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OPENING THE BLACK BOXES OF SUSTAINABILITY PERFORMANCE MEASUREMENT

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Coordinatore del Dottorato

Prof.ssa Anna Comacchio

Supervisore

Prof. Giovanni Favero

Dottorando

Stela Stoycheva

Matricola: 956149

Abstract

The overall motivation of this research is grounded on an interesting thread in organizational research, ethnostatistics, which argues that the processes of measurement (data construction, analysis and final presentation) and the construction of metrics imply tacit assumptions and informal practices employed by the producers of metrics. Keeping this assumption in mind I develop two studies exploring the field of sustainability performance measurement, followed by a methodological discussion on the proper use of the ethnostatistical method in organization and management research.

In the first study, I conduct a systematic literature review to identify the foundational conceptualizations of sustainability and its measurement employed in the management and organization field. To address this need, I design a novel research process grounded in the systematic literature review tradition. A meta-ethnographic research synthesis was performed to formalize the emerging grand narratives produced from the integration and/or comparison of findings from the different studies. This paper makes the following theoretical contributions: 1) I formalize the foundational conceptualizations of sustainability and its measurements and 2) trace their historical progression. Such an analysis provides a rigorous synthesis of patterns in the literature and enables avenues for future research to be identified.

The second study is informed by an ethnographic research aimed at disentangling the sustainability reporting dynamics in order to understand the organizational field forces that affect its realization. The study employs a combination of first- and third-order ethnostatistical analyses and a grounded theory approach to investigate the practices of sustainability reporting at a large multinational company, rated as one of the industry leaders in sustainability for the past five years as per the Dow Jones Sustainability Indices. The key contribution of the study is the development of a theoretical framework explaining the various types of organizational field pressures that are actively re-shaping the corporation's sustainability agenda. Sustainability reporting is conceptualized as a balancing act of *complying* and *adapting* to the demands for the organization field (institutions, external stakeholders and other actors), and a strategic tool to maintain and control the company's legitimacy status. Another key insight from the study is the identification of a *co-creation* mechanism, which theoretically overcomes the sole reliance on the institutional paradigm and offers additional proposition that sustainability reporting can be conceptualized as a socially constructed reality.

The third essay contributes to the ethnostatistical method by discussing the intersection between history and ethnography while suggesting method for their complementary use in organizational and management research.

In particular, it argues that although some valuable contributions employing ethnostatistical approach to organizational settings have appeared, management and organization scholars seem to be failing to deliver a proper ethnography of metrics construction (first-order ethnostatistics) and used instead quasi-historical approaches to reconstruct the historical context in which data were produced. To address this issue the study i) presents practical techniques for conducting ethnostatistical research in live organizational settings and ii) discusses how historical approaches which focus on source criticism and contextual reconstruction could overcome the limitations of pure ethnographies, thus offering a pluralistic method for conducting ethnostatistical research. Collectively, the three studies discuss general problems of quantification (both within the field of sustainability performance measurement and in general) while offering a critical point of view.

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Dedication

I dedicate this piece of work to my late grandparents Joanna, Spas and Dimitar.

I cherish the love and care you gave me and owe my achievements to you.

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1. Introduction

Achieving a sustainable development (SD) has long been and still *is* one of the major concerns of modern societies. Historically, ever since the 1970s, SD has become a central topic of investigation in academia, policy making and the corporate world. Within the economics discipline, this concept was originally mainly described in the context of the scarcity of global resources. Its early framing was mainly in terms of famine and overpopulation, but it did not take long before the considerable debate on this topic expanded to include also environmental concerns drawing attention to the relationship between economic growth and environmental degradation (Ehrlich and Holdren 1971; Meadows *et al.* 1972).

This debate culminated in the prominent 1987 World Commission on Environment and Development (WCED) definition of sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” published in the report *Our Common Future* (WCED 1987). This definition is a major milestone in the contemporary understanding of sustainability, which has turned into a “buzzword” used in almost every aspect of modern life (McKibben 1996).

Not surprisingly, the sustainability construct has been intensively explored both conceptually and empirically within the organization and management research, giving birth to various schools of thought. Within the various research streams, a specific attention has been paid to the challenges stemming from the issue of *defining* and *quantifying* sustainability. Notwithstanding the enormous research efforts, nowadays there are still pending questions regarding the meaning of sustainability, its adequate measurement and reporting at the corporate level.

The significant issue of quantification is relevant well beyond the sole realms of the academic world. The rapid growth in efforts and initiatives to monitor progress towards achieving sustainability goals at the *corporate level*, ranging from the development of global

reporting frameworks and standards, to numerous sustainability indices and ratings, manifests the complexity of the question at stake. Furthermore, the existence of various actors (i.e. organizations, standard setters, rating agencies, etc.) approaching the process of quantification from *different perspectives* poses additional challenges and brings us to a broader question about the problems of measurement in general.

At the same time, real world problems potentially related to quantification exist. In the recent Volkswagen scandal in 2015, the Environmental Protection Agency (EPA) found that many cars of the manufacturer being sold in the United States had a "defeat device" - or software - in diesel engines that could detect when they were being tested, changing the performance accordingly in order to improve results (BBC News 2015). In the wake of this episode, it is quite worrying to know that the same company was announced two years before as an Industry Group Leader in the automobiles and components sector as per the 2013 Dow Jones Sustainability Indices (DJSI). After the scandal gained publicity, Volkswagen was obviously removed from the DJSI. Although there might be numerous explanations behind this scandal, there is a big emerging question - we need a critical stance in the investigation of how measurements are constructed, and even more urgently in the complex area of sustainability measurement.

A methodologically rigorous critical stance is offered by an interesting thread in organizational research, ethnostatistics, which argues that in general the processes of measurement (data construction, analysis and final presentation) and the construction of metrics imply tacit assumptions and informal practices employed by the producers of metrics (Gephart 1988; 2006).

Following these considerations, motivated by the several ongoing questions within the field of sustainability measurement and convinced of the importance of adopting the critical lens in the study of quantification offered by ethnostatistics, I develop three related studies. In

summary, embracing an ethnostatistical perspective I produced one study exploring the state-of-the-art research in defining and measuring sustainability, another one investigating through a field inquiry the practices of sustainability reporting employed by organizations, and a third study - a methodological discussion on the proper use of the ethnostatistical method in organization and management research.

In the *first study*, I explored conceptually the field of sustainability performance measurement by conducting a systematic literature review aimed at identifying the foundational conceptualizations of sustainability and its measurement in the organization and management literature. Motivated by the existence of various definitions and measures pertaining to the field, which in some cases resulted in inconsistent results, I adopted a critical approach in synthesizing the state of the art on the subject. I designed a novel multi-stage research design encompassing a combination of bibliometric mapping techniques and meta-ethnographic research synthesis to present the main trends within the field of sustainability performance measurement. On this basis, I attempted to set a future research agenda. Within the research process, I 1) analysed and systematized the findings of 109 studies published in top academic and practitioner management, organization and strategy journals resulting in the construction of a co-occurrence map used as a navigation tool to visualize the key themes within the field of enquiry; 2) produced a synthesis of the main foundational conceptualizations of sustainability and their representative measures as emerging from this analysis; 3) elaborated a historical progression of the identified conceptualizations and 4) identified and formalized six emerging questions.

The key contribution of the study is the identification of the foundational conceptualizations of sustainability and their measurement tools in the management and organization literature, tracing their historical progression. Such an analysis provided a rigorous synthesis of the patterns in the literature, leading to the emergence of new research questions.

Motivated by one of the most relevant questions emerging from the first study, namely how organizations measure and disclose their sustainability practices, I designed a *second empirical study* aimed at disentangling the sustainability reporting dynamics and understanding the organizational field forces that affect its realization. The scarcity of exploratory studies on sustainability reporting and the centrality of the agency-versus-structure debate in the existing institutional explanations of reporting and quantification mechanisms (Hahn and Kühnen 2013; Hirsch and Lounsbury 1997) were taken as starting points for my inquiry.

For the purpose, I employed a combination of first- and third-order ethnostatistical analyses and a grounded theory approach to investigate the practices of sustainability reporting at a large multinational company, rated as one of the industry leaders in sustainability for the past five years as per the DJSI. The research process on the field amounted to 10 months, of which a 3-month pre-field stage period and a 7-months participant observation period, generated 15 interviews and approximately 300 pages of field notes and triangulation data. Using this material, I could “open the black boxes” of sustainability reporting by providing a thick description of the sustainability reporting process and developing a process framework which identifies a set of mechanisms through which this process is realized.

The key results of the study revealed the existence of various types of organizational field pressures that are actively re-shaping corporation’s sustainability agenda. Sustainability reporting can then be explained as both a balancing act of complying and adapting to the demands for the organization field (institutions, external stakeholders and other actors), and a strategic tool to maintain and control the company’s legitimacy status. Another key insight from the study is the formulation of a speculated co-creation mechanism, which theoretically overcomes the reliance solely on the institutional paradigm and offers an additional proposition that sustainability reporting can be conceptualized as a socially constructed reality obtained

through an iterative process of numerous interactions, reflecting ongoing changes which re-shape and co-create the organizational field through discourse.

At a methodological level, this study contributes to the ethnostatistical method by being potentially one of the first applications of ethnostatistical analysis in the world of practitioners to offer a real-time ethnography of the production of measurement-related discourse.

In the *third methodological essay*, I used the experience of conducting an ethnostatistical enquiry in a live operating setting in order to shed more light on the ethnostatistical method. The study was developed in collaboration with prof. Giovanni Favero. We discuss the intersection between history and ethnography while suggesting strategies for their complementary use in organizational and management research. In particular, we argue that although there are many valuable contributions employing an ethnostatistical approach in organizational settings, management and organization scholars seem to be failing to deliver a proper ethnography of metrics construction (first-order ethnostatistics) and resort instead to quasi-historical approaches to reconstruct the context in which data were produced. We pose that while conducting a proper field ethnography of metrics might be extremely rare given time and access constraints, we warn that the use of organizational histories and archival materials must be done with caution as they tend to be used for specific organizational purposes in the present being part of a wider organizational rhetoric which can hamper their ability to represent an unbiased view of reality. In particular, archival materials can highlight elements of metrics and measurement construction that are not evident in secondary sources. However, a correct use of such sources requires the methodological awareness of their limitation and partiality. The key contributions of the study lay in the 1) proposition of a pluralistic method for conducting ethnostatistical research in organizational settings 2) and offering a methodological discussion on how this promising method can be used to guide critical analyses in organization and management research. In specific we show how historical approaches can successfully

join ethnostatistical enquiries in an attempt to overcome some limitations in existing conventional methods. We suggest that such an approach can bring certain benefits to both the academic and business world by increasing the methodological rigor in producing scientific knowledge at a theoretical level and by improving measurement practices employed by business professionals at a practical level.

All the three studies present a different perspective on the general question regarding the construction of measurement. However, if considered in isolation, each of them made some key contributions within the respective fields of exploration, and generated future lines of research discussed in more depth in the conclusion section. All the three papers have been presented at international conferences, doctoral symposia and workshops; two of them won prestigious awards. The papers will be submitted to targeted journals as indicated in Table 1.

