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Sustainability Reporting as a Tool to Improve Transparency towards Stakeholders. Exploring Reporting Practices in the Imaging Industry

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Abstract: The complexity that characterizes the international competitive system has enhanced the call for transparent reporting and the dissemination of information concerning social and environmental impact being implemented by firm. Recently, Life Cycle Assessment (LCA) methodology was developed in order to respond to the specific needs to measure the environmental impact of firm's products and processes in terms of resources consumption and pollution along their entire life cycle. This study can contribute to strengthening of the understanding, to promote discussion on the current state of the art of sustainability reports and to verify the development of the tools of corporate sustainability management to assess the environmental and social impact, in particular in the imaging industry. The paper proceeds as follows. First, it examines the literature on the sustainability reporting, corporate reputation as an intangible asset. Second, after the literature review it provides a descriptive and critical knowledge linking LCA, corporate reputation and sustainability reporting. Finally, the attention will be focused on the analysis of Canon, Epson, Nikon and Sony's sustainability reports in order to better understand if sustainability reporting tools based on LCA approach are useful to improve transparency towards stakeholders and if these tools are suitable to generate value and improve corporate reputation. Conclusions and implications for further research will end the paper.

Keywords: Corporate Sustainability, Sustainability Reporting, Stakeholder Involvement, Corporate Reputation, Life Cycle Assessment

Introduction

The complexity that characterizes the international competitive system has enhanced the call for transparent reporting and the dissemination of information. Economic actors have a responsibility to stakeholder to disclose information concerning social and environmental impact being implemented by them. This implies the need for firms to use appropriate system to evaluate and control their own behavior and to communicate the result achieved. In particular, through the sustainability report of a firm gives information about the status quo of corporate sustainable development. The stakeholder theory states that the purpose of a business is to create value, besides shareholder and creditors, also for agents that are interested in companies' actions toward sustainability. The environmental and social activities implemented by firms are communicated to stakeholders using corporate sustainability reporting. In the recent past, several studies have been focusing their interest in Corporate Social Responsibility (CSR) and the relationship between corporate governance and the disclosure practices of an organization (Amran *et al*., 2009) Cerbioni and Parbonetti, 2007). Numerous definitions of CSR coexist. One of the most quoted definitions of CSR is coined by the European Commission, which reads as follows "A concept where by enterprises integrates social and environmental concerns in their business operation and in their interaction with their stakeholders on a voluntary basis" (EU-Communication, July 2002).

Companies, in an social and political setting, are no longer considered as systems of economic and financial values production but must be considered as environmental development managers able to produce environmental and social value and in some cases also environmental and social disadvantage that appears in the form of damage to the environment. Interdependence is an emerging phenomenon and marginal "alterations" that occur in a part of the Earth may have repercussions in other parts of the planet in a short time, with an unmanageable butterfly effect. All this creates a high and growing unpredictability. If we look at the enterprise as a dynamic system, it becomes more and more important to evaluate its ability to adapt to changing conditions, to assess the degree of uncertainty and thus the risk of survival. Precisely on the assessment of this successful interaction capacity with the environment, the ability of entrepreneurial transformation does not have to focus solely on the economic development of the company but also to produce sustainable internal and environmental development, while remaining within the recognized ethical limits shape and consolidate the company's reputation as a social actor. Recently, Life Cycle Assessment (LCA) methodology was developed in order to respond to the specific needs to measure the environmental impact of firm's products and processes in term of resources consumption and pollution along their entire life cycle. The LCA has shifted to the forefront of environmental commitment for many companies, allowing a significant acceleration in the industry and improving the ever-more decisive climate policy perspectives that are geared to increasing demand for radical transparency from consumers, users, traders and governments. Furthermore, the LCA is starting to lead the design of individual products and processes and it is increasingly becoming a strategic tool for every company. The main question of the paper is: Are sustainability reporting tools based on product life-cycle useful to improve transparency towards stakeholders? Are sustainability reporting tools useful to improve corporate reputation? This study can contribute to strengthening the understanding, promotion discussion on the current state of the art of sustainability reports and to verify the development of the tools of corporate sustainability management to assess the environmental and social impact. Moreover, it wants to provide a descriptive and critical knowledge linking LCA, corporate reputation and sustainability reporting using a multiple case study (Yin, 2009). In particular, the analysis was conducted on the main competitors of the imaging industry: Canon, Epson, Nikon and Sony.

