

ON SUSTAINABILITY REPORTING: DO STAKEHOLDERS MATTER?

By

MATTERA. M *

HILLIARD. I **

SHAPOVAL. A ***

AIGBEDO. H ****

*-** Associate Professor, Department of Business, Universidad Europea de Madrid, Spain.

*** Postdoctoral Fellow, H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology, USA.

**** Associate Professor, School of Business Administration, Oakland University, USA.

ABSTRACT

Due to sector importance, size and strong growth rates, Aerospace and Defense (A & D) companies need to engage appropriately with stakeholders and communicate effectively their corporate policies, strategies and actions. As a result, in recent years, they have faced greater scrutiny and calls to produce sustainability reports. They rely on internationally recognized frameworks to create such reports. The Global Reporting Initiative (GRI) is one of the most trusted guidelines, being the nearest thing that exists to a standard for responsible management reporting. However, it is unclear whether it effectively fulfills its mission. The present paper explores the disclosure and information content of the top revenue-generating companies in the A&D industry. Results show that, there is a need for further development of the GRI guidelines in a sector-specific fashion, together with higher detail and specification in firms' disclosure of information, to achieve overall greater transparency.

Keywords: Sustainability Reporting, Stakeholder Management, Transparency.

INTRODUCTION

The Aerospace and Defense (A&D) industry is one of the fastest growing and most important industries in terms of revenue and Research and Development (R&D) advancements, in both developed countries and developing countries. On average, global production levels are around 1,000 new aircrafts per year (World Economic Forum, 2014), with the unit cost of production of around \$110 million and sales price of around \$194 million.

Due to the high impact of this industry on the global economy, companies operating in this sector are highly scrutinized in their day-to-day activities, and this necessitates the reporting of their sustainability activity. In general, the nature and extent of sustainability reporting has changed over time. Until now, reporting in most cases has been a voluntary activity, and today represents a new phase, when regulating bodies such as governments will begin to require such reporting as is the case with financial disclosures. For example, Strouhal et al. (2015) notes that, the European Union plans to begin mandating the publishing of CSR reports from 2018.

Organizations tend to emphasize the positive aspects of

their activities in order to create a positive image and to maintain or improve their future financial performance. However, sustainability reporting that is geared towards various stakeholders needs to provide a balanced view so as to facilitate the informed decision making by external stakeholders, especially institutional investors.

In recent times, GRI has emphasized this aspect in the way companies are supposed to report their activities. Hahn and Lulfs (2014) observe that, while GRI's process for balanced reporting is good, it is inadequate. Toppinen and Korhonen-Kurki (2013) use a multiple case study approach to assess the sustainability reporting for multinational companies in the forest industry. Among other things, their study showed that, while there has been an improvement of sustainability reporting for these firms over time, there was a lack of uniform interpretation of some GRI items.

Depending on the industry, stakeholders may consider the sustainability topics more or less relevant; therefore it is important for companies to evaluate the aspects upon which they must disclose information to comply with interest groups' demands. GRI has conducted research on the industry-specific interests of stakeholders, where

they outline the elements, the stakeholders considered as most important for companies in the industry, to report on (GRI, 2013a).

Based on this background, it is of interest to evaluate whether the topics considered by stakeholders are effectively and comprehensibly reported by the companies in a specific sector, especially in a high-impact industry such as A&D. The present study focuses on the highest revenue-generating companies in the A&D sector and evaluates the quality of their sustainability reporting. Firstly, the industry is described and assessed, complemented by a review of sustainability standards and the characteristics of GRI guidelines. Secondly, stakeholders' concerns of the A&D industry are described. Thirdly, A&D top-revenue generating companies are evaluated based on analysis of the data. Finally, conclusions and suggestions for practical implementation are described and the future areas of research are identified.

