



ISO 26000: RESTRICTIVE FACTORS AND REQUIREMENTS FOR ADOPTION BY THE CIVIL CONSTRUCTION INDUSTRY

Alberto Eduardo Besser Freitag^a, Osvaldo Luiz Gonçalves Quelhas^a

^aFluminense Federal University

ABSTRACT

The purpose of this article is to identify restrictive elements and requisites to adopt the ISO 26000:2010 standard by the construction industry in Brazil. The method used was a systematic review of literature, in searches in scientific databases, such as SciELO, Scopus, Web of Science and Engineering Village, followed by a bibliometric study. The results demonstrated that there is still a small scientific literature in a worldwide level regarding ISO 26000 standard into the industry, specifically the civil construction one, and into micro, small, and medium size companies. Despite that, based on the analysis of the documents included in the review of literature, it was possible to build a list with restrictive elements and requisites to adopt the ISO 26000 standard by the construction industry in Brazil, and by other industrial variants. This study is limited by the restrict scientific literature researched. It is suggested a research to investigate which requisites from the ISO 26000 standard are relevant for the companies in construction industry. The differential of this study is to publicize the knowledge regarding the challenges faced worldwide by industries in adopting the ISO 26000 standard, and to propose recommendations for the industry in Brazil.

Keywords: ISO 26000; Sustentability; Industry; Civil Construction; Small Companies.

1. INTRODUCTION

The release of the ISO 26000:2010 standard, in November 2010, brought up the importance of social responsibility (SR) into the organizations, a topic that has attracted a growing attention from society, specifically the scientific and business ones, due to the interdependence of these sectors with various industrial segments, namely the civil construction, thus generating information and news in many other areas.

In the economical field, a study (FIRJAN, 2015a) using the most updated data from the Brazilian Institute of Geography and Statistics (IBGE) demonstrates that the economic area of civil construction industry, in the Brazilian state of Rio de Janeiro, presented a real growth rate of 34.7% in the period from 2008 to 2012, with a financial income grow from R\$ 16.8 billion in 2008, to R\$ 22.6 billion in 2012, representing 4.5% of the GDP of the state in January 2012, and 10.6% of the country's during the same period. In a national level, the field of civil construction had a similar performance, presenting a real growth rate of 29.3% du-

ring the period 2008 to 2012, an income grows from R\$ 164.8 billion in 2008 to R\$ 213.1 billion in 2012, a 4.9% of the Brazil's GDP in 2012.

In regards to the number of employees in the Brazilian state of Rio de Janeiro, another study (FIRJAN, 2015b) based on numbers from the Brazilian Ministry of Labor and Employment shows that the area of civil construction in the state presented a variation of 47.3% in the period 2009 to 2013, with an increase from 214,757 job positions in 2009, to 316,302 in 2013, representing 6.9% of job placements in the state in 2013, and 10.2% of the field in Brazil. In a national level, this industry presented a variation of 39.3% from 2009 to 2013, going from 2,221,254 job placements in 2009, to 3,094,153 in 2013, representing 6.3% of the employments in Brazil.

The most recent publication of Decisão Rio ("Decision Rio" in English; FIRJAN, 2014a) forecasts great investments between 2014 and 2016 in Rio de Janeiro, involving direc-



tly or indirectly the participation of the construction field: Industry of Transformation (R\$ 40.5 billions); Infrastructure (R\$ 37.9 billions); Olympic Installations (R\$ 9.9 billions) and Tourism (R\$ 3.5 billions).

In a sectorial view, the Strategic Map of Industry 2013-2022 (CNI, 2013) has as main goal the competitiveness together with sustainability. The essence of the view is that by 2022 the Brazilian industry will reach a high level of international competitiveness, respecting criteria of sustainability. The search to compete with sustainability must guide decisions, strategies, and actions in the industries, influencing the actions and positions of industrial companies in Brazil, and other representational entities of the industry, the government, and other organizations that are direct or indirectly involved with industrial matters.

In the technical field, the ABNT NBR ISO 26000:2010 standard (ABNT, 2010), which deals with the directives of SR, defines sustainable development as “to satisfy the needs of the presents within the ecological limits of the planet without compromising the capacity of future generations to fulfill their own needs”. The sustainable development has three dimensions (economic, social, and environmental) that are interdependent – for example, the elimination of poverty requires the promotion of social justice, economic development, and the protection for the environment. The ISO standard aims to be useful to all types of private, public, or non-profitable organizations, working in developed or under development countries worldwide.

The context mentioned above demonstrates the importance of SR, of sustainability, and the sustainable development in today’s setting, as well as the importance of civil construction industry in the economy of the Brazilian state of Rio de Janeiro, and to the country as a whole.

In a general sense, there is small scientific literature regarding ISO 26000 standard and the industry of civil construction. A search performed using the terminology “ISO 26000” at the Revista Eletrônica Sistemas & Gestão (“Systems & Management Electronic Journal” in English) until December 23rd 2015 found 10 results regarding the ISO standards 9000, 9001, 11228, 14000, 14001, 17025, and 20000; however, until that moment no article was found mentioning the ISO 26000 standard. At the same time, the bibliometric study performed in this research found small scientific literature involving the ISO 26000 standard and industry as an area of knowledge, especially the civil construction knowledge.