Corporate Social Responsibility, Sustainability Reporting and Information Transparency

Corporate Sustainability (CS), that is an approach based on the firm's capacity to create value for the stakeholder in the long period by implementing business strategies, takes in account different dimensions: economic, cultural, ethical, social and environmental. Each company needs both internal and external purposes, to account periodically the financial and sustainability performances to response to an increased call for transparency. The internal and external communication of the corporate governance is a very important component for sustainable development.

Voluntary information is increasingly associated with the concept of Social Responsibility. For companies the development of a reputable capital goes through the activation of effective communication of the positive aspects for sustainability strategies. The growing experience in the accounting practices related to non-economic aspects pushes businesses a long-term focus on more coherent strategies, with a perspective time, which allows to identify the risks in advance opportunities for internal and external resources.

Several studies have focused on the relationship between CS and business strategy. Their purpose was to identify a variable that was better able to justify a positive correlation between CS and economic and financial performance (Husted and Allen, 2000). These studies argue that socially responsible behavior can have a positive influence on the financial performance if there is a connection in the planning phase between the social strategy and economic strategy (McWilliams *et al.*, 2005). Moreover, Burke and Logsdon had already foreseen that the next step in the academic debate would focus on trying to clarify and quantify the competitive advantages generated by the CSR (Burke and Logsdon, 1996). They believed that a new strategic direction (in terms of social responsibility) is to promote the social and financial interests of stakeholders.

Husted and Allen integrate the thought of Burke and Logsdon, holding that the concept of social strategy helps to create value for the company, claiming also that companies should think carefully about their capabilities and to develop strategies that enable them to make a unique contribution (Husted and Allen, 2000).

Coda also analyzes the topic of CSR integration in business strategy. In this regard, the author identifies the presence of many obstacles to the concrete input of social responsibility in the strategy of the company (Coda, 2005). However, he considers it useful to draw a process of cultural growth for the management that wants to follow this guidance.

In addition, several scientific contributions consider the CSR Strategy as the basis for the generation of competitive advantages (Branco and Rodrigues, 2008). In particular, Kotler and Lee (2005) argue that companies that decide to undertake a "serious" socially responsible path, characterized by the adoption and observance of the principles and logic related to it are in a position to obtain the following benefits:

- Incremental effect on sales and market share
- Strengthening the brand positioning
- Improving the image and reputation
- Greater ability to attract, motivate and retain staff
- Reduction in operating costs and increase efficiency
- Increase the attractiveness for investors and

financial analysts

Also, an analysis of the literature shows that there are several positive effects of CSR on human resources management (Sharma *et al.*, 2009). A company that cares about social issues may attract potential employees highly motivated, qualified and sensitive to moral values. It also contributes to creating a safer work environment, characterized by strong individual motivation and high employee satisfaction. Therefore, it is clear how the research field that affects the correlation between the CSR and the Corporate Financial Performance (CFP) is in constant growth and evolution, distinguished, in particular, for the variety of methodological approaches adopted (Charlo *et al.*, 2015; Lua *et al.*, 2013; Zhou *et al.*, 2015).

Prior research has focused on the relationship between the voluntary disclosure and the firm size and leverage (Simnett *et al.*, 2009). They also demonstrated that countries that draw up sustainability reports are the ones that have stronger legal environments.

Several studies consider sustainability reporting as an important tool for demonstrating transparency, effective governance and to support decision-makers (Clarkson *et al.*, 2008). These functions are not alternative to the disclosure function but complementary to it.

According to Brundtland (World Commission on Environment and Development, 1987) sustainability is defined as the follows: “Meeting the needs of the present generation without compromising the ability of the future generation to meet their needs”.

The Global Reporting Initiative (GRI) wants to define guidelines for sustainability reporting, which is a type of reporting capable of integrates the social, environmental and economic components of business dynamics - known as triple bottom line. “Sustainability report is the practice of measuring, disclosing and being accountable to internal and external stakeholder for organizational performances towards the goal of sustainable development” (GRI, 2011).