Table 1: Overview of Research Dissemination

Paper	Presentations	Target Journal
Measuring Sustainability from a Historical Perspective: A Critical Assessment of the Concept of Sustainability and its Measurement in Management and Organization Literature	<ul style="list-style-type: none"> - Paper presentation at the 4th International Conference on Management, Leadership and Governance, Saint-Petersburg, Russia, 14-15 April 2016. - Paper presentation at the British Academy of Management Doctoral Symposium, Coventry, UK, 6 September 2017. <i>Awarded the Tony Beasley Award 2017 in recognition of outstanding work in the form of a quality academic paper developed by a Doctoral Student.</i> 	In preparation for submission to the <i>International Journal of Management Reviews</i>
Opening the Black Boxes of Sustainability Reporting: How Reporting Affects Organizational Processes?	<ul style="list-style-type: none"> - Draft paper presentation at the Doctoral Workshop Economics and Management, Venice, Italy, 3 July 2017. - Poster presentation at the 4th International Conference on Management, Leadership and Governance, Saint-Petersburg, 14-15 April 2016. <i>Awarded 2nd Place at the Best Poster Conference Competition.</i> -Research idea presentation at the i) VIU Summer School Responsible Capitalism: Strategy, Governance and Finance, Venice, 5-9 June 2016; ii) Joint PhD Workshop Economics and Management, Venice, 23 June 2016. 	Intention for submission to <i>Organization Studies</i>
Research Strategies for Ethnostatistics in Organization studies: Towards a Historical Ethnostatistics	<ul style="list-style-type: none"> - Paper presentation at the 12th Annual International Ethnography Symposium, Manchester, UK, 29 August-1 September 2017. <i>Awarded the Best Paper at the Symposium Award issued by Emerald Publishing, the publisher of the Journal of Organizational Ethnography</i> - Paper presentation at the European Conference on the Social Sciences, Brighton, UK, 7-9 July 2017. <i>Awarded the International Academic Forum (IAFOR) Scholarship for attending the conference.</i> 	Invited submission to the <i>Journal of Organizational Ethnography</i>

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2. Study 1: Measuring Sustainability from a Historical Perspective: A Critical Assessment of the Concept of Sustainability and its Measurement in Management and Organization Literature

Abstract: While the importance of sustainability performance measurement is widely recognized, within the academic community the existence of various definitions and measures has resulted in inconsistent results raising critical concerns about the theoretical foundations of measurement. Furthermore, the plethora of definitions, key constructs and measures pertaining to the concepts of sustainable development (SD), corporate social responsibility (CSR) and corporate sustainability (CS) may actually prevent businesses from identifying ways of pursuing and monitoring sustainability goals. This raises the critical question of how the management discipline has exploited the concept of SD. A systematic study addressing the issue of the meaning of sustainability and its adequate measurement at the business level should therefore be beneficial to both academia and practitioners. The research objective of the study is thus to identify the foundational conceptualizations of sustainability and its measurement employed in the management and organization field. To address this need, the study designs a novel research process grounded in the systematic literature review tradition. A meta-ethnographic research synthesis (an interpretative research synthesis method used to bring together findings from a large and methodologically diverse group of studies) was performed to formalize the emerging grand narratives produced from the integration and/or comparison of findings from different studies. This paper makes the following theoretical contributions: 1) I formalize the foundational conceptualizations of sustainability and its measurements and 2) trace their historical progression. Such an analysis allows for delivering a more fine-grained understanding of the notion of sustainability, while providing a rigorous synthesis of patterns in the extant literature, and thus enables avenues for further research to be identified.

Introduction

Since the 1970s, the notion of sustainable development (SD) has been overwhelmingly used in academia, policy making and the corporate world (Ehrlich and Holdren 1971; Meadows *et al.* 1972; Lélé 1991; Gladwin *et al.* 1995; Hart 1995; Elkington, 1997; Dyllick and Hockerts 2002). Within the management discipline, notwithstanding this long debate, nowadays the concepts of corporate sustainability (CS) and corporate social responsibility (CSR) tend to be used interchangeably by practitioners, while their actual meaning is still an object of theoretical

exploration among researchers (Montiel 2008). Despite the existing definitional ambiguities, attempts at measuring sustainability performance have proliferated in academia and the business world. At the same time, there has been rapid growth in efforts and initiatives to monitor progress towards achieving sustainability goals, including the development of *frameworks* such as the Global Reporting Initiative (GRI), *standards* covering social and environmental criteria such as the UN Global Compact and *ratings* such as the Kinder, Lydenberg, Domini Research & Analytics (KLD) and other sustainability *indices* (for a review, see Siew 2015). While the importance of sustainability performance measurement is widely recognized, within the academic community the existence of various definitions and measures has resulted in inconsistent results (Margolis and Walsh 2003; Orlitzky *et al.* 2003; Carroll and Shabana 2010), raising critical concerns about the theoretical foundations of measurement. Furthermore, the plethora of definitions, key constructs and measures pertaining to the concepts of SD, CSR and CS may actually prevent businesses from identifying ways of pursuing and monitoring sustainability goals (Carroll 1999). This raises the critical question of how the management discipline has exploited the concept of SD. A systematic study addressing the issue of the meaning of sustainability and its adequate measurement at the *corporate level* should therefore be beneficial to both academia and practitioners.

Previous literature surveys posing similar questions have traced the evolution of the CSR domain (Margolis and Walsh 2003; Orlitzky *et al.* 2003), the business and natural environment field (Bansal and Gao 2006; Etzion 2007) and the CS field (Montiel 2008; Montiel and Delgado-Ceballos 2014). So far, to our knowledge, no earlier review has embraced the questions of assessing the concept of SD through a critical evaluation its foundational conceptualizations and measurement, employed in academia and organizations. Thus, the goal of this study is to reconcile the ongoing debate concerning the meaning and measurement of sustainability in the management and organization literature. On a more general scale, this

perspective may be useful in bringing insights to measurement problems in the broader domain of performance measurement and management.

A critical perspective in dealing with such a debate is required. First, there is a need of shifting the debate from the overwhelming body of empirical research on the link between corporate social performance (CSP) and financial performance (FP) to a more exploratory and normative one - i.e. to focus our research efforts on studying critically how practitioners actually measure sustainability and to exploit more the normative power of the SD concept in prescribing a proper organizational behaviour. Second, shedding more light on the sustainability performance measurement domain has implications for the bridge between academia and practice in attempting to assess critically the extent to which management scholarship has advanced the practice of managers or whether what we are measuring really reflects what organizations do, measure and disclose.

Third, if not challenged critically, measurement and scientific findings are not exempt from falling in the trap of being “black boxed”. According to Latour (1999, p. 304), “the way scientific and technical work is made invisible by its own success. When a machine runs efficiently, when a matter of fact is settled, one need focus only on its inputs and outputs and not on its internal complexity. Thus, paradoxically, the more science and technology succeed, the more opaque and obscure they become”. Therefore opening the black boxes of the field of sustainability performance measurement is an attempt of preventing two implications stemming from “black-boxed” knowledge and measurement: i) they cannot adapt to changing contexts and maintain a coherent representation of reality and ii) they have performative power, in the sense that they are “actively engaged in the constitution of the reality that they describe” (Callon 2007, p. 318) and therefore can re-shape and format the micro and macro environments in which they are used in unexpected and unintended ways.

Finally, an interesting thread in organizational research has argued that the processes of measurement (data construction, analysis and final presentation) and the construction of metrics imply tacit assumptions and informal practices employed by the producers of metrics (Gephart 1988; 2006). Bringing this argument to the topic of investigation, it can be argued that while performance measurement is proliferating, the interpretive processes and practices involved in the production and use of metrics have been underexplored (Power 2004; Vollmer 2007). Embracing this assumption, my literature synthesis uses an ethnostatistical lens¹ to produce a summary of observations pertaining to the field of sustainability performance measurement.

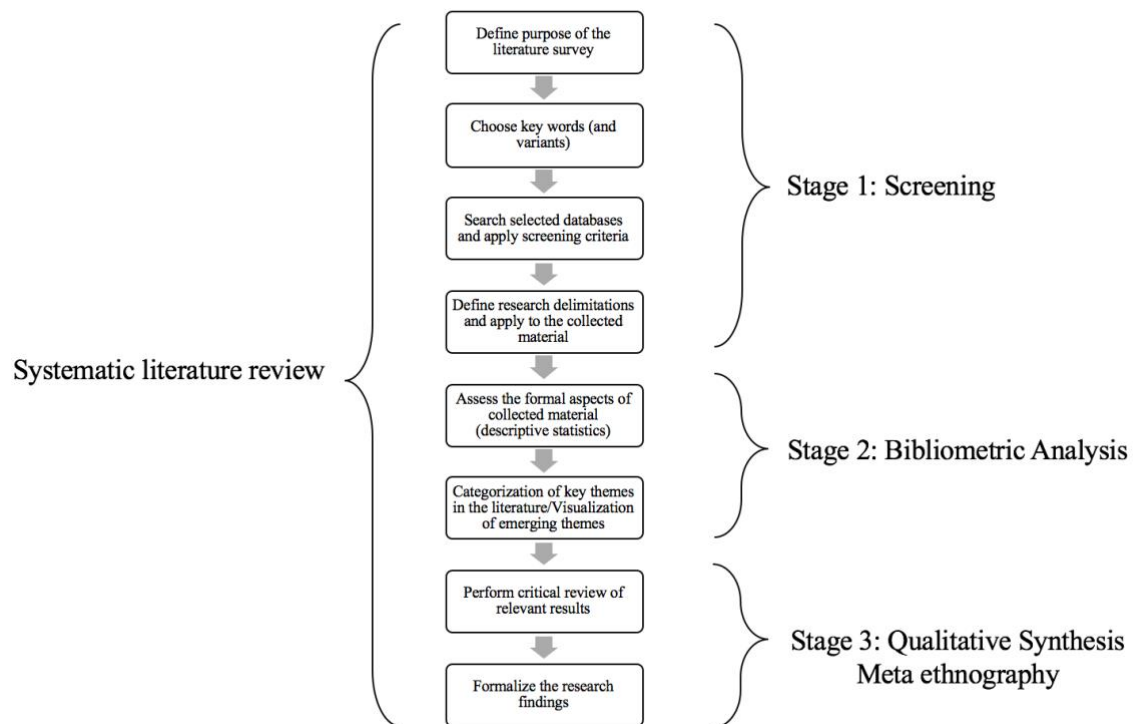
Methodology

To address the above stated objectives, the research employs a combination of quantitative and qualitative techniques, following a reproducible design aimed at identifying, evaluating and interpreting the existing body of knowledge in a given field. An overview of the approach employed in the research is provided in Figure 1.

The overall framework used for the research design follows Tranfield *et al.* (2003). The main aspects of this approach, as summarized in Denyer and Neely (2004, p. 133), are: i) development of clear and precise aims and objectives; ii) pre-planned methods; iii) comprehensive search of all potentially relevant articles; iv) use of explicit, reproducible criteria in the selection of articles for review; v) an appraisal of the quality of the research and the strength of the findings; vi) synthesis of individual studies using an explicit analytic framework; vii) balanced, impartial and comprehensible presentation of the results.