Such gap of understanding led to define the research question of this paper as the necessity to identify the restrictive factors and requisites for the adoption of ISO 26000 standard by the civil construction industry in Brazil.

The main goal of this research is to identify the restrictive factors and requisites to adopt the ISO 26000 standard by the civil construction industry in Brazil. The specific goals are:

- 1) From a review of literature, identify the challenges faced worldwide by industries in order to adopt ISO 26000 standard and the recommendations in its implementation;
- 2) Elaborate a list of restrictive factors and requisites to adopt ISO 26000 standard by the civil construction industry in Brazil, specially by micro, small, and medium size companies, and by other industrial segments.

The justification for such study is in the differential to provide the understanding upon the challenges faced worldwide by industries in adopting the ISO 26000 standard, and to propose recommendations to the Brazilian industry, especially the civil construction, and the micro, small, and medium industrial companies.

The delimitation can be characterized by the search of companies in many countries, in which there is a full description of the processes of implementation of ISO 26000. Therefore, the review of literature is not only based in the study of the aspects of implementation of ISO 26000 in Brazilian companies. The literature used was generated between the years of 2010 and 2015.

The first chapter contextualizes the development of the research. The second, presents a review of literature involving ISO 26000 standard and the industry of civil construction and other variations of industry, as well as micro, small, and medium size companies. The third, deals with the research method used, a systematic review of the literature available. The fourth, brings up the result in a list with the restrictive elements and the requisites to adopt ISO 26000 standard by the civil construction industry in Brazil and in other areas of industry. The fifth chapter discusses the results, and finally, in the sixth chapter there is the conclusion and some suggestions for further research development.

2. REVIEW OF LITERATURE

2.1. ISO 26000 in corporations

Deus *et al.* (2014) present a study based on a systematic review in ISI Web of Science and Scopus databases regarding the question: “which are the barriers and the motivational aspects in adopting ISO 26000s standard in corporations?”. The motivational aspects found were: globalization/competition in international markets; congruence with management systems; reputation (image) of the company; relation-



ship with employees and improvement of the organizational environment; improvement in the relationship with external stakeholders; competitive advantage/strategies; guidelines for Corporate Social Responsibility (CSR) and reduction of business risks. On the other side, the barriers found were the lack of alignment of the CSR with organizational strategies; commercial (domestic and international); lack of understanding of ISO 26000 standards; lack of communication; lack of proper tools; lack of sensibility towards the topic; focused on short-term results; knowledge management; apprehension in not fully implementing the standards; financial resources.

An agenda for future studies was elaborated, including some suggestions aligned with the research issue of this study:

- a) Researches focused in specific industries will be required to support/analyze specific practices of the standards, as well to analyze its influence in a chain of resources;
- b) Relate and study the effect of ISO 26000 standards in small and medium size companies;
- c) Transnational comparison of practices and initiatives of SR can also provide a better understanding on the importance of CSR practices to the sustainability of a corporation.

For Hahn (2012), the present categories of the standards are not enough to fully understand the ISO 26000. The author explains that today there are three classes for the ISO standards (Type A – Standards for requirements in managerial systems; Type B – Standards for directives for managerial systems; Type C – Standards related to managerial systems), and ISO 26000 standards does not match any of these types. To solve this issue, the author suggests the addition of a new class of standards of managerial systems into ISO classification, which he called “Type D”, together with a preliminary note “Standards to induce or improve a managerial system”, with characteristics to be destined to improve (or induce) a managerial system with content and structure that would systematically promote (or induce) continued discussion processes. The focus on this type of standard is in the content and in the processes used to combine a set of central issues pertinent and component of the necessary structure inside the managerial system. At the same time, it must permit the improvement (or induction) of systematic discussion processes, taking into account its present organizational environment. Such managerial system can be flexible regarding the changes of expectations, relationships, and external influences. As a consequence, the inter-relationships with all parts involved become “regulatory genes”, influencing the managerial system they are inserted.

The certification of such standards in a Type D is possible, but it is not constitutive characteristic (Hahn, 2012). To acquire a certification is, most of the times, only an initial push to adhere to a standard. Furthermore, internal goals, such as the optimization of operations become a priority. Evidences show that the existence of an environmental managerial system is related to a better environmental performance. Its certification, on the other hand, does not lead to such environmental behavior improvement. The SR of corporations is a very heterogenic and dynamic domain. Its nature is different in each corporation. The content and the proceedings of SR management need to be constantly improved. ISO 26000 standards working as a managerial system standard Type D would support the resolution of this issue. The focus in the content can assist to provide a broader understanding of SR, leaving a margin for flexibility large enough for individual performance. The examples of the best practices can work with the support and guidelines in how the SR can be implemented. For companies that start to realize the importance of SR, ISO 26000 standards and its focus on the content can be a starting point to implement SR in organizational managerial processes. Companies in a more advanced stage can use ISO 26000 to monitor the conformity of the steps taken, and to systematize the relationships with all parts involved. As an option, ISO 26000 could be used to prepare corporations for an external certification.