The goal of GRI-G.4 is to help improve editing of the Sustainability Reports regardless of their own dimension, sector, or position and focus the attention of businesses on the reporting of significant elements that can improve the transparency of the actions taken by the companies towards stakeholders.

Sustainability Reporting and Corporate Reputation: An Additional Intangible Asset

Over the last few years, the cognitive expectations of the various classes of companies have significantly widened on aspects related both to values, to behaviors and to the results achieved.

The necessity to respond to such needs and the recognition of the importance of transparency in dealing with actors for value creation, are the basis for good responsible governance. An additional intangible asset that can generate value for the enterprise is corporate reputation, which is also heavily influenced by sustainability strategies. In the recent years, several studies were conduct on the relationship between Corporate Social Responsibility and Corporate Reputation (CR). On one hand, many cases recognized the CSR like a process to build a solid reputation (Vitezić, 2011; Armitage and Marston, 2008; Siltaoja, 2006; Brammer and Pavelin, 2006; Fombrun, 2005). On the other hand, studies showed that there are differences between CSR and CR but that allow to understand the complementarity relationship between them (Hillenbrand and Money, 2007; de Quevedo Puente, *et al*., 2007). Nevertheless, theoretical contributions are still limited. In particular, they are focusing on:

- Measurement of reputational factors and effects (Capuano, 2010; Watson, 2010; Gabbioneta *et al.*, 2007; Caruana, 2001; Caruana and Chircop, 2001);
- Relationships that exist between reputation and economic-financial performances (de Quevedo Puente *et al.*, 2007; Brammer and Pavelin, 2006; de la Fuente and de Quevedo Puente, 2003)
- Social reporting tools analysis in order to ascertain their suitability to represent commitment in social and environmental field (Khan, 2010; Viganò and Nicolai, 2009; Armitage and Marston, 2008; Coupland, 2006; Hasseldine *et al*., 2005; Fombrun *et al*., 2000).

Recently, Michelon (2011) has focused attention on the necessity to improve the comprehension about the relationship between Corporate Sustainability Disclosure (CSD) and CR. In particular, Michelon analysed the concept of reputation along three dimensions: Commitment to stakeholders, financial performance and media exposure. Instead, other scholars have investigated the link between Reputational Risk Management and theorization in social reporting (Bebbington *et al*., 2008).

Moreover, in the corporate context there is widespread awareness of the need to manage various socio-environmental variables. At the same time being recognized as sustainability disclosure an important role in enhancing the profile of reputation (Kongpunya *et al.*, 2011; Friedman and Miles, 2001). Therefore, the Sustainability Report represents for companies a valuable information tool through which to disseminate news about values that inspire business policies. To make known the behaviour adopted can greatly affect the companies’ reputation in the social and economic context (Fombrun, 1996). To obtain and maintain a good reputation is not always easy. Companies need a set of procedures and tools to adequately manage reputational risk. However, at the moment no significant methods and indicators have been identified to weigh this risk. The literature on the subject has not yet been able to provide the appropriate tools in order to achieve a turning point in this regard.

Nonetheless, most of the scholars involved in the issue agree that, sustainability disclosure is a determining variable for CR and that it can contribute to managing reputational risk (Bebbington *et al*., 2008; Friedman and Miles, 2001; Fombrun *et al*., 2000).

In view of this, the widespread information needs to provide a faithful picture of business behaviour. Untruthful or inadequate information may, in fact, have a negative impact on business reputation and reflect on economic and financial performance (Roberts and Dowling, 2002). It is therefore evident that if the CSR variable as a mitigating element of reputational risk is not appropriately managed and accounted, it can become counterproductive. The CSR in case of gains/losses of reputation suffers of a "handicap" in terms of asymmetry in stakeholder behaviours (Klein and Dawar, 2004). The latter are more likely to penalize socially irresponsible behaviour than to reward ethically correct conduct. In relation to the increasing complexity and variety of risks to be monitored and the constant search for greater transparency information, reputational risk management plays a crucial role in the wider scope of risk management.