¹ See [Study 3](#) for a more detailed discussion on the ethnostatistical method.

Figure 1: Overview of Literature Review Research Process



An initial scoping review was conducted by analysing previous literature reviews focusing on summarizing the state-of-the-research in the area of sustainability performance measurement (e.g. Margolis and Walsh 2003; Orlitzky *et al.* 2003; Bansal and Gao 2006; Etzion 2007; Montiel 2008; Montiel and Delgado-Ceballos 2014). The outcome of the scoping review identified that there are several foundational conceptualizations of sustainability in the management and organization literature, which have different backgrounds and follow different theoretical paths (ecological economics and environmental management, corporate (social) responsibility and corporate sustainability). Therefore, the research question for the systematic literature review was specified as follows: *What are the foundational conceptualizations of sustainability and their measurements in management and organization research?*

Next, a review protocol was designed to address the above stated question, containing specific rules for inclusion/exclusion criteria, a quality assessment tool and a common data extraction format. The review process started with the identification of relevant publications through the means of a structured key word search in major databases (see Screening stage, Figure 1). The following keyword configuration was used and applied to the titles, abstracts and keywords supplied by the authors in the bibliographic collections of selected databases: “*sustainab**”, “*corporate responsibility*”, “*corporate social**” and “*environmental management*”. This key word configuration elicited different terms and variations pertaining to the same fields, such as “sustainable development”, “sustainability”, “corporate social performance”, “corporate social responsibility”, “corporate social irresponsibility”, “corporate sustainability”, etc. Major databases, including the ISI Web of Science Core Collections *Social Science Citation Index (WoS/SSCI)*² and Scopus, were searched using the selected terms for the entire period of their online coverage (from 1985 to 2016 for WoS/SSCI and from 1960 to 2016 for Scopus). A further refinement of the inclusion/exclusion process was attained through a manual check of the abstracts of the papers obtained and through a snowballing technique, adding relevant articles found through other means, such as using the reference lists of already published reviews.

A quality assessment tool was constructed to judge the implicit quality of a given study from the quality rating of the particular journal in which it was published, as is common practice in the management field (Tranfield *et al.* 2003). Following the approach of earlier reviews addressing similar topic (e.g. Bansal and Gao 2006; Montiel 2008; Montiel and Delgado-Ceballos 2014) I developed list of journals³, encompassing top academic

² The choice of searching in the ISI Web of Science Core Collections Social Science Citation Index rather than the full ISI Web of Science database was consistent with the research objective, namely to analyze the state of research in the area of sustainability performance measurement in the *management field*.

³ Academy of Management Journal, Academy of Management Perspectives, Academy of Management Review, Administrative Science Quarterly, British Journal of Management, Business & Society, Business and Society Review, Business Ethics Quarterly, Business Strategy and the Environment, California Management Review, Harvard Business Review, Human Decision Processes, International Journal of Management Reviews, Journal of Applied Psychology, Journal of Business Ethics, Journal of International Business Studies, Journal of Management Studies, Journal of Management, Journal of Organizational Behavior, Management Science, MIT Sloan Management Review,

management, strategy and organizational behaviour journals, top practitioner management journals, journals specialized in addressing social and environmental management issues and journals specialized in publishing reviews, against which the inclusion of a specific study in the further analysis was judged.

To support the research process, a preliminary treatment of the results through bibliometric mapping techniques (see Bibliometric analysis stage, Figure 1) was designed to provide the starting point for the subsequent synthesis by rigorously categorizing and organizing key themes in the literature. Although not regarded as the power tool for the theoretical analysis, the use of bibliometric mapping techniques was considered useful in serving as a navigational tool to explore the landscape of the research field being mapped (Noyons 2001). Therefore, in this exploratory stage of the research process, the dataset of studies obtained was approached using the following set of questions: 1) How are the publication trends in the field of sustainability performance measurement distributed among journals? 2) How have publication patterns evolved over the years? 3) What are the key themes within the domain of study?

The first two questions were answered by means of descriptive statistics produced by a straightforward counting of the number of publications per year and across journals. To address the matter of identifying the main topics in the domain, a semi-automated procedure was applied to create a co-occurrence map. The analysis of documents based on the co-occurrence of words is considered a way of grasping the conceptual framework of a scientific field (Marshakova-Shaikevich 2005).

The core stage of the analysis was the research synthesis (see Qualitative synthesis stage, Figure 1). By definition, a research synthesis is a collective term used to denominate a family of methods designed to summarize, integrate and – where possible – cumulate the

Organization & Environment, Organization Science, Organization Studies, Organizational Behavior, Personnel Psychology, Strategic Management Journal.

findings of different studies on a certain topic or research question (Mulrow 1994). Stemming from the research objective, namely to explore the foundational conceptualizations of sustainability and their measurement in the management field, an appropriate interpretative approach to research synthesis was considered to be the *meta-synthesis*. The outcomes of a meta-synthesis in general are the emerging “theories, grand narratives, generalizations, or interpretative translations produced from the integration or comparison of findings from qualitative studies” (Sandelowski *et al.* 1997, p. 366). Its focus is on the “similarities and differences in language, concepts, images, and other ideas around a target experience” (Sandelowski *et al.* 1997, p. 369), which should ultimately expand the available set of interpretations of findings and thus contribute to developing theories.

In this study, I used meta-synthesis to compare, interpret, translate and synthesize different research foundations, conceptualizations and measures pertaining to the explored topic by treating the concepts and measures from all types of studies obtained (i.e. empirical, conceptual, or review) as *qualitative* evidence. In contrast to the quantitative meta-analysis approach, which draws on quantitative data from the literature and strict statistical approaches, meta-synthesis focuses on qualitative studies (Noblit and Hare 1988). The choice to apply such a synthesis of all types of studies was appropriate in answering the research question posed, which attempts to explore and synthesize evidence which is qualitative in nature. The value of such analysis lies in the “translations” of studies with one another, together with the researcher’s profound understanding (Noblit and Hare 1988). This translation means not only maintaining the uniqueness of individual interpretations, but also at the same time revealing the differences between varied accounts, which enables researchers to understand simultaneously how various studies are related to each other.

To produce my research synthesis, I followed the meta-ethnographic approach proposed by Noblit and Hare (1988). By definition meta-ethnography is an interpretative and

comparative textual analysis of studies. It offers alternative methods to produce such analysis ranging from “refutational synthesis” - used to settle contradictory explanations between studies, “reciprocal translations” – used to translate concepts from similar studies into one another, to “lines of argument synthesis” which produces overarching interpretation based on the findings of the primary studies (Denyer and Tranfield, 2006). Adopting it for my research purpose, the research synthesis employed here involved several stages: 1) reading the studies, 2) determining how the studies are related (i.e. which studies share the same conceptualization), 3) translating the studies into one another (i.e. using a comparative approach to determine similarities and differences in the concept and its measurement applied in different studies), 4) synthesizing translations (i.e. producing a synthesis of the conceptualizations obtained and their relevant measures) and 5) expressing the synthesis using ethnostatistics as the theoretical lens to build a summary of observations pertaining to the field of sustainability performance measurement.

Analysis and Results

Exploratory Stage: Descriptive Statistics and Bibliometric Mapping

Following the developed research protocol, the screening phase described in the methodology section was applied. The WoS/SSCI and Scopus databases were searched with the pre-defined set of keywords for the entire period of their online coverage (from 1960 to 2016). The search was limited to peer-reviewed journal articles in English, falling under selected subject areas (i.e. Business, Management, Accounting). The produced results from both databases were compiled and cleared for duplications in order to create a single unique database. Next, I applied further restrictions to the collected material through the means of the developed quality assessment tool. Based on it, I restricted the inclusion of papers which were published only in journals from the list of journals identified in the Methodology Section. This tool proved to be capable of serving two purposes simultaneously – first to set further limitation

and second to act as a pre-defined quality appraisal tool. This resulted in an initial poll of documents, which were analysed through a cursory scan of titles and abstracts aimed at setting further limitations and removing false and/or irrelevant entries. At this stage, another set of inclusion and exclusion criteria was developed against which each study was judged. Specifically, I included papers which 1) explicitly discuss sustainability concepts, principles and constructs and offered either explicit or implicit definition of the same and/or 2) contained operationalization or proxy measurement of the construct at stake or discussed sustainability assessment or measuring tools in general. All studies that didn't fall under the above stated criteria were excluded from further in-depth analysis. I complemented the dataset through a snowballing technique in which I added relevant articles found through other means, such as using the reference lists of already published literature reviews. This resulted in a unique dataset of 109 articles which were considered relevant for further in-depth analysis and were used for the exploratory analysis provided in the subsequent section.

As anticipated in the Methodology Section the main objective of the exploratory stage was to answer to three questions: 1) How are the publication trends in the field of sustainability performance measurement distributed among journals? 2) How have publication patterns evolved over the years? 3) What are the key themes within the domain of study?

In order to assess the formal aspects of the collected bibliographic material (e.g. distribution of papers over journals, number of publications per year) descriptive statistical analysis was performed to provide the background for the subsequent theoretical analysis. The distributions of reviewed publications among journals and in time is illustrated in Figures 2 and Figure 3.