1. Industry Outlook: Aerospace and Defense

1.1 Overview

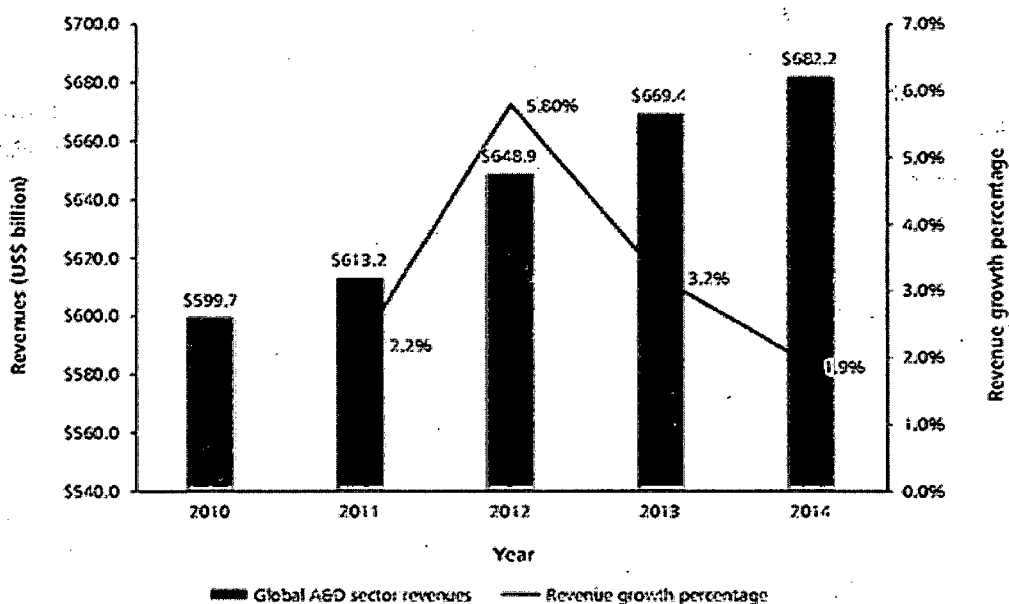
The commercial aerospace sector is growing at a fast rate, as seen in Figure 1 (Deloitte, 2015), with new airlines taking over a previously oligopolistic market, while some of the less-traditional airlines are significantly investing in their

customer experience, thus taking over as a prime choice for consumers, as is the case with Emirates or Qatar Airlines (PWC, 2015). In the case of the global defense industry, there are a few large defense programs, and some developing countries are fostering their own defense industry instead of following large global contractors such as Boeing.

One example is India, which is currently developing a fifth generation fighter aircraft through a local contractor and a state-owned company. This shows that, the competition for global defense programs will become fiercer in years to come, as developing countries participate in the bid for a market share in this industry (Pandit, 2015). Because of the fierce competition, in the commercial and global defense sectors of this industry, there is strong pressure to consolidate key market segments and to grow market share.

1.2 The Stockholm International Peace Research Institute Database

In 1989, the Stockholm International Peace Research Institute (SIPRI), focusing on the A&D industry, created a global database on arms-producing companies worldwide, which includes not only financial information, but also other elements that are crucial for the industry's stakeholders, including employment (SIPRI, 2015). Since



Source: Deloitte (2015)

Figure 1. Five-year History of A&D Sector Revenue and Growth Performance

the creation of this database, SIPRI produces annual publications on the 100 largest companies in the sector, ranked by sales volume of industry-related products and percentage of these products represent over total sales.

The SIPRI categorizes aerospace and defense firms (whether public, private or state-owned), as well as military goods and services to military customers (both domestic and sales for export) as arms-producing companies. It compares company's results over different years, but does not conduct analysis, among companies during different years. In 2014, it was recorded that, defense-related sales-aerospace and other military services by the top 100 companies totaled \$401 billion (SIPRI, 2015).

This industry, apart from being one of the largest employers and revenue-generators worldwide, has a significant impact on society due to the nature of the use of advanced technology and specific production requirements, the inherent pollution and environmental impacts, and the social impacts due to the nature of the business. Because of this, it is of interest to evaluate the degree to which these firms comply with international standards and how they communicate with their stakeholders (Perlo-Freeman & Wezeman, 2013).

Because of the above mentioned concerns, A&D industry, just like other sectors, has increased the implementation of transparency standards, usage of corporate reporting as a way to communicate with its stakeholders, to transmit their values and actions regarding the topics herein discussed.