Albareda (2013) presents in his article an analytical model to understand the complex architecture of accountability standards inside the CSR, studying the cycle of standardization of CSR through the analysis of organizational studies. There are two main objectives: to discuss the theoretical approach to the governance in CSR, proposing a matrix to classify international standards of accountability in CSR, and to study the multi-industry cycle of standardization of CSR (configuration and project, propagation and application), creating an analytical model of CSR standards, with various elements to analyze the accountability of CSR, such as scope, type of actors, type and mechanisms of performance, and type of legitimacy and monitoring strategies.

The article is based in an empirical research about global standards in multi-industry standardization in CSR, and the arrival of a standardization dynamics based on competition-collaboration. Is it supported by a case study from the Global Reporting Initiative (GRI) and its interaction and conversion with the UN Global Pact and ISO 26000. The differential is the analysis of the main dynamics of convergence adopted by the most popular multi-industry CSR standards, and with the convergence with the the processes of sustainability reports moving to an integration and elaboration of homogeneous directives, under the prevalence of the GRI model.



2.2 ISO 26000 in industrious segments

2.2.1 The civil construction segment

A terminology originated in the 1950's, CSR is the responsibility of a corporation of the impacts of its decisions towards the society and the environment. However, ISO 26000 standards redefine SR in general terms through the use of references of the principles, the central issues, and the questions related to the topic. The segment of civil construction industry of Hong Kong (CIHK) is fundamental to the economy of that metropolis; in 2011, the gross value of constructions performed by the main contractors reached HK\$ 128.53 billion and contributed to HK\$ 65.4 billion for the total GDP of HK\$ 1.823 trillion. The aim of the study of Barnes *et Croker* (2013) was to investigate which issues from ISO 26000 standards are relevant for the companies of CIHK. The main conclusion is that the level of activities of CSR related by CIHK companies in the seven main topics of ISO 26000 standards is proportional to the size of the corporation observed; many small and medium size companies (SMC) consider that many of the issues raised by ISO 26000 are irrelevant; for large building companies, reputation, legislation and/or ruling, and corporative culture are the greatest motivational aspects to improve CSR in CIHK.

CIHK is characterized by a small number of large local and foreign building companies, which require subcontracting, a practice that can dissipate the adoption of CSR policies. Despite there are still few published articles regarding ISO 26000, it was seen that the most significant barrier and challenge to implement CSR is the general lack of understanding or awareness of CSR. The focus of the research was to fulfill the gap in the literature regarding the views from the professionals in the construction industry (CI) in relation to the issues in CSR found in the ISO 26000 standards that can be applied at CIHK. The methodology used consisted in a questionnaire sent to a large number of corporations (large

contractors and subcontracted companies) in the list of CIHK identifiable in public websites.

The questions present in the inquiry sent were designed based on the principles used to evaluate the relevance of each central issue from the ISO 26000 standards. Besides the 44 questions related to the seven guiding principles and the seven central issues from ISO 26000, there were added seven questions to collect socio-demographic information to observe the different segments analyzed, as well as the type of company and the points of view regarding the topic. One question related to the size of the corporation was added to observe the different treatment and actions of CSR between large companies and SMC. In the end, 2,853 invitations to respond to the questionnaire were sent, and the number of valid responses was 134 (one email, 115 printed forms, and 18 web-based filled questionnaires), or 4.7% of the total. Table 1 presents the results from the analyzed material.

Many of the issues found in ISO 26000 standards are relevant for a CI in Hong Kong. However, as seen by the ISO 26000 itself, not all questions and central topics are seen as relevant by all segments of the industry. In particular, the majority of the issues related to human rights were not seen as relevant for many interviewees. Despite ISO 26000 only has one question related to workplace safety, it achieved the highest score according to the companies that participated in the research.

Another focus of the interviewees was the environmental performance, but there was only a small relevance seen in the questions linked to greenhouse gases and the biodiversity. This study finds echo in the conclusions of other researchers: the wild competitive nature of the construction industry focuses on the profit, thus potentially inhibiting CSR, especially in small companies; health, a safe environment, and components of environmental managerial systems inside the policies to define subcontractors are influenced by the legal requirements in Hong Kong.

Table 1 - Summary of the answers of ISO 26000 standards classification by size (number of employees). Brazil, 2016.

Classifications ISO 26000	Less than 20	20 to 50	50 to 100	100 to 200	More than 200	All answers
SR principles	2.15	2.55	2.67	2.84	3.11	2.65
Human rights	1.83	1.86	2.26	1.99	2.41	2.09
Work practices	2.43	2.82	2.93	2.85	3.28	2.86
Environment	2.03	2.42	2.70	2.44	3.09	2.57
Legal operational practices	1.69	2.12	2.23	2.27	2.87	2.25
Consumption practices	2.26	2.54	2.72	2.47	3.16	2.66
Involvement and development of community	1.93	2.16	2.23	2.44	2.70	2.30
Research total	2.06	2.35	2.53	2.46	2.93	2.48

Source: Barnes *et Croker* (2013)