Figure 2: Distribution of Reviewed Papers by Journal

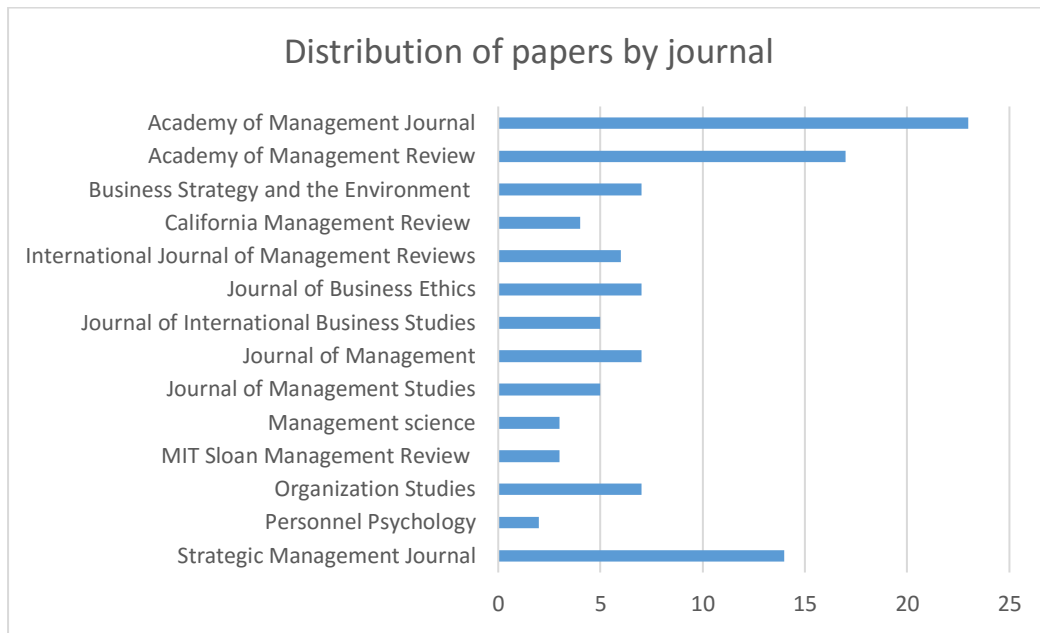
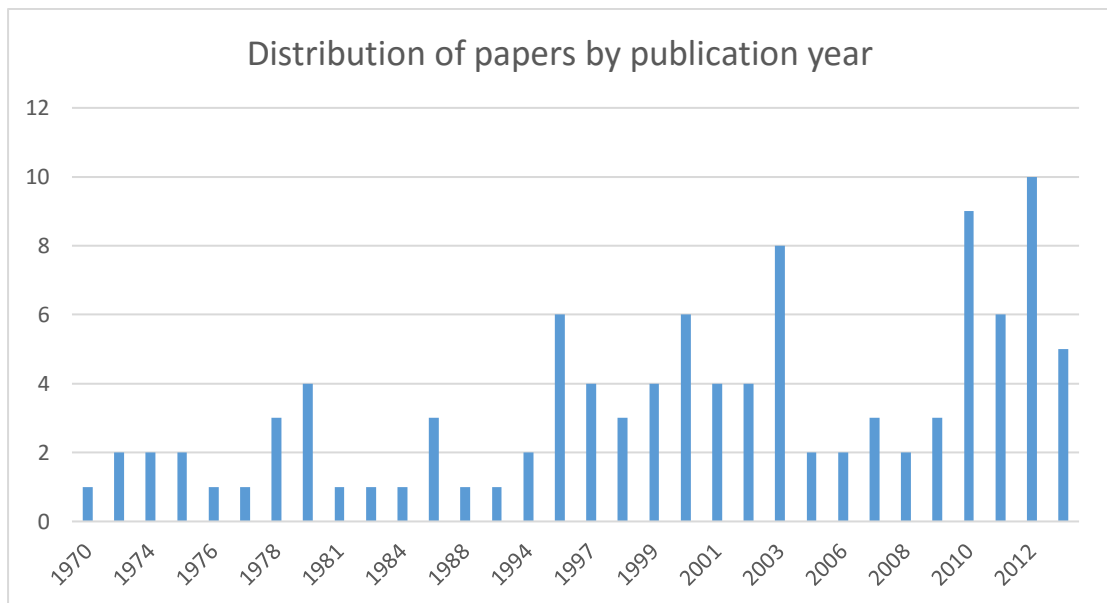


Figure 3: Distribution of Reviewed Papers by Publication Year



Based on the descriptive statistics produced it is worth mentioning that the main powerhouses of the review were top academic journals which guarantees the academic significance and validity of the produced results in those studies upon which I base my further theoretical analysis (21 % of the reviewed papers were published in the *Academy of*

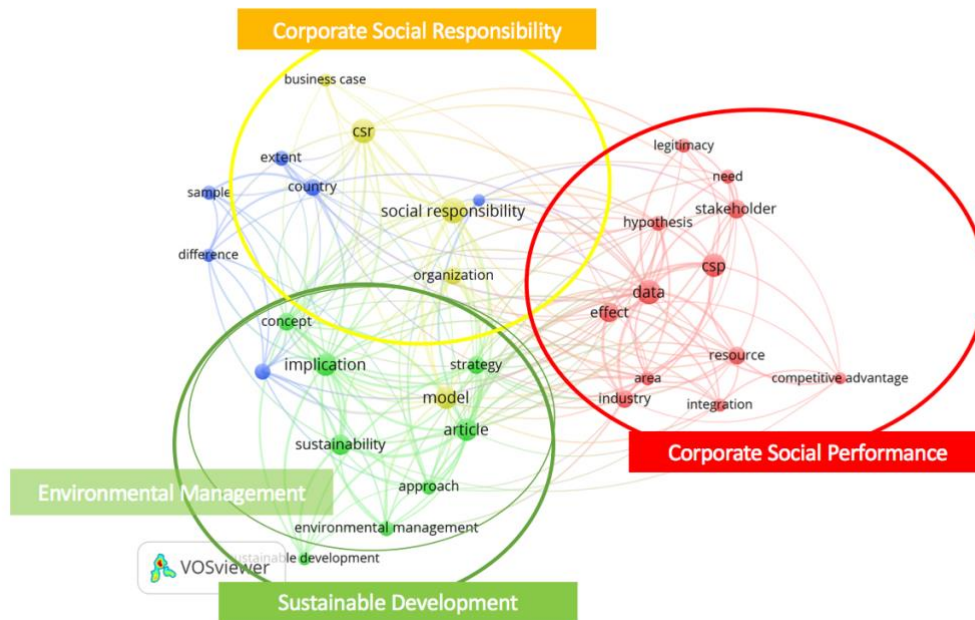
Management Journal, 17 % in the *Academy of Management Review* and , 15 % in the *Strategic Management Journal*). Furthermore, not surprisingly the publication patterns progress continuously throughout the years, and more specifically in the years after the publication of the famous Brundtland report in 1987, which defined the term “sustainable development”, manifesting the continued significance of the research topic.

To address the question of identifying the main topics in the domain, a semi-automated procedure was applied to create a co-occurrence map. To prepare for the automated data analysis I manually checked the abstracts of the 109 studies to unify different spellings of the same words and to abbreviate longer sequences of words (e.g. “corporate social responsibility” was abbreviated to “csr”). The resulting corpus of words from the abstracts of the studies were analysed with VOSviewer (www.vosviewer.com). The VOSviewer is a free software program used for creating, visualizing and exploring bibliometric maps of science using a text mining and clustering functions to analyse co-occurrence of particular terms (van Eck and Waltman 2010). The VOSviewer statistical analytic, text mining and visualization functions were used to create a co-occurrence map of the words from the abstracts of the retrieved papers. The obtained map shows the most relevant terms (elements) according to a “relevance score”⁴ calculated by VOSviewer, their belonging to a specific cluster (topic) as well as their distance to other topics so that elements associated with similar topics are positioned close to each other, while those that are less similar are positioned more distantly from each other (Noyons 2001). The produced co-occurrence map of the terms is shown in Figure 4. In the figure, each of the most relevant terms is mapped with a circle, where the diameter of the circle and the size of the relative label represent the frequency of the term, its proximity to another term indicates

⁴ In order to obtain the relevance score, the VOSviewer performs a part-of-speech tagging (i.e. to identify verbs, nouns, adjectives, etc.). It then uses a linguistic filter to identify noun phrases. The filter selects all word sequences that consist exclusively of nouns and adjectives and that end with a noun. The VOSviewer thereafter calculates for each noun phrase a relevance score based on the following rationale: noun phrases have a low relevance score if their co-occurrences with other noun phrases follow a more or less random pattern (e.g., noun phrases such as “interesting result”, “new method”, etc. which are considered very general), while the relevance score is high if they co-occur mainly with a limited set of other noun phrases. VOSviewer allows then to leave out noun phrases with a low relevance score. The remaining noun phrases usually represent relevant terms in the domain of interest (Van Eck and Waltman 2014).

the degree of relatedness of the two terms and its colour represents the cluster to which it belongs.

Figure 4: Co-occurrence Map of the Words from the Abstracts of Analysed Papers



In the map, several clusters occur which represent the key themes within the field of investigation, namely “sustainable development”, “environmental management”, (corporate) social responsibility – “csr” and “social responsibility” elements, and corporate social performance - “csp” element, and other terms pertaining to the respective clusters. Although regarded as a navigation tool, the obtained map proved to be useful in capturing the state-of-the-art and visualizing the main themes, on which I built on my emerging foundational conceptualizations unfolded in the next section.

Research Synthesis: A Historical Progression of the Foundational Conceptualizations of Sustainability

Moving to the core stage of my analysis, the research synthesis, I applied the meta-ethnographic approach discussed in the Methodology Section. This unfolded in a multi-stage process in which I read the studies, and extracted the main definitions and measures (where applicable) they used. Next, comparing the definitions I coded the papers into emerging

categories (conceptualizations) using as analytical guide review papers identified in my scoping review (Bansal and Gao 2006; Montiel 2008; Montiel and Delgado-Ceballos 2014) and the obtained co-occurrence map. At this stage I complemented my analysis with additional bibliographic material (papers and books) found in the reference lists of selected studies which was necessary in order to formulate the emerging categories. This resulted in producing a synthesis of the main foundational conceptualizations and their representative measures and elaborating a historical progression of the identified conceptualizations (an overview of the synthesis is presented in Table 2). Finally, in the end of the section I discuss my findings using an ethnostatistical perspective to summarize my main observations regarding the state-of-the-art in the sustainability performance measurement and suggest areas for future investigation.

Table 2: Overview of Research Synthesis: Foundational Conceptualizations of Sustainability and their Representative Measures

Foundational Conceptualization	Representative Definition/ Summary of Conceptualization	Representative Measures
Sustainable development (SD) – a macro perspective	“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987)	<i>not applicable</i>
Ecological economics (Capital-based approach) - a macro perspective	SD can be approached as a model representing three dimensions (economic, social and environmental), with three circles inscribed one inside the other, where limits and carrying capacity of the ecosystem is normative for the growth of social and economic systems (Costanza 1991)	<i>not applicable</i>
Sustaincentrism, Corporate sustainability (CS) & Sustainable organizations	SD is a "process of achieving human development in an inclusive, connected, equitable, prudent, and secure manner" (Gladwin, Kennelly and Krause 1995)	KLD, DJSI, Inclusion in the DJSI as a proxy of sustainable organizations, Disclosure of social performance, Reputational ratings, GRI indicators, Analysing sustainability reports as per the GRI framework, Analysing annual reports, Developing own measures
	CS is "meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc.), without compromising its ability to meet the needs of future stakeholders as well" (Dyllick and Hockerts 2002)	
	Sustainable organizations are "one whose characteristics and actions are designed to lead a “desirable future state” for all stakeholders" (Funk 2003)	

Environmental management/ Ecological sustainability	Conceptualized in terms of four interrelated strategies: 1) managing the impacts of populations on ecosystems, 2) ensuring world-wide food security, 3) managing ecosystem resources and 4) creating sustainable economies (Shrivastava 1995)	CEP social audit rankings of companies, Disclosure of expenditures on environmental practices, IRRC evaluation of environmental performance, Developing own measures
Corporate social responsibility (CSR)/Corporate social performance (CSP)	Social responsibility must embody the economic, legal, ethical, and discretionary categories of business performance because of the need to address the entire range of obligations business has to society (Carrol, 1979)	KLD, DJSI, Disclosure of social performance, CEP social audit rankings of companies, Reputational ratings, Fortune’s Corporate Reputation Survey, Moskowitz Reputation Index, Analysing sustainability reports as per the GRI framework, Analysing annual reports, Developing own measures
	CSR is based on three principles: 1) legitimacy (institutional level), 2) public responsibility (organizational level) and 3) managerial discretion (individual level) (Wood, 1991)	

Legend: KLD = Kinder, Lydenberg, and Domini Indices, DJSI = Dow Jones Sustainability Indices, GRI = Global Reporting Initiative, CEP = Council on Economic Priorities, IRRC = Investor Responsibility Research Center

As Table 2 illustrates I identified 5 foundational conceptualizations of sustainability and in what follows I elaborate on their historical progression.