2. Sustainability Reporting Standards

2.1 Global Reporting Initiative

As previously mentioned, organizations increasingly use Non-financial Reporting (NFR) as a key vehicle for stakeholder dialogue, through which they explain their responsible management philosophy and provide information on the impacts of their operations. The most widely used tool for this is the Global Reporting Initiative, which aims to promote corporate sustainability reporting and emphasize the standardization of such reporting (White, 1999).

Reporting organizations should disclose information on

their organizational profiles, their management approaches to different sustainability issues, as well as their responses to specific indicators on organizational performance. Indicators are divided into 6 categories (economic, environmental, human rights, labor practices and decent work, society, and product responsibility). The GRI framework is undoubtedly the nearest thing that exists to a standard for responsible management reporting (Etzion & Ferraro, 2010). It enjoys widespread popularity and has a number of important strengths, as follows:

- Due to its widespread adoption and institutional consolidation, there is little doubt that the framework has succeeded in formalizing to some extent, the shape and scope of non-financial reporting¹. Additionally, the framework was designed with the intention of being generically applicable, to be usable by organizations of any size, sector, or location.
- The initiative (as indicated by the use of the descriptive adjective framework) has managed to create a common language and a level of standardization in non-financial reporting, which enables benchmarking and comparative analyses among different organizations. A conscious effort was made to relate the framework to the United States Federal Accounting Standards Board Interpretation (FASBI) framework and the developing International Financial Reporting Standards.
- Amongst the successes of the framework, was the incorporation of a number of accountancy concepts such as Relevance, Comparability, and Materiality (Etzion & Ferrero, 2010). This materiality principle covers information that "may reasonably be considered important for reflecting the organization's economic, environmental, and social impacts, or influencing the decisions of stakeholders, and, therefore, potentially merit inclusion in the report" (GRI, 2013b).

The views on the GRI mentioned in the previous section are not shared by all. Described by Milne et al. (2008), as an "uncritical" reporting model, a number of weaknesses have been identified both at the design and

¹ Apart from the number of 'official' users, anecdotal evidence suggests many organizations, while not directly adopting the framework, follow its rationale/structure when reporting (Fonseca, 2010).

implementation levels, as follows:

- While the design of each generation of the GRI is a broad-based consultative process, much of the focus has been on the development and promotion of the guidelines themselves, and some have argued that, not enough work has been done systematically analyzing the information presented (Rowley & Berman, 2000; Snider et al., 2003; Brown et al., 2009). There exists a situation, where many organizations seem to confuse reporting on their performance with actual performance (Gray & Milne, 2002).
- Recent versions of the framework focus on the importance of including information that is relevant and material, yet there are no explicit guidelines on how to interpret this (Milne et al., 2008). Partly as a result of this, it has been argued that, the actual reading of reports by NGO's, labor organizations, and financial analysts is quite low (Levy et al., 2010).
- Given that, incentives exist for firms to highlight the positive and downplay the negative aspects of their operations, questions have been raised regarding the viability of the data presented (Campbell, 2007). While reports can be externally verified, there are concerns that the process is weak, costly, and limited attention is paid either to the meaning behind the data presented, or to the overall level of organizational performance (Bebbington & Gray, 2001; Fonseca, 2010).

2.2 Stakeholder Concerns in Aerospace Industry

It has become common for companies in today's business world to have strategic intentions to create and sustain value for their current shareholders. In addition, it is good practice for a company to extend the scope of its strategy to include stakeholders. Those are usually defined as firms, organizations, and individuals that are directly or indirectly influenced by the actions of the company. Different stakeholder groups may have a wide variety of sustainability concerns that are not shared by others. Those topics cover environmental and social impacts in addition to the economic and governance aspects. In producing reports, companies receive help mainly from five stakeholder groups, namely, business associations,

labor representatives, civil society organizations, information users, and experts (GRI, 2013b).

The A & D industry is represented by manufacturers of military or civil aerospace, aircrafts and defense equipment, tools, and parts, including defense electronics and space equipment. In addition to traditional issues shared with many other industries, such as emissions, energy consumption, quality control in the supply chain and labor conditions, there are several areas that need special attention due to the nature of the industry under consideration. These include, for example, nuclear materials and weapons, confidentiality and dependence on governments, and political issues. Moreover, major topic specifications are outlined considering special features of the A&D industry, and taking into account the explanations provided in the GRI, stake holder expectations study (GRI, 2013a).