2.2.2 Textile segment

The textile and clothing industry of China faces pressure to adopt CSR initiatives, as described by Chen *et al.* (2014) in their article. The implementation of the collective code of conduct CSC9000T, based on a philosophy of sustainable development and guided for the consumer is a benchmark to industrial development. CSC9000T has similar characteristics to those in SA 8000 and ISO 26000 standards. The focus is in social aspects, with vague environmental directives, and lack of third-part auditing. The main reasons to implement such regulations were initially motivated by international pressuring groups, and expectations from clients. The ISO 26000 and SA 8000 international standards work as reference points in a comparative study to CSC9000T with other social responsibility standards. The ISO 26000 standards, the code CSC9000T, and the SA 8000 standards have an approach to a managerial system consonant to the PDCA (*Plan-Do-Check-Act*) cycle, continued improvement, and a demand of documentation. ISO 26000 standards cannot be certified by a third-part agency, but it provides a self-declaration document that can be considered as a certificate of conformity. CSC9000T can be used as self-declared or certified by third-part agencies, while SA 8000 is audited by third-part observers.

2.2.3 Mining and metallurgical segment

The objective of the article by Bluszcz *et al.* (2015) is to present a level of involvement of Polish corporations from the industry of mining and metallurgy in activities for their sustainable development. Various initiatives that aim to promote the sustainable development and CSR are under discussion. The authors faced problems of integrated communication in activities of CSR, and mention a certain level of socially responsible companies, which they called it the Respect Index, introduced in Warsaw's Stock Market Exchange. Two companies, of this segment and mentioned in the article, are listed by this index. Researches produced in Poland regarding the understanding of rules and standards to implement SR in companies confirmed the awareness on the topic among senior managers, and the relation between understanding versus application of ISO 26000 standards one of the highest, only below ISO 14000 standards.

Many times it is conceptually suggested that models for the performance of CSR, which take into consideration all parts of a company, can generate managerial systems based on international standards. Ranängen *et al.* (2014) developed a research study which the question to be answered was to discover if the adoption of managerial systems established is useful to place the management of the parts involved into practice. It was then developed a case study with a metal and mining company from Sweden, using the analyti-

cal model based on ISO 26000 standards. The company has well integrated and implemented work systems based on labor environmental practices. This fact indicates that certified managerial systems are effective tools for CSR and they can be well used as means to manage the parts involved in practical terms. However, the analysis also indicates that such managerial systems do not contribute to a better use of renewable energy, not even for a systematic reduction of greenhouse gases. Despite that, the important issues in CSR, such as legal operational practices, and the involvement and development of the community are not taking into account by the managerial system adopted.

2.2.4 Oil & Gas segment

The destruction of the ozone layer, the rise of Earth's temperature, and the climate changes from the result of greenhouse gas emissions are the most important preoccupations of society today. Considering that extractive oil and gas industries can pollute the environment, and that there are many oil and gas installations near residential area, hence the expectations must be fulfilled, and local societies must consider the limitations as the most challenging issues to be solved. Rangriz *et al.* (2014) conducted a research in 2014 using questionnaires, with 49 factors for effectiveness based on the rules present at the ISO 26000 standards, distributed between high and medium management positions in oil and gas companies. The study found that there is a significant relationship between the seven elements for effectiveness (corporate governance, environment, human rights, employee development, consumer related issues, improvement of local society, and fair performance analysis methods), and the SR in the oil and gas extractive industries. Corporate governance and environment has the most severe impacts upon SR.

2.3 ISO 26000 in micro, small and medium size industries

The majority of the subcontracted companies in the construction industry of Hong Kong (CIHK) are SMC, corresponding to 98% of commercial establishments of Hong Kong, according to Barnes *et al.* (2013) research. SMC represent at least for 65% of the gross value of construction sites (most of them working as subcontractors for medium or large corporations). However, most of the present effort to involve SMC in Hong Kong in issues related to environmental and social performance have had little impact so far.

During last decade, the literature of CSR in evolution, and the imperatives of increased demands in accountability and sustainability moved the main discussion from a "yes or no" debate, to a "how" to implement CSR, mostly done



by large corporations and with little participation from SMC. The actors involved had an implicit supposition that small companies are essentially the same as large corporations, however in a smaller scale. Researchers in the field had the argument for a long time that “a small business is not a small large business” due to the limitation of resources that small companies have, mostly due to a tendency to be in highly fragmented sectors, a wildly competitive environment, incapable of spending with highly qualified professional costs, a higher relative cost to fulfill all legal requirements and stricter restrictions to have access to financial loans, which are questions that can be attributed to the SMC in the construction industry.

Table 1 shows the average score for each constructor, and demonstrates and supports the main findings of the research, in which the level related of the CSR activities is a function based on the size of the company and it is not necessarily related to the function of the corporation – as the main contractor or being a subcontractor. The analysis identified that the large companies with more than 200 employees, including the large subcontractors, consider that today fulfill all legal requirements, but in fact they exceed those rulings in the areas of health and workplace safety, despite there is a focus in environmental issues that is usually done due to conformity. The differential identified among those companies was exclusively the size of the corporation.