Sustainable Development – a Macro Perspective

The concept of SD has developed over the last forty years mainly as a macro perspective. Since its inception several disciplines have explored the concept in terms of interpretation, values and principles such as economics, natural and social sciences. Nowadays, the most widely cited definition of SD is given in the Brundtland report (WCED 1987) which describes it as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Since the term has been officially formalized in the report, a prominent approach to pursue sustainable development path, has been Elkington’s (1994; 1997) conceptualization on the “three pillars” of sustainability, which integrates economic, social, and environmental considerations. In this framework, the three pillars are both interconnected and influencing and supporting each other, whilst each of them

are independently curtailed in the short run, in the long run all the three pillars must be considered simultaneously in order to reach the sustainability goal.

Besides having been criticized in terms of definitional vagueness and ambiguity (Lélé 1991), critiques of this view on sustainability both at the theoretical and practical level (Lehtonen 2004) emerged giving birth to new foundational conceptualizations of SD (e.g. ecological economics) introduced more in-depth in the following section. Specifically, on a conceptual level emerging research threads i) oppose the idea that the three dimensions are qualitatively and hierarchically equivalent and ii) include in the discussion an important aspect related to the different types of capital which has not been adequately addressed in the “institutional” definition of SD.

Ecological Economics (Capital-Based Approach) - a Macro Perspective

Another macro perspective on SD has been offered by the ecological economics stream. According to ecological economics scholars (e.g. Martinez-Alier 1987, Costanza 1991, Daly 1992), SD can be approached as a model representing three dimensions (economic, social and environmental), with three circles inscribed one inside the other. The model illustrates that the environmental sphere (the biosphere) represents the external limit of a system which contains the social sphere, with the economic sphere representing the innermost dimension. This conceptualization refers to the idea of the dependency of the economy and society on ecological systems, in which business and society can function within certain environmental constraints. Or, put differently, the idea of the limits and carrying capacity of the ecosystem is normative for the growth of social and economic systems.

Against this backdrop, a significant stream of research has emerged in ecological economics scholarship related to different types of capital (capital-based approach). Three different types of capital have been reconciled, namely economic, natural and social. From this perspective, SD depends on the capability of a system to maintain different forms of capital stocks over

time (Dyllick and Hockerts 2002), which raises the critical question of the potential interchangeability of different kinds of capital (Pearce and Turner 1990). Two main schools of thought have advocated respectively two forms of sustainability: weak and strong. Weak sustainability assumes that all kinds of capital are equivalent and therefore the loss of one form can be compensated or substituted by the other form (Solow 1986). For example, according to the weak sustainability approach, the loss of natural capital (i.e. degradation of natural resources) is acceptable in so far as it is compensated or substituted with an increase in other forms of capital (i.e. man-made technology to compensate the loss of natural resources). Strong sustainability assumes that some types of capital, namely some forms of natural capital, cannot be substituted and therefore different forms of capital are complementary and should be preserved independently of each other (Costanza 1991). In this line of thought, it is proposed that keeping the amount of natural capital constant can assure sustainability.

Sustaincentrism, Corporate Sustainability & Sustainable Organizations

Intrinsically linked to the concept of SD and perceived as the origin of the concept of CS (Montiel 2008), the concept of sustaincentrism was first introduced in the general management literature in Gladwin *et al.* (1995), the authors theorizing that SD is the process of “achieving human development in an inclusive, connected, equitable, prudent, and secure manner” (p. 878). In particular, the component of inclusiveness refers to a holistic view embracing both environmental and human systems over time and space; the connectivity component explains the interconnected and interdependent nature of social, economic and environmental goals; the principle of equity refers to the fair distribution of resources and property rights over space and time; the component of prudence refers to the duty to keep both eco- and socio-economic systems resilient and within their carrying capacities; the safety component demands safety from chronic threats and the prevention of harmful disruption. Along with this foundational theoretical conception, various definitions of CS were developed

in the following years (e.g. in Bansal's (2005) contribution, corporate sustainability is based on three principles: economic prosperity, social equity and environmental integrity). Although views on CS among academics and the business community differed slightly thus formulating variety of definitions, the overall approach deployed in the management science can be summarized as considering CS to be an attempt to adapt the concept of SD to corporate settings in which the ultimate aim is matching the goal of value creation alongside environmental and social considerations. Against this backdrop prominent contributions defined the sustainable organization/enterprise as "one that contributes to sustainable development by delivering simultaneously economic, social and environmental benefits – the so-called triple bottom line" (Hart and Milstein 2003, p. 56); and "one that will not use natural resources faster than the rates of renewal, recycling, or regeneration of those resources" (Marshall and Brown 2003, p.122). Despite the varied definitions, the main consideration emerging from the body of research that explores CS is that while focusing extensively on instrumental questions such as *why* organizations commit to pursue sustainability goals and *how* they implement them, it seems that the management discipline has somehow neglected the potential normative power of the SD concept to prescribe behavior for businesses grounded on sound theoretical models and empirical findings. On the contrary, empirical research has generated in some cases inconsistent results (Margolis and Walsh 2003) which contributes to shifting the discussion from the core question of how to translate the SD principles to business practices, to marginal topics such as questioning the appropriateness of the employed measurement thus posing new methodological and theoretical questions on the meaning of sustainability.

Environmental Management/ Ecological Sustainability

Historically management and organization research extensively explored environmental issues not only together with social considerations, but also in isolation (e.g. Adizes and Weston, 1973; Alexander and Buchholz, 1978). This thread of research referred as

Environmental Management or Organizations and Environment (O&E) fields focus on how organizations perceive, react and interact with issues relating to the natural environment. Within this framework variety of concepts have been formulated to describe business practices and policies that go beyond simple profit maximization specifically concerning business's impact on the natural environment, including total environmental quality management, ecological responsibility, corporate greening, corporate environmental responsiveness, etc. (e.g. Shrivastava 1995, Bansal and Roth 2000, Winn and Angell 2000, Sharma and Vredenburg 1998). Although a clear definition of what encompasses corporate responsibility towards the environment is lacking (McGee 1998) which stems from the fact that virtually all organizations have environmental impacts for which they may not be aware of and that these issues can be both technical and social in nature (Hoffman and Ventresca 2002), the question of environmental management is highly intertwined with the broader concept of SD. Overall, the developed definitions related to conceptualization of SD from environmental management point of view embraces largely an unidimensional perspective in which the final purpose is ecological sustainability.

Corporate Social Responsibility /Corporate Social Performance

Even though the conceptualizations of CS and CSR (and its sister concept CSP) nowadays tend to converge (Montiel 2008), their evolutionary paths have differed. The roots of the concept of CSR⁵ can be traced back as early as Bowen (1953), who described the responsibilities of business as moving far beyond merely seeking profit maximization. Specifically, social responsibility referred to “the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society” Bowen (1953, p. 6). While a comprehensive survey of the historical progression of this concept is beyond the scope of this study and has been done

⁵ The original notion coined in the seminal work of Bowen (1953) was “social responsibility (SR)”. Due to the greater awareness of the notion of CSR, which shares the same conceptualization, here I use the term CSR to refer to the same concept that appeared initially as SR.

elsewhere (Carroll 1999; Carroll and Shabana 2010), it is worth noting here another milestone in the evolution of the concept which also advocates the consideration of CSR and CSP as sister concepts, namely the seminal work of Carroll (1979). In this seminal study, Carroll (1979) proposes a four-component definition of CSR and embeds it in a conceptual model of CSP. The definition of CSR given by Carroll (1979, p. 2) states that “corporate social responsibility encompasses the economic, legal, ethical, and discretionary (philanthropic) expectations that society has of organizations at a given point in time”. Specifically, in order for companies to be responsible, they are expected i) to be profitable (economic responsibility), while ii) obeying the law (legal responsibility), iii) conforming to social norms (ethical responsibility) and iv) making voluntary contributions to the communities in which they operate (discretionary responsibility). Since then, many authors have offered a variety of conceptualizations reflecting diverse perspectives on CSR (see Wood (2010) for a recent review). Despite the varying conceptualizations, nowadays authors tend to refer to CSR/CSP as the overall social responsibility of business, evolving from the principles of legitimacy, public responsibility and managerial discretion. This therefore leads to the conclusion that the concepts of CSR and CSP have emerged and evolved as a comprehensive managerial paradigm in which the “instrumental” exploration of business and society prevails.

Measuring Sustainability

When we come to the discussion of how sustainability is measured, as observed in Table 2, I identified several representative measures pertaining to the above-mentioned conceptualizations. In particular, what I observe is the existence of variety of methods aimed at capturing the complexity of the investigated constructs which ranges from referring to third party’s assessment such as the KLD Ratings, Inclusion in the DJSI as a proxy of sustainable organizations, Reputational ratings, through using GRI indicators, analysing sustainability reports as per the GRI framework, and analysing company’s annual financial reports, to

developing own measures including multi-itemed surveys, and combinations of interviews and analysis of annual reports. What is interesting to note is that scholars tend to use similar metrics, variables or techniques in order to capture the constructs pertaining to different conceptualizations. The main observations stemming from the research synthesis are presented in the following section.

Main Observations and Future Research Agenda

In this section I present the main observations of my research synthesis and pose emerging questions.

Observation 1: *Conceptualizations and measures of CS, Environmental management/ Ecological sustainability and CSR tend to converge*

The results of my literature review show that even having different historical trajectories, definitions and measures pertaining to the fields of CS, Environmental management/ Ecological sustainability and CSR tend to converge. Collectively, all those streams of research view sustainability as an effort of balancing economic, legal, environmental and social concerns. On a conceptual level, even though the stream of research categorized here as Environmental management/ Ecological sustainability adopts an unidimensional perspective on sustainability (i.e focus on the environmental aspect), it should be regarded as an integral part of the scholarship on sustainability performance measurement, because environmental issues are a subset of the broader three dimensional perspective (i.e. focus on the economic, environmental and social aspect) which the other streams of research adopt. Further, all these streams of research tend to make either explicit or implicit reference to the “institutional” definition of sustainability as per the Brundtland report (WCED 1987) when formulating their definitions. This phenomenon resonates with the so-called “next-stepping practice” (Gephart, 1988, p. 54) according to which papers within a stream of research tend to use past literature in order to position themselves in a specific debate and to ground their reason for existence. In

the context of this study, I translate this practice as a sign that irrespectively of the fragmentation of the literature into different schools of thought, this overarching reference reinforces the idea that nowadays we are discussing *similar* concepts, despite using diverse labels to position ourselves better in a specific research paradigm. While the connection between the next-stepping practice and the observation that different foundational conceptualizations tend to converge can be regarded as a rhetorical one, my results show that schools of thought pertaining to different conceptualizations, tend to operationalize their constructs with similar measures (see Table 2).