Commercial airlines are under increasing pressure to reduce operating and maintenance costs. As a result, they have strong demand for products and technologies that favor lower energy consumption and higher overall efficiency. Aircraft manufacturers are trying to drive down fuel consumption by reducing the vehicle weight, for example by using modern composite materials. Searching for alternative fuel produces not only cost reductions, but also lower emissions and blends of biofuels and traditional jet kerosene are already used today. Moreover, it has become a regulatory practice to require airlines to pay for their carbon emissions, like under the EU Emission Trading Scheme. Further development of low-carbon fuels in aviation is expected through special programs such as Transport 2050.

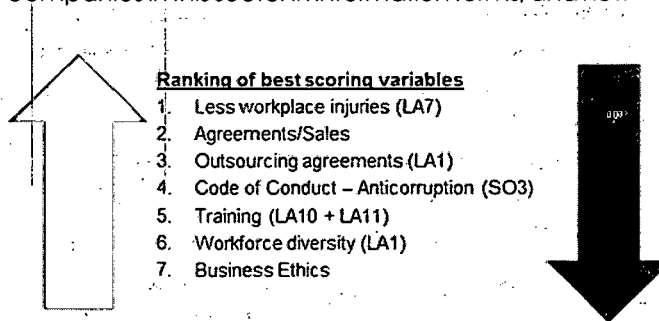
Air pollution concerns are supplemented by even more harmful contaminants like nuclear materials. Nuclear decommissioning, defined as safe handling of nuclear facilities and power reactors at the end of life, create costs, technical challenges, and risks to the environment and living organisms. The A&D sector deals, for example, with nuclear power submarines, aircraft carriers and special ships like ice breakers. Radioactive waste disposal after decommissioning requires special planning for many years in advance. Nuclear materials together with

includes safety levels, training rates, and levels of employee diversity, and anti-corruption items such as codes of conduct. These answers reflect the globalized diverse nature of these companies, with high-skilled employees, and hence the need for advanced training and continuous improvement (the business case for CSR). The value chain is also well reported on, in terms of agreements on both outsourcing and sales. This possibly reflects the ongoing concerns about corruption in the sector, or dealings with despotic and authoritarian regimes.

In the worst scoring variables, what stands out is the lack of information on these companies' stance or commitment to international agreements and treaties relevant to the sector, such as the Anti-corruption index developed by Transparency International, or other common standards used for non-financial reporting such as, Accountability's AA1000 standard for stakeholder engagement. This lack of information draws into doubt, the level of commitment within the sector towards international norms and agreements on creating a more sustainable world. There is widespread understanding that many of the problems being faced cannot be dealt with individually, rather requiring enhanced cooperation and new ways of engagement.

3.3.2 Scores of Variables where no corresponding GRI Indicator exists

Table 4 shows the scores for the variables, where no corresponding GRI indicator existed. As can be seen, the overall scores are extremely low, with only one variable scoring above the overall variable average (6.9). This suggests a need for the GRI to re-assess what it requires for the companies in this sector in information terms, and how



Source: Own elaboration

Figure 2. Best and Worst Scoring Variables

Dust and Particles	3
Volatile Organic Compounds	13
Favoritism	2
Sexual harassment	2
Worker intimidation by management	4
ISO	12
UNGC	6
Arms Trade Treaty	6
Global Principles of Business Ethics for Aerospace and Defense Industry	3
TI Defense Companies Anti-Corruption Index 2015	4
Controlling proliferation of nuclear weapons	5
Product Affordability	23
AVERAGE	6.9

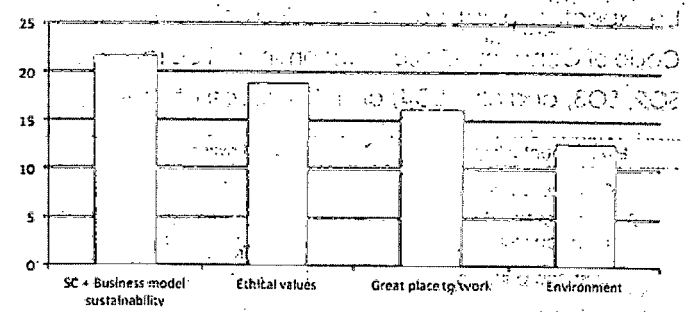
Source: Own elaboration

Table 4. Scores of Variables where no corresponding GRI indicator exists

it is asked for. Broadly, it seems the GRI needs to do more, so that, stakeholders receive the information they want about the issues they identify as important.

