by DAX30 companies (2005, n=19; Multiple answers possible)

1 Figure 1: Reasons against the portrayal of conflicts in areas related to sustainability (2005; n=19;
 2 Multiple nominations possible)



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 12 Figure 2: Judgement of the Provision of Individual Information Generation (2005, n=19;
 13 Multiple answers possible)



24 Figure 3: Screening by DAX30 companies (2005, n=19; Multiple answers possible)