Based on these observations I suggest several recommendations and avenues for future research. Stemming from my findings, first, I would call for a more conceptual clarity in future research. This can be easily addressed simply omitting the citations of the institutional definition of SD, which is too broad politically rooted, when discussing measuring the sustainability performance of organizations. Instead, I propose that research in this direction should base its construct definitions and measures on the conceptualization given by CS scholars, namely that sustainability should be considered as a balance between social, legal, economic and environmental concerns of organizations' external and internal stakeholders. Second, accepting the fact that CS is a multidimensional construct, future line of research should focus on the streamlining the measures we use when treating these concepts. In this context, I propose that instead of engaging more efforts in developing measuring tools, putting more research efforts on replication studies could overcome exiting problems and inconsistent results. Third, what I observe is a prevalence of research efforts over the "instrumental" questions of whether it pays to be green. Instead of engaging further in this pre-mature question, a promising future line of research could be, to investigate more heavily the normative power of the SD concept to prescribe behaviour for businesses which seems to be an under-researched topic. In particular, drawing on the capital-based approach and the idea of the carrying capacity

of the ecosystem, future research should focus on the discussion and development of new vision and operationalization of the connections among the business, natural environment, and social aspects while accounting for that fact that the ecosystem capacity is normative to the growth of the other two systems (economic and social). Against this backdrop, development of measuring tools accenting for those issues can become the basis for prescribing business behaviour.

Observation 2: *Existence of diversity of measures with prevalence of third-party assessments used to measure sustainability*

While it is common knowledge that one of the most important challenges in the field of sustainability performance measurement is the identification and development of the suitable tools capable of capturing the complexity of the construct, my observations show that a standard method of measuring CS and CSR/CSP is currently not present. Different approaches measuring sustainability exists ranging from developing own measures, through document analysis to using third-party assessments (i.e. Ratings such as KLD, DJSI). What I observe is the prevalence of the use of third-party assessment as a proxy for measuring sustainable corporate performance. Such observation has been made also in earlier reviews (e.g. Montiel 2008; Montiel and Delgado-Ceballos 2014). Stemming from this observation I see as an implicit “standardized” measure for organizational sustainability the reliance of third-party assessments as a common measure capable to capture the complex nature of the corporate sustainability construct (e.g. KLD, DJSI). Because of that, two more important questions emerge: 1) How do third parties develop their sustainability ratings? And more importantly: 2) How do organizations actually measure and disclose on their sustainability practices?

Conclusion

Motivated by the still ongoing debate within the academic community regarding the meaning of sustainability and its adequate measurement at a corporate level, I conducted a

systematic literature review aimed at identifying the foundational conceptualizations of sustainability and its measurement employed in the management and organization field. To do that I have devised a novel multi-stage research design encompassing a combination of bibliometric mapping techniques and meta-ethnographic research synthesis to present the main trends within the field of sustainability performance measurement and attempted to set a future research agenda.

My reviews suggest that sustainability within the management and organization scholarship can be categorized into five foundational conceptualizations, namely: 1) Sustainable development as a macro perspective, 2) Ecological economics (capital-based approach) as a macro perspective, 3) Environmental management/ Ecological sustainability foundational perspective 4) Sustaincentrism, Corporate sustainability & Sustainable Organizations foundational perspective and 5) Corporate social responsibility /Corporate social performance foundational perspective. In order to formalize these findings, I have produced a synthesis of the main foundational conceptualizations and their representative measures (Table 2) and elaborated a historical progression of the identified conceptualizations. Finally, I have summarized my main observations regarding the state-of-the-art in the sustainability performance measurement and suggested areas for future investigation.

In particular, I observed that 1) even having different roots, nowadays the concepts of CS, Environmental management/ Ecological sustainability and CSR tend to converge in terms of both definitions and measures, 2) there is still a non-standardized method for measuring CS and scholars tend to use pervasively third-party assessments as a proxy for sustainable corporate performance. Stemming from these observations I have proposed several recommendations and emerging questions leaning towards shifting the research paradigm by moving beyond the “instrumental “questions about the link between corporate social performance and financial performance or engaging more efforts in devising sophisticated

tools for capture corporate sustainability performance which basically poses more methodological concerns and leads to inconsistent and incomparable results. Instead I suggest a more exploratory and normative approach on the topic, in particular, to focus our research efforts in studying critically how practitioners actually measure sustainability and to exploit more the normative power of the SD concept in prescribing a proper organizational behaviour which seems to be an under-researched theme.

In summary, the key contributions of the paper are the identification of the foundational conceptualizations of sustainability and their measurement in the management and organization literature and tracing their historical progression. Such an analysis provides a rigorous synthesis of patterns in the literature, leading to the emergence of new research avenues.

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3. Study 2: Opening the Black Boxes of Sustainability Reporting: How Reporting Affects Organizational Processes?

Abstract: Notwithstanding the long-lasting thread in management literature focusing on how businesses contribute to achieving sustainable development, it is only since the 1990s that measuring and reporting the sustainability performance of organizations have become an increasingly relevant topic for discussion among the business and academic communities. Albeit this strong interest the state-of-the-art in the topic reveals a scarcity of exploratory approaches for studying sustainability reporting and a relative inability of existing studies to holistically embrace a compelling theoretical perspective that can explain organizational behavior. Thus, this paper aims to disentangle the sustainability reporting dynamics in order to understand the organizational field forces that affect its realization.

Reinforced by an interesting thread in organizational research, which calls for a more in-depth focus on the complex dynamics embedded in the construction, use and effects of quantitative measures (ethnostatistics), this study employs a combination of first- and third-order ethnostatistical analyses and a grounded theory approach to investigate the practices of sustainability reporting at a large multinational company, rated as one of the industry leaders in sustainability for the past five years as per the Dow Jones Sustainability Indices. The obtained results revealed the existence of various types of organizational field pressures that are actively re-shaping corporation's sustainability agenda. Sustainability reporting can be conceptualized then as a balancing act of *complying* and *adapting* to the demands for the organization field (institutions, external stakeholders and other actors) and a strategic tool to maintain and control its legitimacy status. Further, SR is realized by a *co-creation* mechanism and thus theorized as a socially constructed reality obtained through an iterative process of numerous interactions, reflecting ongoing changes which re-shape and co-create the organizational field through the sustainability discourse.

Introduction

As achieving a sustainable development has been one of the major concerns of modern societies while it has been mainly interpreted as national and global goal, there is a growing debate on how businesses contribute to the sustainability objectives (Atkinson 2000). Even

though there is evidence about the business community's concerns for society for centuries, it is mainly since the 1950s that it has become a formal topic of investigation by scholars. More recently, measuring, managing, and reporting the sustainability performance of organizations has become a hot topic for discussion among scholars and practitioners which is manifested through the proliferation of efforts and initiatives to monitor progress towards corporate sustainability (CS), e.g. *frameworks* such as Global Reporting Initiative (GRI), *standards* which cover social and environmental criteria such as OECD Guidelines for Multinational Enterprises, ISO14001, etc., *ratings* and such as the the Kinder, Lydenberg, Domini Research & Analytics (KLD) and other sustainability *indices* (for review see Siew (2015)).

Sustainability reporting (SR)⁶ is increasingly recognized as an essential channel through which organizations aim to meet the demands of diverse set of stakeholders' (e.g. employees, customers, suppliers, investors, public authorities) needs for information on the economic, environmental, and social impacts that stem from their operation. Extant literature has identified the potential added value for organizations of reporting on sustainability such as i) being a source of legitimation of corporate activities, ii) increase of brand value and reputation, ii) valuable source of benchmarking against competitors, iii) a way of signaling competitiveness, iv) adding to employee motivation and v) supporting internal information and control processes (Herzig and Schaltegger 2006). On the other hand, there exist variety of motivations for managers to engage voluntarily in SR practices such as to comply with legal requirements and community expectations, to manage particular stakeholder groups, to attract investments, to comply with industry requirements among others (Deegan 2002). Nevertheless, the possibility of the existence of other motivations to engage in reporting actions, a prevailing

⁶In what follows the term sustainability reporting (SR) will be used interchangeably with other terms carrying the same meaning such as non-financial reporting, corporate responsibility reporting, triple bottom line reporting.

view embraced by majority of researchers as motivation behind SR is the desire to legitimize an organization's operation.

This study aims to disentangle how legitimacy is constructed and maintained through SR. To explain such complexity three perspectives appear. Institutional theory in general favors the idea that the adoption and retention of many organizational practices are often more dependent on social pressures for conformity with the external environment than on technical pressures for economic performance. This view suggests that corporate activities do not necessarily follow a business rationale but instead answer to institutionalized expectations (DiMaggio and Powell 1983). Strategic legitimacy theory views legitimacy as an operational resource and assumes a high level of managerial control over the legitimation process (Suchman 1995). According to this view corporations may influence the social construction of the belief systems and norms in the field they operate (Dowling and Pfeffer 1975). A third theoretical perspective, grounded in the social constructivist thinking (Berger and Luckmann 1966) suggested that a socially constructed reality is the product of an evolutionary process of individuals' multiple interactions and acting on their interpretations to create a generally accepted meaning. Under this perspective, SR will be achieved through an iterated discourse process from individuals' and organizations' interpretation of the dynamic societal expectations, through constructing meanings from those interpretations and reflecting such constructions in their public discourse, followed by re-iterating this cycle based on the presentations of others. Thus, it is expected that organizations' representation of what constitute sustainability as manifested by its sustainability disclosure may not only shape, but may itself be shaped by a more global discourse of which it is a part. Embracing the theoretical arguments stemming from those perspectives to the realm of SR, little is known about the ways in which SR is realized and what are the forces that shape organizational discourse. What is missing from prior research is more in-depth exploratory approaches to studying SR (Hahn and Kühnen 2013). Thus, the

research questions I pose in this study are: 1) *What is the process of SR?* and 2) *What are the forces that affect the way the process is organized and realized?*

The broad objective of the study is to disentangle the SR dynamics and understand the organizational field forces that affect its realization. Such an effort is reinforced by the ethnostatistical thread in organizational research which argues that the processes of measurement (data construction, analysis and final presentation) and the construction of metrics imply tacit assumptions and informal practices employed by metrics producers (Gephart 1988; 2006). Thus, while performance measurement and reporting are proliferating, the interpretive processes and practices that are involved in those processes have been underexplored (Power 2004; Vollmer 2007). There are two main implications stemming from this: 1) if not challenged, measurement and reporting may fall in the trap of being “black boxed”⁷, which makes its use smoother but hampers its ability to adapt to changing contexts and be a valid representation of reality; 2) disclosure may have a “performative” power, in the sense that it is actively engaged in the constitution of the reality it describes (Callon 2007), and thus it can ultimately re-shape the micro-(i.e. the organization) and macro-environment (i.e. the industry and the economy as a whole) in which it is realized. Within the sustainability performance measurement field, to this date, however, the available body of knowledge fails to address the issue of how discourse is constructed, given meaning and enacted in organizational practices.