3.3.3 Scores by Category

Looking at the scores by category (Figure 3), the results seem to indicate that broad concepts of sustainability are well embedded in the industry (business model sustainability and ethical values) but actual impacts are not yet being fully assessed and reported on. The industry is known for its substantial environmental impacts, yet this is the category where less information is provided. This suggests a lack of initiatives to provide energy-efficient or renewable energy, or reduce overall energy use within the



Source: Own elaboration

Figure 3. Average Scores by Category – Percentage of Total Results

Most common type of response to all variables across a sample		%
No data or reference	320	41.8
Some reference to variable, but no specific information	183	23.9
Some relevant information	95	12.4
Probable full disclosure (including specific figures)	167	21.8

Source: Own elaboration

Table 5. Responses to Variables

sector, and may be a next important area in which the sector can improve its overall level of responsible management.

3.3.4 Response Level across Sample

Table 5 shows how companies responded in general across the indicators which asked some level of quantitative response (45 out of the 56 variables). The reason for focusing on quantitative data here is two-fold: firstly, it is easier to identify and less open to subjective interpretation, and, secondly, it is difficult for companies (particularly ones of this magnitude) to explain the omission of such clearly defined data. What stands out is the almost 42% of company responses that provide no data or reference to the information required by stakeholders. Probable full disclosure is identified in slightly over 20% of all responses. This is in line with other analysis of non-financial reporting in general, where companies tend to cherry-pick the information they wish to provide, and seek to avoid including data which may portray them in a bad light (Brown et al., 2009).

Conclusions and Future Areas of Research

The A&D sector is one of the most important sectors of the global economy. The highly technological products and services which it develops, together with its impact on the public sector (defense) and the private sector (commercial aviation), makes this industry a highly scrutinized one. Through the above analysis, there is evidence that A&D firms, whether private or public, have a strong focus on their social responsibility and make a conscious effort to inform their stakeholders of their ongoing actions and strategic plans through comprehensive sustainability reports.

However, the current mechanisms that are in place are not sufficient for A&D companies to communicate effectively with their stakeholders. The companies

evaluated provided little or no information regarding their adherence to industry-relevant international agreements and treaties. As a consequence, their commitment towards creating a more sustainable world, taking into account their important environmental and social impacts, is not as solid as it could be if they adhered to such standards.

Regarding the use and implementation of the GRI guidelines, the firms do not follow one specific report format when providing information. In addition, gaps exist, for example where some reports included web links in their table of contents/index, yet there was no information when the page listed was consulted. At the same time, other companies, such as Finmeccanica, did include all the variables and detailed whether they were reported on or not, and in the event they were not, the company explained why (e.g., analyzing data, carrying out surveys to obtain information, etc.). Consequently, a minimum content rule should also be included as part of the GRI requirements in order for any report to be part of the GRI database.

Currently, due to the fact that firms can create reports according to their own designs and systems, and by using different outlines, with varying details of disclosed information, the resulting information is uneven. Thus, stakeholders have difficulty understanding these reports. Furthermore, the evaluation has shown that, some of the variables that stakeholders consider important in A&D, were not included in the GRI guidelines. This could imply that GRI has not sufficiently updated their requirements, as stakeholders vary significantly from one industry to another and they should receive information regarding the elements that matter most in each context.

Additionally, it has been shown that, due to the nature of the products and services, as well as the production processes and operations, this industry generates substantial environmental impacts, which were not fully disclosed. Because of this, GRI should set minimum requirements of disclosure in those areas that are the most important for each industry, as it would enable a greater in-depth understanding of each firm's strategies, initiatives and results in socio-environmental terms and permit stakeholders to assess companies more accurately. For

instance, in the case of the A&D sector, environmental impacts as well as anti-corruption issues should be considered crucial.