Based on the experience of fifteen years working in ergonomic consulting services mainly for French SMC, Biquand et Zittel (2012) developed a seal to evaluate and valorize the efforts of companies in dealing with health and workplace safety, as demanded by ISO 26000 standards, in its paragraph 6.4. The formal approach of ISO describes what needs to be achieved, but there is no indication in how the real working conditions must be improved. The seal, called “Démarche T”, aims the management of working conditions as a process, providing visibility and credit to the companies in order to continuously get involved in the topic. The authors describe the items and processes that are part of this evaluation. First, they perform an ergonomic diagnose, followed by recommendations. In a local level, companies that acquire the seal are enabled to a competitive advantage to hire the best candidates, motivated by good working conditions, and that also follow the ISO 26000 standards requirements, once more a decisive advantage to get closer to benefits of regional and European public.

The goal of the work of Hemphill (2013) was to critically identify and analyze the reasons for and against companies in implementing the ISO 26000 international standards. The analysis found three reasons for the usage of the standards: first, the positive image of ISO as a global organization, respected worldwide and with credibility to establish international technical standards; second, the development of an

international consensus between the parts involved regarding the definition and objectives of SR, in reference to the economic, environmental, and social impacts of enterprises upon the societies and the natural environment; and third, a holistic reference for a managerial team interested in following the principles of SR in the operations of the company.

From a general perspective of corporate governance, the ISO 26000 international standards is deficient because it is too vast in order to be useful in the context of certain industries and segments, too expensive and time-consuming for many SMC in its implementation, and contrary to many other ISO international standards, it does not lead to a certification, therefore, it enables failure in the process of evaluation of its effectiveness. The standards offer a generic approach as “one size fits all” for all sorts of corporations, of all types and sizes. It does not take into consideration industries or contexts based in specific sectors in which profitable companies compete, which is fundamental to identify the main social impacts and the challenges of sustainability. This “deficiency” increases the complexity (and the costs) of a company dedicated to adopt and implement ISO 26000 standards effectively. It is especially troublesome for the SMC, companies that represent almost 97% of all companies in the world, in which such spending and the time necessary to be used for training and assistance with the implementation can be transformed into a dilemma in making a decision by the governance.

Confronted by the allocation of time and elevated costs, the administrative councils and senior managers/businessmen of SMC can decide to invest their limited resources in a certifiable volunteer model of SR and sustainability, such as the Global Reporting Initiative (GRI) and the UN Global Pact. It is a format for the company to achieve the highest feedback possible from an investment, or in other words, a third-part certification and subsequent legitimacy and credibility of its SR and sustainability practices. Hemphill (2013) mentions a recent global research performed by the Institute for the Study of International Development (ISID), from Manitoba, Canada, about the impact of ISO 26000 standards and SR in SMC operations, who report that:

- More than 89% of the interviewees do not intend to use the standards because consider them too long and covering a too wide spectrum to be used as practical guidelines. The segment of cleaning commented that ISO 26000 standards should consider national and sectorial preoccupations if it is to have a wider appeal;
- Many interviewees do not consider the standards (such as the ISO 26000) fundamental to improve the competencies, diversification of the offering of products and services, and access to financial loans – es-



sentinal aspects for the integrity of businesses;

- 45% of the interviewees mention the lack of time as an obstacle to improve the performance of SR;
- Many interviewees apparently do not have competency to understand the SR agenda, giving it priority among the interests of their companies, and estimate the time and resources needed to implement it;
- 41% of the interviewees feel the rise of social conformity costs as a barrier to improve the competitiveness, and they have suggested that their results do not achieve the necessary economic scale to justify the investments in social and environmental improvements. This last finding is the next challenge of business governance.

Due to the ISO 26000 standards in not providing details to the implementation of operational measures in the field of the industry or in the context of segments, it is unquestionable that the consideration of “adaptation costs” will be fundamental for the SMC governance in

many industries/segments. To respond to the challenge of amplifying the adoption of the standards (especially among SMC), this article suggests that there is a possibility by industrial or segmental associations to assume the responsibility (and the cost) to “adapt” the standards in their specific context of the industry or segment. The best argument is the benefit of the image generated for the segment/industry.

3. RESEARCH METHOD

A general strategy to perform a research is to use the available data. In contrast with strategies of research based on first-hand collected data (experimental, survey, field research), the researcher of available data has to gather second-hand information. A source of such information include data files generated from surveys and ethnographies (Singleton Jr *et* Straits, 2010).

The method of research adopted in the elaboration of this article was based on Prisma (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), a guideline of recom-