To answer these pending questions, this paper is informed by an ethnographic research undertaken over a 7-months period in a large multinational manufacturing company that has been one of the industry leaders in sustainability for the past five years as per the Dow Jones

⁷ Black box is a technical term for a device, system or object when it is viewed in terms of its input, output and transfer characteristics without any knowledge required of its internal workings. Opening the black box thus is an attempt to understand the internal workings of a given system. I refer here to Latour’ blackboxing (1999, p. 304): “the way scientific and technical work is made invisible by its own success. When a machine runs efficiently, one need focus only on its inputs and outputs and not on its internal complexity. Thus, paradoxically, the more science and technology succeed, the more opaque and obscure they become”.

Sustainability Indices (DJSI). The data analysis employed represents a novel research process encompassing a combination of first-and third- order ethnostatistical analyses⁸ and a grounded theory approach to offer an in-depth investigation of the practices of SR.

Such un-black boxing of the SR practice can have several implications for the above mentioned different research streams and methods. First, it contributes to the literature on SR by offering an in-depth description of the SR production. Therefore, it shifts the focus from the long-lasting investigation of the determinants of the adoption, extent and quality of SR to a more exploratory one – i.e. the study of the micro-dynamics of the process and how it is realized. Second, it aims to disentangle how different theoretical perspectives and paradigms (strategic, institutional and constructionist) underpin the process realization. Finally, the study contributes to the ethnostatistical method by being potentially one of the first applications of ethnostatistical analysis in the world of practitioners to offer a real-time ethnography of the production of measurement-related discourse.

I proceed by problematizing the central tensions in the research on SR by exploring different theoretical positions that can shed lights on those tensions. I then outline the methodology and present the results of the study. On this basis, I develop a conceptual theoretical framework explaining the relationships and mechanisms underpinning the SR practice and conclude by discussing the implications and limitations of the study, and offer avenues for future research.

Literature Review

Current Status of the State of the Art in Sustainability Reporting

Extant literature has widely acknowledged that corporations are exposed to an increased stakeholders' demand for accountability and transparency. A central channel through which

⁸ See [Methodology Section](#) for description of the ethnostatistical analysis employed in this paper and [Study 3](#) for a more detailed discussion on the ethnostatistical method.

organizations attempt to meet these needs is through SR. Disclosure of sustainability information grants several benefits to organizations such as enhancing legitimation of corporate activities, increasing brand value and reputation, being a valuable source of benchmarking against competitors, signaling competitiveness, motivating employees and supporting internal information and control processes (Herzig and Schaltegger 2006). Moreover, recent survey of trends in corporate responsibility reporting confirmed an increased sustained growth in reporting among the world's 250 largest companies by revenue from 35 % in 1999 to 92% in 2015 (KPMG 2015). Nowadays, it is clear, that companies' disclosure of non-financial information has become more of a norm than a voluntary act and incorporating social and environmental responsibility into business activities a standard business practice. Such increasing trend has not been left behind academic interest.

Historically, research interest in SR can be traced back as early as the 1970s mainly in the realms of the accounting discipline. Traveling through several shifts in focus from complementing financial reporting with social reports, through focus on environmental issues towards the 90's trend of considering both the social and the environmental dimensions simultaneously in a joint report published alongside financial reports (Fifka 2012; Deegan 2002) nowadays SR (integrating economic, social and environmental aspects) is a prevailing business practice adopted by organizations and represents an ongoing topic for discussion among wider streams of literature (i.e. accounting, organization and management). SR has been studied from different perspectives encompassing i) a major body of *empirical research investigating the determinants* of the adoption, extent and the quality of SR, ii) a significant body of research investigating SR as a *proxy of organizational sustainability* and iii) a *critical research stream* which implicitly assumes that SR is a social construction and examines the rhetorical power of language. Those different perspectives are underpinned by two different

epistemological orientations: while the first two perspectives fall in the realms of objectivism, the third perspective lays on the opposite site of the continuum, i.e. constructivism.

Within the objectivist orientation extant literature on SR showcases that research efforts i) often still seems far from considering truly complete SR on all three dimensions of sustainability (i.e. focus on triple bottom line (TBL) reporting is considered to be still in its infancy with majority of analysis leaning towards investigating environmental and social issues in isolation instead of addressing integrated reporting or inter-linkages between all three dimensions of sustainability); ii) revealed relative scarcity of exploratory and confirmatory analyses as research tools employed by scholars as compared to documents analysis, and iii) with some exceptions studies tend to fail to holistically embrace different theoretical explanations (legitimacy, stakeholder, and/or institutional theory) of sustainability practices which in some cases produced mixed results (Hahn and Kühnen 2013). Overall, the majority of the extant research was engaged to explore the factors determining the adoption, extent and the quality of SR and used different theoretical reference points to position their analyses. On the other hand, in the realms of organization and management literature, the examination of SR has been more of a by-product of a more central question which Margolis and Walsh (2003, p. 268) described as the “30-year quest for an empirical relationship between a corporation’s social initiatives and its financial performance” being a source of measurement of organizational sustainability. Thus, while the existent literature has been pre-occupied to describe the determinants of SR and to search for more sophisticated measures to operationalize organizations’ sustainability performance, the stand-alone question of examining the micro-dynamics of SR practice remains underexplored topic.

Along with the above-mentioned macro streams, an emergent stream of critical research started to approach SR through the means of discourse analysis (i.e. Livesey 2002; Higgins and Walker 2012; Tregidga *et al.* 2014; Higgins and Coffey 2016). The implicit common ground

of this line of research lays in basic premise that SR discourse does not merely reflect the organizational reality and focuses on the discourse as a key means through which social actors construct and influence the world in which they operate. Embracing this premise this stream of research resonates with the notion of socially constructed reality (Berger and Luckmann 1966). According to this notion, reality is not a pure reflection of occurring events but a result of multiple social interactions in which meanings and interpretations are constructed and re-enforced through *discourse* to form shared assumption about reality (Mizruchi and Fein 1999). In this context, a corporation's representation of what constitutes sustainability communicated by the means of its disclosure may not only shape, but may itself be shaped by a more global discourse of which it is a part. This calls for a closer look at the micro-dynamics of SR practice which can allow for solving existing theoretical tensions in the extant literature which is unfolded in the subsequent section.

Organizational Legitimacy as an Interplay between Institutional, Strategic and Constructionist Perspectives

As the reviewed literature suggests corporations seek to establish and constantly maintain a certain legitimacy status and one of the ways to do that is through their voluntary sustainability discourse. Organizational legitimacy has emerged as an essential but often loosely defined and understood construct in organization and management literature (Suddaby, Bitektine and Haack 2016). Despite being highly debated, the generally accepted definition of legitimacy is the one given by Suchman (1995, p. 574), who defines it as a “generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions”. Drawing on his work, legitimacy is first a *generalized* and *collective* perception – i.e. “represents an umbrella evaluation that, to some extent, transcends specific adverse acts or occurrences” (Suchman 1995, p. 574). Further, although it is composed of legitimacy judgments of

individuals (Bitektine 2011), it is aggregated at the collective level. In this respect, while individual events or actions may impact the actual or perceived legitimacy, legitimacy transcends the specific and while individual legitimacy judgements may diverge at a micro-level (individual level) they tend to converge at the macro-level (collective level) thus making legitimacy an aggregated, collective evaluation which transcends individual judgements (Bitektine and Haack 2015). Second, legitimacy is a *perception* because it “represents a reaction of observers to the organization as they see it” (Suchman 1995, p. 574). Third, it is *socially constructed* due to its ability to “reflect a congruence between the behaviors of the legitimated entity and the shared (or assumedly shared) beliefs of some social group” (Suchman 1995, p. 574). Essential to this definition is the social aspect that implies a certain degree of agency involved in the process in which legitimacy is constructed (Suddaby *et al.* 2016).

For analytical clarity, it is important to disentangle here the existence of three perspectives on organizational legitimacy as described by Suddaby *et al.* (2016), namely legitimacy-as-property, legitimacy-as-perception and legitimacy-as-process. According to Suddaby *et al.* (2016): i) when viewed as a property, legitimacy tends to be theorized as an asset or resource which is formed as a product of two main actors – the entity and its external environment. Therefore, legitimacy occurs as an outcome of the degree of fit between the organization’s structure and the normative expectations of the surrounding environment; ii) the legitimacy-as-perception stream treats legitimacy as a form of evaluation – i.e. a product of the interactions between the individual and the collective level to form a generalized judgment about the appropriateness of actions of an entity. Within this thread of research, individual and collective cognition is the fundamental mechanism through which legitimacy is constructed; iii) in the legitimacy-as-process perspective, *legitimation* is viewed as an interactive process, which is a product of interaction of multiple actors from the organizational field. Therefore legitimacy is

the product of how that congruence is achieved. Under this view, the agentic, purposive role of actors is a central variable which explains how legitimacy is socially constructed.

In this study, I embrace the processual perspective on legitimacy to focus on how legitimacy is constructed and maintained through SR. To explain such complexity three theoretical alternatives emerge. According to the *strategic legitimacy theory* (Suchman 1995) there exist a high level of managerial control over the legitimation process (Oliver 1991). Further, it is assumed that “organizations are able to make strategic choices to alter their legitimacy status and to cultivate the resource through corporate actions, by adapting their activities and changing perceptions” (Aerts and Cormier 2009, p. 3). Therefore, it is suggested that corporations can influence the social construction of the belief systems and norms in their field (Dowling and Pfeffer 1975) and one of the ways to do so is through discourse.

In contrast, under the *institutional perspective* (DiMaggio and Powell 1991) managerial agency is somehow limited and “constrained by the same belief systems that determine audience reactions” (Suchman 1995, p. 576). In this realm, drivers of organizational action are exogenous to organizations themselves (Wooten and Hoffman 2008). This perspective suggests that corporate activities do not necessarily follow a business rationale but instead answer to institutionalized expectations. Therefore, organizations will shape their discourse to conform to the belief systems and rules prevailing in the social environment, resulting in isomorphic behavior. Thus, SR within will reflect the beliefs and norms of acceptable behavior in the larger social system of which they are a part. Within the institutional tradition, a central tension is the so-called “structure-versus-agency” debate (Hirsch and Lounsbury 1997) which asks whether organizational behavior is primarily driven by macro forces or organizational agency. The structuralist perspective (Hoffman and Ventresca 2004) predicts that organizations will become gradually isomorphic as they implement templates for organizing drawn from their institutional environments to create and maintain legitimacy (DiMaggio and Powell 1983;

Tolbert and Zucker 1983). Proponents of the agency view, however, propose that organizations can exert a certain degree of control over the institutionalization process whereas increased institutionalization can drive divergence from the norms (DiMaggio 1988; Oliver 1991) and lead to institutional entrepreneurship defined as the “activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones” (Maguire *et al.* 2004, p. 657) and institutional work defined as the “purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions’ (Lawrence and Suddaby 2006, p. 215). The central agency-versus-structure debate has been addressed by Heugens and Lander’s (2009) meta-analytical enquiry who argued that the homogenizing effect of the isomorphic pressures should be accepted as a stylized fact. More importantly, the authors identified several areas of future research by calling for a more in-depth look at the processual dimension of isomorphism (i.e. how organizations experience isomorphic pressures and manage them). In this context, the literature on institutional work and entrepreneurship poses another interesting question, known as the paradox of embedded agency (e.g. Zietsma and Lawrence 2010), namely that as institutions are, by definition, stable designs and deviations from those are punished, how it is possible that institutional work takes place and that institutional entrepreneurs are able to construct new practices. This question can have a plausible explanation in what follows.