In spite of the fact that, broad concepts of sustainability are well embedded in the industry, as they pertain to ethical values specifically and a business model that is based on sustainable growth, the actual impacts have not been reported and experienced as they should. Thus, companies in the A & D sector should provide greater detail in their reports, and this should include a full assessment of the implementation of each initiative in practice.

It is therefore suggested that, firms in the A&D sector foster specific agreements among themselves in order to improve the quality of their reports and their stakeholder engagement. Considering the high socio-environmental impact of their operations, collaborative projects in research and strategic implementation of new initiatives can significantly contribute to minimizing their environmental footprint and negative social impact of their operations.

In this paper, by means of a qualitative-descriptive methodology, new insights into stakeholders perspectives on A&D sustainability reporting have been provided in addition to comparison with the actual sustainability reports of companies. Further studies should focus on expanding these insights through a quantitative approach by exploring the links between each of the variables herein evaluated, and how the companies' perform (e.g., increase in sales, annual revenues, and return on assets, etc.).

Additionally, evaluations should be made regarding whether these firms are making adequate efforts to reduce the negative socio-environmental impacts of their actions, and whether their transparency and disclosures are appropriate, considering stakeholder expectations.

References

[1]. Bebbington, J., & Gray, R. (2001). "An account of sustainability: Failure, success and a reconceptualization". *Critical Perspectives on Accounting*, Vol.12(5), pp.557-588.

[2]. Brown, H. S., de Jong, M., & Levy, D. L. (2009). "Building institutions based on information disclosure: Lessons from GRI's sustainability reporting". *Journal of Cleaner*

Production, Vol.17(6), pp.571-580.

[3]. Campbell, J. L. (2007). "Why would corporations behave in socially responsible ways? an institutional theory of corporate social responsibility". *The Academy of Management Review*, Vol.32(3), pp.946-967.

[4]. Deloitte (2015). *Global Aerospace and Defense Sector Financial Performance Study*. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Manufacturing/gx-mnfg-a-and-d-financial-perf-study-2015.pdf>

[5]. Etzion, D., & Ferraro, F. (2010). "The role of analogy in the institutionalization of sustainability reporting". *Organization Science*, Vol.21(5), pp.1092-1107.

[6]. Fonseca, A. (2010). "How credible are mining corporations' sustainability reports? A critical analysis of external assurance under the requirements of the international council on mining and metals". *Corporate Social Responsibility and Environmental Management*, Vol.17(6), pp.355-370.

[7]. Global Reporting Initiative, (2013a). Sustainability topics for sectors: What do stakeholders want to know. Amsterdam: GRI.

[8]. Global Reporting Initiative, (2013b). Retrieved from <https://www.globalreporting.org/resource/library/G3-1-Guidelines-Incl-Technical-Protocol.pdf>, on 18/Jan/2016.

[9]. Gray, R., & Milne, M. (2002). "Sustainability reporting: Who's kidding whom?". *Chartered Accountants Journal of New Zealand*, Vol.81(6), pp.66-70.

[10]. Hahn, R., & Lülfs, R. (2014). "Legitimizing negative aspects in GRI-oriented sustainability reporting: A qualitative analysis of corporate disclosure strategies". *Journal of Business Ethics*, Vol.123(3), pp.401-420.

[11]. Levy, D. L., Brown, H. S., & De Jong, M. (2010). "The contested politics of corporate governance the case of the global reporting initiative". *Business & Society*, Vol.49(1), pp.88-115.

[12]. Milne, M. J., Ball, A., & Gray, R. (2008). "Wither ecology? The triple bottom line, the global reporting initiative, and the institutionalization of corporate sustainability reporting". Paper presented at the American

Accounting Association Annual Meeting, Anaheim.