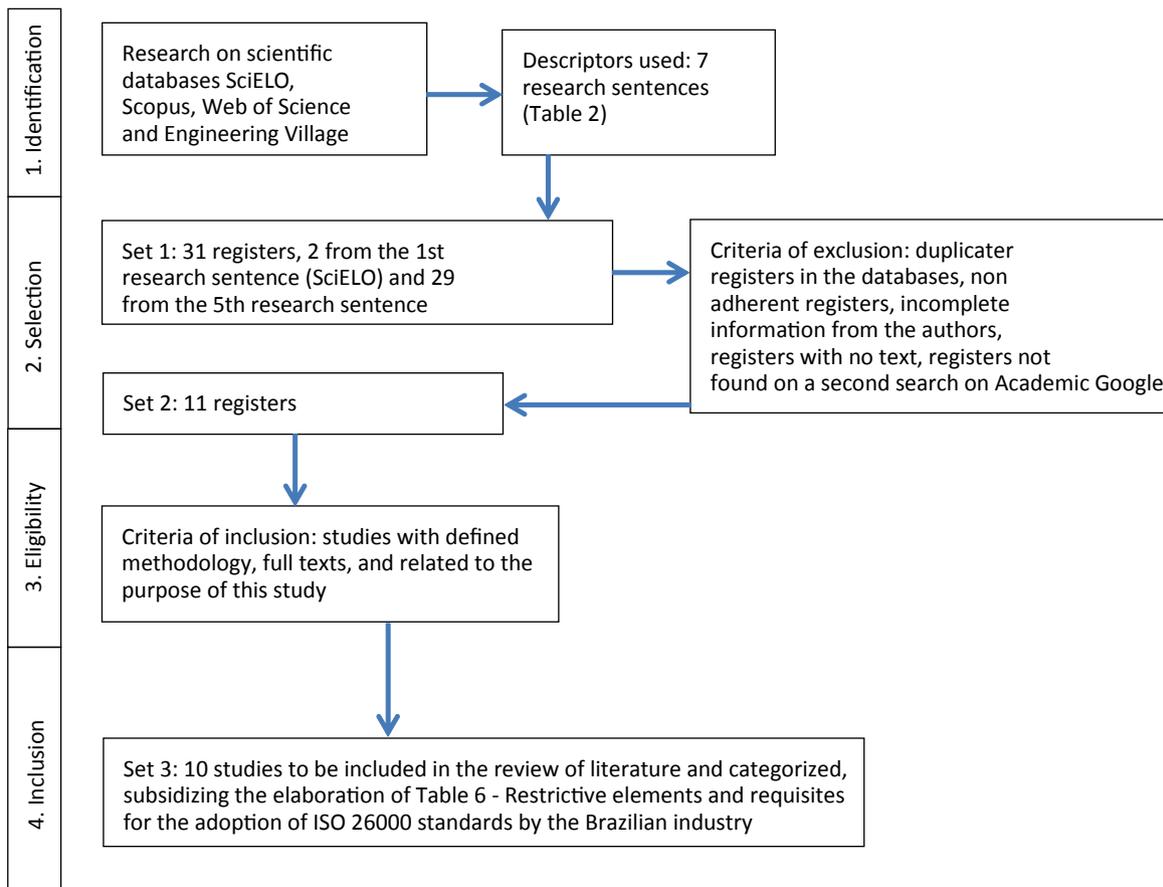


Image 1 - Flux of information in four stages of a systematic review of literature

Source: Designed from Moher *et al.* (2009)



recommendations for a systematic review of literature, described by Moher *et al.* (2009), using a flux of information divided in four stages (identification, selection, eligibility, and inclusion), described in Image 1, from data available over scientific databases SciELO, Scopus, Web of Science and Engineering Village.

Description of the four stages of a systematic review of literature, used in this paper:

1. Identification – research performed between February 1st to 28th 2015 on the scientific databases SciELO, Scopus, Web of Science and Engineering Village, accessed through the journal webpage of CAPES/MEC, at the Universidade Federal Fluminense (UFF), filtering the registers since 2010 (the year ISO 26000 was issued), using seven research sentences (Table 2);
2. Selection – prioritization of 31 registers (set 1) resulting from the first (SciELO) and fifth research sentences. After reading the titles, abstracts and keywords, the registers found in duplicity in the different databases were eliminated, as well as the non-adherent ones, and the ones with incomplete information regarding the authors. There were also eliminated registers that did not have a full text available, and those which could not be found in the Academic Google, in a second search. In the end only 11 registers remained (set 2);
3. Eligibility – after a full reading of the 11 documents and analysis of the content, it was identified 10 studies (set 3) related to the purposes of this research;
4. Inclusion – the 10 studies were included in the review of literature and categorized, subsidizing the construction of Table 6, which has a summary of the restrictive elements and the requirements for the adoption of ISO 26000 standards by the Brazilian industry, specifically in the segment of civil construction and in special by micro, small, and medium size companies.

The bibliometric study of the 31 registers (set 1) presented next shows there is a small increase of the production of scientific articles (in 2011, there were no records). The main sources are the Journal of Cleaner Production and Corporate Governance (Binlgey) and the area of knowledge “industry” is mentioned together with management, business, accountability, engineering, and energy. The still small scientific literature involving ISO 26000 standards and the industry, specifically the civil construction and micro, small and medium size companies, corroborate to the research problem and the objectives of this study.

Table 3 presents the year of publication of the 31 registers. The highest number was observed in 2014, despite the fact that in 2011 there were no publications over the scientific databased searched. Despite the yet low number of re-

Table 2 - Research sentences used in the researched scientific databases. Brazil, 2016.