Several studies focused on the impacts that may arise from a reputational crisis, as well the contribution that fair CRS policy can make in the management of this risk (de Quevedo Puente *et al*., 2007; Fombrun, 2005).

With regard to the measurement and assessment tools of reputation and reputational risk, over the last few years, the doctrine has been growing interest in that, contributing significantly to the understanding and development of these issues (Fombrun and Van Riel, 1997). An important role in the evolution of these studies is attributable to C.J. Fombrun. In 1997 he was the promoter of Reputation Institute foundation that contributed to the formulation of corporate reputation measurement models based on quantitative data. Like, for example Reputation Quotient'SM (Fombrun *et al*., 2000; Fombrun and Foss, 2001; Gardberg and Fombrun, 2002) and Rep Trak TM Pulse (Ponzi *et al*., 2011).

To support the existence of a link between sustainability and corporate reputation there are studies carried out by the Reputation Institute that, thanks to the RepTrak model, have developed a valid technique to monitor variables that can influence an organization's reputation (Fig.1).

From these studies, it emerged that the key dimensions of corporate reputation are the governance, the type of products and services offered and citizenship. These are followed by the workplace, which is the treatment the company reserves to its employees.

In order to better understand the link, it is good to specify that governance is defined as the capacity to have ethical and transparent behaviors, while citizenship means the company's ability to maintain a good citizen's conduct, that is, to positively influence society, responsible for the environment and supporting the right causes. This implies that stakeholders in evaluating an organization place particular emphasis on its approach to sustainability issues.

The dense relational network that interests the company and its stakeholders can be organized through the development of the local clusters, geographic concentrations of companies, academic institutions, government agencies and various stakeholders.

Simultaneously, the diffusion of corporate reputation and reputational risk studies has grown the interest on the relationship between CR and Corporate Sustainability Disclosure (CDS). In some cases, in the doctrine has been emphasized that the motivations for companies to follow the path of voluntary disclosure are not to be found in the search for recognition of their own ethical responsibility, rather than to the need to manage their reputation strategically (Cravens *et al*., 2003). Other scientific contributions refer to the key role of CSR reporting for the achievement and consolidation of a positive CR (Kongpunya *et al*., 2011) and for the management of reputational risk (Bebbington *et al*., 2008). In others, it has also been noted that voluntary risk reporting contributes to increasing the legitimacy of companies. This practice, on one hand helps to alleviate institutional pressure to increase the effectiveness of market discipline and on the other facilitating the "control" of key stakeholders through an effective management of CR (Barnett *et al*., 2006). Recent studies based on legitimacy theory have also shown that it is more likely to use social reporting tools for those companies that adopt a proactive strategy for the stakeholder expectations and that have good financial performance and are exposed to a significant media pressure; this allows them to increase the degree of social legitimacy and their reputation at the widest audience of stakeholders (Michelon, 2011). Additional contributions addressing risk management and voluntary disclosure have different results (Xifra and Ordeix, 2009). Lajili and Zéghal (2005) found that disclosure of risk information could jeopardize the uniformity, clarity and reflection of the reliability of the same information. However, Estrella (2004) believes that it can be particularly useful to integrate voluntary risk disclosure through "other regulatory tools, in particular with direct supervision and financial market discipline".

CR is based on the organization's ability to meet the expectations of stakeholders. It can be built in the long run only thanks to the experience. The ability to get reputations was one of the factors that attracted most businessmen, coming to the process of integrating sustainability into business processes. The impact that company's reputation has on the company's ability to operate had become intense as to create reputational risk management, in order to favor a strategic management of the same. Such strategies cannot be excluded from the dynamics that affect sustainability, since it has become a major stakeholder interest. In modern society the bearers of interest are aimed at sustainable development issues, so they can only become an integral part of variables that can influence corporate reputation.

Sustainability Reporting and LCA

Several studies provide that companies that have chosen business philosophy more sustainable are more successful than those simply oriented to environment (Graedel and Allemby, 2002).

In order to obtain comparable data, however, sustainability report need to be constructed and linked on the basis of product life cycles of the processes themselves and those comparisons between sustainable systems should have an objective result and a complete vision throughout the cycle of product life. The importance of the life cycle thinking in the economic context derives, exactly from this assumption.