- [13]. Pandit, R. (2015). "Make-in-India: Plan to develop 5th-generation fighter aircraft." Retrieved from <http://timesofindia.indiatimes.com/India/Make-in-India-Plan-to-develop-5th-generation-fighter-aircraft/articleshow/45802270.cms> [Information last accessed on Jan 13th at 19.21 pm CET].
- [14]. Perlo-Freeman, S. and Wezeman, P. D (2013). "The SIPRI Top 100 arms-producing and military services companies, 2012". Retrieved from http://books.sipri.org/product_info?c_product_id=472 [Information last accessed on Dec. 14th 2015 at 19.21 pm CET].
- [15]. Price Waterhouse Cooper (PWC), (2015). "2015 Aviation Trends". Retrieved from <http://www.strategyand.pwc.com/perspectives/2015-aviation-trends> [Information last accessed on Dec. 14th 2015 at 19.21 pm CET].
- [16]. Rowley, T., & Berman, S. (2000). "A brand new brand of corporate social performance". *Business & Society*, Vol.39(4), pp.397.
- [17]. Strouhal, J., Gurvits, N., Nikitina-Kalamae, M., Startseva, E. (2015) "Finding the link between CSR reporting and corporate financial performance: Evidence on Czech and Estonian listed companies". *Central European Business Review*, Vol.4(3), pp.48-59.
- [18]. Snider, J., Hill, R. P., & Martin, D. (2003). "Corporate social responsibility in the 21st century: A view from the world's most successful firms". *Journal of Business Ethics*, Vol.48(2), pp.175-187.
- [19]. Stockholm International Peace Research Institute, (2015). "Global arms industry: West still dominant despite decline; sales surge in rest of the world, says SIPRI". Retrieved from <http://www.sipri.org/media/presreleases/2015/SIPRI-Top-100-December-2015> [Information last accessed on Dec. 14th 2015 at 19.21 pm CET].
- [20]. Toppinen, A. and Korhonen-Kurki, K. (2013). "Global Reporting Initiative and social impact in managing corporate responsibility: a case study of three multinationals in the forest industry". *Business Ethics: A European Review*, Vol.22(2), pp.202-217.
- [21]. White, A. L. (1999). "Sustainability and the accountable corporation". *Environment: Science and Policy for Sustainable Development*, Vol.41(8), pp.30-43.
- [22]. World Economic Forum, (2014). "Aerospace Industry Overview". Retrieved from <http://reports.weforum.org/manufacturing-growth/aerospace-industry-overview/> [Information last accessed on Dec. 14th 2015 at 19.49 pm CET].

ABOUT THE AUTHORS

Marina Mattera is working as an Associate Professor in the Department of Business, Universidad Europea de Madrid and is accredited by the Ministry of Education (ANECA). She holds a PhD. in Economics and MSc. in Innovation Management. As an academic, she actively participates in research projects, has lectured in different countries (Belgium, UK, Turkey, etc.), has been invited to participate in Global Programs (e.g. Chuo University - Tokyo, Japan), and has been a visiting scholar at the George Washington University (Washington D.C., USA). She has also worked in the private sector in Spain, Argentina and Switzerland; as well as coordinating a World Bank Project in 2013.



Ivan Hilliard is working as an Associate Professor in Business Administration and Multinational Management studies at the Universidad Europea in Spain. He holds a PhD in business and economics, and his doctoral thesis deals with measurement systems for corporate social responsibility and sustainable business practices. His areas of research include Business Sustainability, Corporate Social Responsibility and Social Entrepreneurship, on which he has published a number of scientific papers, as well as contributing to a number of books.



Andriy Shapoval is a Postdoctoral Fellow (Industrial Engineering-with concentration in Operations Research/Optimization) in H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology Atlanta, USA. He also received degrees in Applied Mathematics and Management and worked as a business analyst in different industries in Ukraine. He is a member of Omega Rho - an honor society for academic achievements in the fields of Operations Research and Management. His academic life includes serving as a peer-reviewer in journals and being a multi-year session chair in annual meetings of the Institute for Operations Research and Management Sciences (INFORMS).



Henry Aigbedo is an Associate Professor of Operations Management in the School of Business Administration at Oakland University, Michigan. He received his Ph.D. in Management Science and Engineering from the University of Tsukuba, Japan. He also holds degrees in Mechanical Engineering from universities in Nigeria. He has held faculty positions at several institutions, including Iowa State University, Iowa and the University of Tsukuba, Japan. Dr. Aigbedo has acquired valuable experience through work or field research at companies in Nigeria, Japan, and the United States. His research activities have involved presentations at many international conferences and publications through various outlets, including the European Journal of Operational Research and the International Journal of Production Research. His research interests include Supply Chain Management, Lean Manufacturing Systems, and Sustainability.