Research sentences	SciELO	Scopus	Web of Science	Engineering Village	Total
ISO 26000	2	62	41	15	120
ISO 26000 AND indústria	0	---	---	---	---
ISO 26000 AND indústria AND construção	0	---	---	---	---
ISO 26000 AND construção	0	---	---	---	---
ISO 26000 AND industry	---	14	8	7	29
ISO 26000 AND construction industry	---	1	0	0	1
ISO 26000 AND building industry	---	1	0	2	3

Source: Designed by the authors.

Table 3. Year of publication of the registries. Brazil, 2016.

Year	Number of Documents			
	SciELO	Scopus	Web of Science	Engineering Village
2015 (until Feb.)	0	1	1	1
2014	1	5	4	3
2013	0	3	0	1
2012	1	3	3	1
2011	0	0	0	0
2010	0	2	0	1

Source: Designed by the authors



gistries involving ISO 26000 standards and the industries, it is visible an increase since 2012.

The sources of publication with a higher number of registers are described on Table 4, with at least one registry on each scientific database researched. The sources Journal of Cleaner Production and Corporate Governance (Bingley) had at least two registers in the same database, at the time of research, and integrate the review of literature.

Table 4 - Main sources of the registers. Brazil, 2016.

Source	Number of Documents		
	Scopus	Web of Science	Engineering Village
Journal of Cleaner Production	2	2	2
Corporate Governance (Bingley)	2	0	0
Metalurgija	1	1	1
Communications in Computer and Information Science	1	0	1
Journal of Business Ethics	1	1	0
IET Software	1	0	1
Canadian Mining Journal	1	0	1

Source: Designed by the authors.

Table 5 describes the main areas of knowledge related to the registries found in the scientific databases. It is perceived a predominance in the areas of management, business and accountability, followed by engineering, energy, and industry. The low amount of registries related to the industry demonstrates the importance and the opportunity to direct studies to this area of knowledge, which is the intention of this research.

Table 5 - Main areas of knowledge found in the registries. Brazil, 2016.

Area of Knowledge	Number of Documents		
	Scopus	Web of Science	Engineering Village
Business		4	0
Management	7	3	0
Accountability		0	0
Engineering	4	0	0
Energy	3	0	0
Industry	0	0	3

Source: Designed by the authors

4. RESULTS

Based on the analysis of the 10 studies that were included in the review of literature, the Table 6 was designed, relating the author, category of organization, and a summary of the restrictive elements and requisites to be considered when adopting ISO 26000 by the Brazilian industry, specifically the civil construction and by the micro, small, and medium size companies.

DISCUSSION OF RESULTS

The segment of civil construction has 2,551 corporations in the Brazilian state of Rio de Janeiro (FIRJAN, 2014b), from which more than 97% are micro, small, or medium size companies. This data matches the recommendation of Deus *et al.* (2014) in regards to the performance of studies focused in specific segments to study the influence of ISO 26000 standards in the chain of resources of micro, small, and medium size companies. It is also aligned to the suggestion of Hemphill (2013) as to industrial and/or segment associations working to adapt the standards to the specific context of the industry/segment.

Hahn (2012) suggests the existence of a new standard Type D, to induce or improve a managerial system in order to better frame ISO 26000, being possible to issue certificates, despite this is not the main objective. A solution to reduce the costs of certification, especially in the case of micro, small, and medium size companies is the adoption of a seal to evaluate and valorize the efforts of companies to dealing with health and workplace safety, as explained by Biquand *et Zittel* (2012).

The study called "Civil Construction: Challenges 2020" (FIRJAN, 2014c) names the civil construction industry as one of the most important segments for the economy because development and productive capacity of Brazil are related directly with the growth of this segment. This dynamism is being supported despite the effects of the present international crisis, which implies new challenges in regards to innovation, technology, professional qualification, and the creation of business environment that enable productivity, corporate competitiveness, and the development of the country. Therefore, it is interesting to perform a survey among the industries of the civil construction segment in the Brazilian state of Rio de Janeiro, and nationwide, such as the model adopted by Barnes *et Coker* (2013) to evaluate the level of activities of CSR reported by the companies in the seven central topics of ISO 26000.

The pressures to adopt initiatives of CSR by the textile and clothing industries in China are seen by Chen *et al.* (2014). A way to motivate the adoption of ISO 26000 standards in Brazil is through the report "Benchmarking



Table 6 - Restrictive elements and requisites for the adoption of ISO 26000 standards by the Brazilian industry.