The adoption of the Life Cycle Analysis method for evaluation of ecological dimension of product and processes can be helpful to the key innovative variable of sustainability by creating added value.

One of the weaknesses of sustainability reporting is that it does not include information regarding product and process. The quality of reporting should improve taking in consideration largely the life cycle approach. Moreover, the parameters used to report corporate sustainable and social responsibility are chiefly qualitative. Therefore, it is very difficult to aggregate sustainability indicators in univocal way.

LCA is now recognized as one of the most effective methods of environmental product policy and sees its application in eco-design, environmental marketing (Ecolabel) and environmental management. International ISO 14040-14044 (2006) define the procedure for carrying out an LCA and the four phases included in it: goal and scope, life cycle inventory, life cycle impact assessment and interpretation. The LCA allows determining the inbound and outbound flows of each product's lifecycle, assessing its environmental impact on a global scale, such as the greenhouse effect, thinning the ozone b and, or others. This analysis therefore allows to improve the environmental aspects of the products by intervening in the individual phases of their life cycle.

LCA methodology provides the beginning point to create good indicators for global sustainability reporting (Pflieger *et al*., 2002). In addition, it takes in account upstream and downstream process linking inventory results.

Several sustainability reports include a section devoted to the environmental impacts and resources used throughout in a product's life cycle.

According to Perrini and Tencati (2006), the environmental section has to comprise "input-output analysis, Life Cycle Assessment (LCA) and cost-benefit account related to environmental management of products/processes".

LCA has become the most commonly used tool of corporate environmental management to assess the environmental impact of a product, process or service. All relevant environmental parameters over the whole life cycle are determined, from material extraction, production to the end of the product and its recycling. The methodology of LCA is applicable to any industrial or service sector that provides a comprehensive and detailed view of the observation system in order to highlight and locate opportunities for reducing environmental impacts related to product life and to inform the "public" about the environmental impact of the product life cycle. LCA provides the main starting point for global sustainability reporting including the emerging future in this context. Input-output analysis allows finding and managing the information concerning the consumption of resources and their impact in terms of emissions (Suh *et al*., 2004).

The LCA is a fundamental support to the development of environmental labeling: in the definition of environmental reference criteria for a given product group or as a main tool for obtaining a Product ID (Gorre´e *et al*., 2000)

The LCA methodology diffusion depends mainly on three factors:

- New attention to product policies, as an important factor of the environmental policies
- The presence of public opinion that requiring environmental quality criteria
- The growing awareness that environmental issues can no longer be faced for individual compartments (air, water, soil), but require an assessment and a global intervention

LCA methodology initially developed as a support to industrial decision-making has a very large application going from management of a single company to that of the national socio-economic systems. The approach focuses on the separate study of individual elements of the production system; it goes to a global view of the production system, in which all processing processes are taken into account as they participate in the realization of the function for which they were designed.

It is interesting to consider both the external and the internal benefits deriving from the application of the LCA:

- It can be used to achieve competitive advantages on the market by comparing the environmental impact between multiple products

- Life cycle analysis is an informative basis for external certification
- This tool can be used by businesses to orient public decisions, in order to demonstrate the pursuit of its environmental objectives
- It provides information on the environmental impact related to the product life cycle, through subsequent validation of the Environmental Product Declaration (EPD)

This model has proven to be very useful for companies for the calculation of the impact associated with a product allowing moving towards a savings of energy and materials.

It also enables value creation through services and sustainable environmental practices focused on environmental and social responsibility. Stakeholders today are increasingly careful in evaluating the commitment of an organization to the transparency of business practices and their business environmental impact.

Data and Methodology

The current paper contributes to the emergent area of sustainability research by using a multiple case study approach to identify characteristics that appear to be common across sustainability reporting. This methodology was also uses in order to understand the relevance of LCA approach to increasing the information transparency of sustainability reports (Yin, 2009; Eisenhardt, 1991).

The first choice of method used to define the research plan was to focus on companies that:

- Belong to the same industry, in particular to the imaging industry
- Have a firm experience in the development of social accountability tools
- During the years have shown attention on environmental issues, deduced from their websites and from their reports

For the definition of the survey sample we decided to refer to four companies: Canon; Epson; Sony and Nikon.