Author	Category	Restrictive elements	Requisites
Deus et al. (2014)	Corporations in general	Barriers to adopt ISO 26000 standards: lack of alignment of CSR with organizational and commercial strategy; lack of understanding of the standards; lack of communication; lack of tools; lack of the sensibility to the topic; focus on short-term results; knowledge management; afraid to no fulfill the standards; financial resources.	Researches focused in specific industries, especially micro, small, and medium companies, and transnational comparison of CSR practices and initiatives.
Hahn (2012)	Corporations in general	ISO emphasizes that ISO 26000 is not a standard for managerial system. What type of standard is the ISO 26000? Which opportunities and restrictions are present in the ISO 26000? Today's understanding of the standards of managerial systems is enough to characterize ISO 26000?	Today's categorization of the standards of ISO managerial systems (Types A, B, and C) are not enough to fully understand the ISO 26000. The suggestion is to set a "Type D" standard to induce or improve a managerial system, from the continuous improvement of the content, processes, and structure. Certifiable.
Albareda (2013)	Corporations in general	Understand the complex architecture of standards for accountability in Corporate Social Responsibility (CSR).	Adopting a convergence between multiple industries standards of CSR in a global scale, GRI, UN Global Pact, and ISO 26000, based on a dynamics of competition-collaboration regulation.
Barnes et Croker (2013)	Civil Construction Industry of Hong Kong and small and medium size companies	Find which issues from ISO 26000 are relevant for companies, through survey.	Based on the size of the enterprise; many SMC consider that many issues from ISO 26000 are irrelevant; however, for large corporations, reputation, legislation and/or ruling, and corporate culture are motivator elements for improvements in CSR.
Chen et al. (2014)	Textile and Clothing Industry in China	Pressure to adopt initiative of Corporate Social Responsibility.	Implementation of the collective code of conduct CSC9000T, based on a philosophy of sustainable development and guided for the consumer, and comparison with ISO 26000 and SA 8000 standards.
Bluszcz et Kijewska (2015)	Mining and Metallurgy Industry in Poland	Evaluate the level of involvement in activities of sustainable development through survey with senior managers.	There is an understanding regarding standards and rules in implementing social responsibility in corporations, with a high rate of application of ISO 26000, if compared to other standards.
Ranängen et Zobel (2014)	Metal and Mining Industry in Sweden	Find if the adoption of managerial systems established is useful to place the management of the parts involved in practice, based in a model mirrored from ISO 26000.	Certified managerial systems are effective tools for CSR and can be used as managerial means for the parts involved in practice.
Rangriz et Abyar (2014)	Oil and Gas Extractive Industry	Evaluate the perception of managers from the field of O&G regarding the work of their corporations in SR, considering the risk of polluting the environment.	Consider that Corporate Governance and Environment have more severe impacts over SR.
Biquand et Zittel (2012)	Small/ Medium French Companies	Formal approach of ISO 26000 describes what companies need to achieve, but there is no indication regarding how the real work conditions must be improved.	Seal to evaluate and valorize the effort from companies in dealing with health and workplace safety, as demanded by ISO 26000, from an ergonomic diagnose and recommendations.
Hemphill (2013)	Small and Medium Size Companies in General	ISO 26000 standards offer a generic approach "one size fits all" to corporations of all types and sizes, not taking into consideration contexts seen in different segments.	Industrial/segment associations could take the responsibility to "adapt" ISO 26000 standards to the specific context of the industry/segment.

Source: Designed by the authors



of Corporate Social Investment” (Comunitas, 2013), showing that since 2007 there is a consistent increase of social investments performed by corporations with headquarters in Brazil, despite the unfavorable economic setup in 2012, when the national economic growth was 0.9%. This consistent increase in social investments is reinforced by higher gains in stock trade of the companies listed in the Bovespa Index for Socio-environmental Responsibility (ISE), when compared to the Ibovespa.

From a research by McKinsey, Bonini *et* Bové (2014) it was identified that company leaders are prioritizing the topic “sustainability”, and global executives believe that this issue is everyday more important to the strategy of their corporations, but there are still challenges to make this issue the main business of the companies. Besides the strong participation in processes, the leaders share other characteristics, which are the key for a successful program of sustainability – among those, aggressive goals (internal and external), a strategy focused and wide adoption of those requirements by the leaders of corporations worldwide.

Such study is lined up with the research of Bluszcz *et* Kijewska (2015), in which there is an awareness regarding standards and rules to implement SR in companies, and the study of Ranängen *et* Zobel (2014), as the importance of legal practices of operation, and involvement and development of the community, as well as Rangriz *et* Abyar (2014), in the impacts of corporate governance and environment, considered the most severe upon SR.

5. CONCLUSION AND SUGGESTION OF NEW STUDIES

The objective of this research was to identify the restrictive elements and requisites in the adoption of ISO 26000 standards by the civil construction industry in Brazil. In chapter 4 there was a list with this information, responding to the proposed main goal, as well as the specific objectives, which came from the systematics review of literature. The challenges faced worldwide by the industries when adopting ISO 26000 standards were identified, as well as recommendations to their implementation, and then, a table was build listing the restrictive elements and the requisites for adopting the ISO 26000 standards by the Brazilian industry, specifically the civil construction and specially by micro, small, and medium size companies.

Through a bibliometric study, this research proved that scientific literature of publications involving the ISO 26000 standards and the area of knowledge “industry” is still small, especially regarding the adoption of those standards in civil construction industry.

A suggestion for future studies is to apply in the civil cons-

truction industry of Brazilian state of Rio de Janeiro, and in the country as a whole, the research model performed in the civil construction industry of Hong Kong by Barnes *et* Croker (2013), with the objective to find and compare which ISO 26000 issues are relevant to the corporations, especially for the micro, small, and medium size companies.

Such research could be replicated in other industrial segments, in order to compare the level of CSR activities related by the companies for the seven central topics of ISO 26000.

Another suggestion is to verify if there is a correlation between the use of ISO26000 and the increase of productivity in the civil construction industry, as means to motivate of good CSR practices in corporations.

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