Regarding the data collection, we downloaded all the sustainability reports of the above companies available on the telematic network. In particular, for Canon, Epson and Sony, the reports analyzed for each single company were 14 for the period from 2003 to 2016. Regarding Nikon's sustainability reports are 11 for the period from 2006 to 2016. Overall 53 sustainability reports were analyzed.

Results

The main features observed are represented by a table that summarizes their presence in the sustainability reports (Table 1).

In particular, the first line representing refers to the years of publication of the reports; the second line lists the guidelines that companies have taken into account; the third highlights the companies that have been paying attention on management risk and more specifically on corporate reputation and reputational risk; the fourth line indicates whether the document refers explicitly to stakeholder engagement both in the reporting process and in the activities carried out by the stakeholders; the fifth line shows whether there is a special section dedicated to the LCA methodology in the reports; finally, the last line indicates whether the reports were subject to assurance or not.

With regard to the features just mentioned above, some brief considerations can be made. First element that deserves to be highlighted is the fact that the reports produced by the company's subject of study have assumed a repetitive character, presenting an annual recurrence. This aspect, however, was a basic prerequisite for this investigation, as it provided comparability between the documents analyzed.

All companies use the Sustainability Reporting Guidelines of GRI. In the last reports they adopted G4 of GRI.

In particular, the Reports contain General Standard Disclosures (Strategy and Analysis; Organizational Profile; Commitments to External Initiatives; Identified Material Aspects and Boundaries; Stakeholder Engagement; Report Profile; GRI Content Index; Governance; Ethics and Integrity) and Specific Standard Disclosures (Economic; Environmental; Social: Human Rights; Social: Society; Social: Product Responsibility).

In addition to G4, Epson also adopts Environmental Reporting Guideline issued by the Japanese Ministry of Environment (2012) and ISO 26000:2010/ JIS Z 26000:2012 (Guidance on social responsibility).

We also observed which companies dedicated a section to risk management. In the reports analyzed refer to Management of Security Risk in International trade, Crisis Management System, Legal Risk Management System, Business Risk Management and Financial Risk Management. For example, Canon has established the Risk Management Committee. This committee is comprised of three subcommittees, namely, the Financial Risk Management Subcommittee, Compliance Subcommittee and Business Risk Management Subcommittee. The Risk Management Committee "develops various measures with regard to improving the Canon Group's risk management system, including grasping any significant risks (violation of laws and regulations, inappropriate financial reporting, quality issues and information leakage, etc.)".

Nikon, instead, holds crisis management seminars for all employees scheduled for appointment overseas, which tailor to each individual in order to provide the necessary local knowledge.

Table 1: Sustainability Reports' features analyzed

	Canon	Epson	Nikon	Sony
Years of publication	2003-2016	2003-2016	2006-2016	2003-2016
Sustainability reporting guidelines	Gri	Gri	Gri	Gri
Risk management system	X	-	X	X
Stakeholder engagement	X	X	X	X
LCA	X	X	X	X
Assurance	Assurance statement	-	Independent practioner's assurance report	Third-party verification

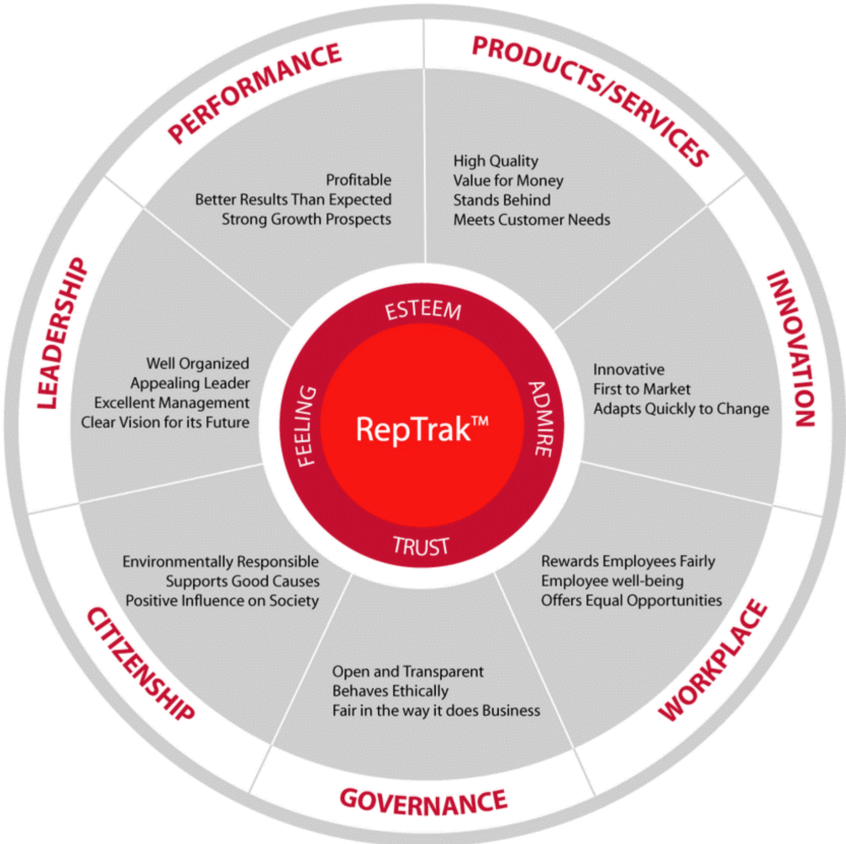

Fig. 1: RepTrak™ reputation model

Furthermore, Nikon implemented measures to combat terrorism through specialized external organizations to increase knowledge about crisis management of the Crisis Management Secretariat of the Human Resource Department in the year ended March 31, 2016.

There is no explicit reference to the management of reputational risk. Although attention to reputable dynamics is palpable through a full reading of the reports, from a formal point of view, the management of reputational risk still assumes residual contours. However, the management of this risk is recognized as a strong strategic asset. As Nikon says: "We will not engage in any activities that damage Nikon's reputation or financial interest in order to benefit ourselves or third parties".

Moreover, the reports examined reveal the centrality of the stakeholder engagement, both as regards the construction and implementation of the company's strategic plan as well as the social reporting process. In the specific case, Sony has activated participatory processes for members and employees. In particular, the participatory activity involved in the above-mentioned stakeholder categories has provided:

- The definition of the modalities and processes of dissemination and involvement of employees on the Operational Plan and the consequent work processes
- Enhancing and enriching the Sustainability Report process with its shared construction and analysis of its results

- Analysis of the profile and needs of the members and re-definition of the role
- Analysis of the profile and needs of workers

In particular, "Sony not only promotes engagement with stakeholders in implementing its CSR activities but also encourages the participation of multi-stakeholder groups in the planning of those activities, thereby contributing to the creation of a global framework for social responsibility".

The surveyed companies have enabled the engagement processes to shareholders and employees. In particular, the analyzed companies have planned the definition of policies, actions and processes and involvement of employees; the strengthening and enrichment of the shared construction process of the Social Report and the analysis of the results; analysis of the profile and needs of the members and shared re-definition of the role; analysis of the profile and needs of employees.

Regarding the LCA section, we observed that all the companies use the lifecycle assessment methodology. Canon, for example says: "To reduce these impacts across the entire lifecycle, we convert each type of environmental impact to CO2 and set as the overall goal for our Mid-Term Environmental Goals a 3% improvement per year in the lifecycle CO2 emissions improvement index per product. We have incorporated this overall goal into our companywide goals, business goals and operational site goals using Lifecycle Assessment (LCA) methodology, resulting in environmentally conscious designs and production with due consideration for the entire lifecycle of a product". Canon's proprietary tool helped the company reduce carbon emissions in its newer product lines by 30% and reduce energy usage by up to 75%.

Also the Nikon Group implements product assessment at the planning and design stage of products to develop products with a low environmental impact throughout the entire life cycle: "We also provide feedback to targets set in the development of subsequent models by conducting evaluations of the environmental impact using the LCA method for some of our models".

While the Epson tool does not include end-of-life criteria, it does highlight ways to reduce eventual waste by making different decisions in early design phases. In all cases, as with Canon tool, LCA was first used to look at existing products and company processes and measure the overall footprint of both. That new understanding fueled changes in product design and eventually companies took LCA to the next logical step and began evaluating decisions earlier and earlier in the design process.

Regarding to the assurance activity, Canon from 2003 has submitted its Third-Party Opinion reports and to an assurance statement with the purpose to ensuring its stakeholders the completeness, relevance and completeness of the information contained therein.

Nikon Corporation is recognized by SRI rating agencies and is included in the FTSE4Good Index Series, the Morningstar Socially Responsible Investment Index (MS-SRI), the ECPI Ethical Index Global, the Ethibel EXCELLENCE (Ethibel Investment Register) and MSCI Global Sustainability Indexes.

Moreover, Nikon elaborates an Independent Practioner's assurance Report, in order to ensure that the economic and financial data in the report correspond to the accounting results and that the socio-environmental information is consistent with the content required by the guidelines adopted as a reference to the elaboration of the document.

Conclusion

Sustainability report is a tool that companies use to communicate with stakeholders, for decision making and for marketing purpose. Companies are moving towards sustainability development with analysis that considers the life cycle of product, impact level of activities and automation of data administration.

This study, though preliminary and exploratory, has made possible to better understand the utility that a social accountability tool, which is the sustainability report, is able to offer in term of management and mitigation of reputational risk, with reference to a particular category of companies.

The results of the analysis have allowed us to ascertain how the social/sustainability reports play an important role in the activity of Reputational Risk Management. In this case the report acts as a tool for consolidating and increasing the trust relationship between the company and its customers, through a clear information transparency and stakeholder engagement. Despite the importance recognized to the social reporting tool, from the examination of the reports, management of reputational risk still lacks the "right" representation.

This is mainly due to the difficulties that companies generally encounter in measuring this type of risk and not simply identifying them in the overall framework of risk management.

For this reason, it is considered useful to combine the study of the relationship between sustainability disclosure and corporate reputation - through a broader theoretical framework and comparative analysis of the sector - a research activity designed to develop new criteria and measurement methods that respond better to increasing reputational risk management demands.

Sustainability reports are appropriate detection tools. The approach to this methodology involves the examination of the ecological impact on all the phases of the life cycle of product. This methodology appears complex and it can generate applicative difficulties that can be addressed by defining a specific limit of analysis. LCA methodology has several operational advantages consistent with the underlying logic of product policy: it makes possible to compare products and services that perform the same function or meet the same need; it allows an overall evaluation of the product/service, thus avoiding the problem of simply transferring impacts from one stage to another and it is suitable for integration with other environmental policy tools. The use of life cycle assessment in combination with labels allows the immediate recognition of the ecologically oriented product.

Finally, to address the three dimensions of sustainability while respecting the definition of Sustainable development of Brundtland (1987) is possible by combining the three pillars and promoting exchanges and the possible convergence of different research fields and through more streamlined approaches and easier management and integration.

In conclusion, sustainability reporting tools based on product life-cycle are the most complete and conceptually exhaustive, but the still high degree of variability and interpretation of non-standardized tools opens the door to margins still too wide. Integration between analytical and computing tools is the best way for their expansion and improvement, demonstrating that the character of multidisciplinary in this subject is perhaps much more felt than others and is the only way which leads to the refinement of the methodology, in order to have instruments of complete, effective and exhaustive sustainability. Sustainability reporting - if reports in a clear and complete way, using reporting as a tool for dialogue and confrontation with interested parties - is a valuable tool to ensure greater information transparency and, consequently, improve the relationship of trust with the relevant stakeholders.

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Author’s Contributions

This paper is the result of a joint effort of all the authors who contributed to the following parts of the manuscript.

Luisa Pulejo: Introduction and Conclusion.

Valeria Naciti: Corporate Social Responsibility, Sustainability Reporting and Information Transparency; Sustainability Reporting and LCA; Results.

Nicola Rappazzo: Sustainability Reporting and Corporate Reputation: An Additional Intangible Asset; Data and Methodology.

Ethics

This article is original and to the best knowledge of the author has not been published before. Authors declared that there is no ethical issues that may arise after the publication of this manuscript.

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