Another theoretical orientation, *social constructionism* (Berger and Luckmann 1966), offers an alternative perspective for our questions at stake. According to this position socially constructed reality is the product of an evolutionary process of individuals’ multiple interactions to create a generally accepted meaning. Under this perspective, it is expected that the meaning of ambiguous subjects such as sustainability will converge over time. This will be achieved through an iterative process in which individuals and organizations interpret and construct meanings, and reflect such constructions in their public discourse. This can lead to

reflexive shifts in societal beliefs. Bringing this argument to the realm of SR, it is expected organizations' representation of what constitute sustainability may not only shape, but may itself be shaped by the more global discourse of which it is a part. Consequently, constructing and maintaining legitimacy would require taking active part in the global discourse and in the re-formulation, maintenance of disruption of institutions (by institutional work). Moreover, when viewed as a socially constructed reality, SR can represent a perfect platform for institutional work to take place as long as discourse is not sanctioned by law provisions.

To disentangle the above stated theoretical tensions, this study poses the following research questions: 1) *What is the process of SR?* and 2) *What are the forces that affect the way the process is organized and realized?*

Methodology

This study combines ethnostatistical analysis (Gephart 2006; 1988) with grounded-theory building (Glaser and Strauss 1967) to investigate practices of SR employed by organizations. In particular, it uses first- and third-order ethnostatistical analyses to explore the practices of production of SR with a specific focus on the discourse which is then followed by grounded theorizing. Gephart (1988, p. 9) defines ethnostatistics as “the study of the construction, interpretation, and display of statistics in quantitative social research” which implies three levels of analysis: 1) first-order ethnostatistics investigates how statistic or measurement is created through ethnography, 2) second-order ethnostatistics investigates the assumptions and the appropriateness of the statistical techniques used when elaborating numerals and 3) third-order ethnostatistics examines the rhetorical aspect of quantification. Relevant to my object of investigation – i.e. SR, I employ respectively first-and third-order ethnostatistical analyses which translates to i) producing thick description of the process of SR and ii) analysing the SR discourse. More specifically, under the first level ethnostatistics I am studying how reporting is realized by observing the activities of the producers of SR,

investigating the meanings they give to that activity and the surrounding contexts. In the third level analysis, I treat SR as a literary document and focus on how and whether language is used as a tool for persuasion and in general how language is used to convey specific interpretation of emerging phenomena.

Research Setting

This research was informed by the unique opportunity to explore the work of members of the Sustainability Department based in the headquarter of a large multinational company which has been one of the industry leaders in sustainability for five consecutive years (2009-2016) in the industry in which it operates according to independent rating agencies (RA). This setting provided an excellent avenue to answer my research questions for three main reasons. By the time of the investigation the procedure of SR adopted by the company had become a routinized activity. The company published sustainability reports in accordance with the Global Reporting Initiative (GRI) Standards and Guidelines⁹, considered as the *defacto* standard for preparing sustainability reports, for thirteen years, resulting in an experience in SR almost from the first publication of full version of the guidelines in 2000. Second, for the industry in which the company operates, SR is considered to be a well-established business practice according to research conducted by KPMG (2015), in which the it scored above the global industry average on a number of criteria such the overall quality of disclosed information and the availability of assurance statements among others. Methodologically, these conditions grant that the research relies on the logic of theoretical sampling falling under the condition of presenting an extreme exemplar and an opportunity for an unusual research access (Yin 1994). Also, the situated analysis (Suchman 1987) adopted here provided a rich avenue to capture the micro-level

⁹ The Global Reporting Initiative (GRI) a non-profit organization which develops a rigorous international standard for the reporting of economic, environmental, and social performance.

dynamics of the SR meta-routine (Feldman and Pentland 2003) which gave insights not only from within but also across a number of routines constituting the meta-routine realization.

Data Collection

This study employed data collection methods commonly used for ethnographic research (e.g. Van Maanen 1979) such as archival data, participant observation, formal in-depth semi-structured interviews and informal conversations. Whilst the actual participant observation period spanned through 7 months from September 2016 to March 2017, I could benefit from an early pre-field stage aimed at familiarization with the work of the Sustainability Team (ST) and the overall company organizational structure through the means of informal conversations with the Head of the Sustainability Department and other team members. Those initial insights were complemented using secondary sources such as the company's sustainability reports and website information, along with familiarization with the GRI-G4 Guidelines¹⁰ for preparing sustainability reports. This pre-field stage lasted for 3 months before actually entering the field. In line with the common practice of conducting ethnographic research this pre-familiarization phase was done with caution in order to be able to omit any *a priori* assumptions and any implicit hypothesis testing and instead allows for entering the field with "little familiarity about its *inner* workings" (Gioia and Chittipeddi 1991, p. 435, emphasis added). Over the participant observation period I made regular site visits ranging from 1 to 3 days in length lasting on average of 7-8 hours per day which included participating in team meetings, teleconferences and conducting formal interviews and informal talks. During those visits, I immersed myself in a vibrant yet highly organized working environment in which the ST members did their routine activities. The Sustainability Department offices were located in the headquarters of the organization, in which one could feel the "corporate spirit" from the entrance door, through

¹⁰ The GRI Sustainability Reporting Guidelines are periodically reviewed to provide the best and most up-to-date guidance for sustainability reporting. G4 is the 4th update of the GRI Sustainability Reporting Guidelines and offers Reporting Principles, Standard Disclosures and an Implementation Manual for the preparation of sustainability reports by organizations (GRI, 2013).

the corridors and the offices to the dining facility. At the reception, I was given a visitor's pass and showed to the offices in which the ST was located. When passing through the corridors, I could hear other employees having teleconferences. And during lunch breaks which I had together with the ST members I could see a dining facility full of white-collar employees. During my visits, I had a working desk located next to the working desk of my main informant. Occasionally we would move to different rooms in order to have teleconferences or team meetings. During the team meetings and teleconferences I was preparing quick notes focusing on the content of the conversations, interactions and actions of the team members. Moreover, in my filed notes I was trying to recreate also the looks of internal company documents used during the meetings and which were not possible to be shared with the researcher for confidentiality reasons (such as data servers, Key Performance Indicators sheets, and procedures). Those field notes were expanded in more detail shortly after the field visits in order to ensure the reliability of the data while the memories were still fresh. Additionally, where necessary the field notes were annotated with researcher's post-factum clarifications about specific terms and abbreviations used by the team following a specific "native" rhetoric with which I become gradually more familiar with through interactions and triangulating with company documentation.

The participant observation was supplemented by 15 formal semi-structured and unstructured interviews (5 unstructured interviews held with the Sustainability Head and Senior Sustainability Specialists aimed at familiarization with the company's history and work process pertaining to the practice of SR), 8 semi-structured interviews with the core members of the ST responsible for preparing and realizing the company sustainability report (including the Sustainability Head and the 7 Senior Sustainability Specialists focused on investigating the process of SR and its determinants and 2 unstructured interviews with the Sustainability Head and 1 Senior Sustainability Specialists (aimed at exploring more in-depth an emergent

phenomenon from the initial data analysis). The conducted interviews followed different protocols: the unstructured interviews aimed at familiarization with the company's work process (although following a prepared interview guide) were more open in nature to produce rich narratives of informant's accounts on the process of work and its historical development. Due to my theoretical focus on the dynamics of the process the semi-structured interviews focused on eliciting the members' accounts of the process of SR and its determinants I followed a critical incident technique (CIT) for interviewing (Flanagan 1954). The CIT is an interviewing technique following rigorous procedures aimed at extracting behavioral patterns based on the identification of critical incidents. By an *incident*, it "is meant any specifiable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act. To be critical the incident must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effects" (Flanagan 1954, p. 327, emphasis added). Adapting the technique to the research questions at stake, the informants were encouraged to talk about specific events (incidents) that made them change a specific routine pertaining to the SR practice.

The data collection was complemented using additional secondary sources such as the company publicly available data in the form of official documents available in the company website, previous sustainability reports, press releases and news articles, rating agencies' questionnaire and reports, competitors' websites and sustainability reports. The use of those additional resources was made constantly throughout both the data collection and analysis process to ensure the validity of the obtained data by cross verifying the same information. The data collection process encompassing field notes and interview data generated approximately 300 pages of text.

Data Analysis

While the initial data analysis began during the field work, its completion and refinement was done at the end of the project marked by the publication of the current's year sustainability report. After gaining enough detachment from the fieldwork I was able to complete my data analysis and begin my writing in a more neutral state. The data analysis was conducted in an iterative fashion consistent with an inductive, grounded theorizing approach (Glaser and Strauss 1967; Eisenhardt 1989) which involved developing insights by analyzing in an iterative process the primary and secondary data, emerging observations, and existing literature (Locke 2001). The analysis followed the exemplar first- and second-order analysis approach (Corley and Gioia 2004) which involved i) extracting recurrent concepts and themes through *in-vivo* codes (i.e. assigning labels to a section of data, using a language taken from that section of the data) and descriptive coding (i.e. summarizing the basic topic of a passage of qualitative data) and grouping them into emergent categories (first-order analysis), followed by ii) moving the analysis to a more theoretical level aimed at extracting the explanatory dimensions from the emerging patterns of data via seeking for relationships between and among first-order findings to facilitate assembling them into higher-order themes (second-order analysis). The resulting data structure (presented in Table 3) reports the data from the obtained first-order concepts through descriptive coding to the second-order theoretical observations and constructs that I extracted from them. Table 3 provides an overall snapshot of the observations and relationships reflected in the emergent theoretical framework. Consistent with the methods of inductive inquiry, the analysis followed several stages of iteration in which the theoretical framework underwent refinements.

Table 3: Data Structure

Empirical Observation (First-order concepts)	Theoretical Observation (Second-order themes)	Theoretical Constructs (Overarching dimension)

Benchmarking with competitors as a source of defining material content and improving performance	Benchmarking as source of formulating material content	<p style="text-align: center;">COMPLIANCE <i>(Compliance with field level demands drive change)</i></p>
Using institutional frameworks and guidelines as a source of formulating material content		
Rating agencies' feedback as a source of formulating material content and improving performance		
Referring to the sustainability plan as a source of formulating material content and setting targets		
Institutional demands drive changes in the reporting process	Institutional pressures drive potential changes in the process	
Changes in the rating agency questionnaires drive changes in the reporting process		
Incremental changes in the process are implemented for efficiency reasons and to comply with changing institutional demands	Changes are inherent in the process and are provoked by field level pressures (institutions, business requirements and industry trends, global trends)	
Milestone changes in the process are implemented to comply with institutional demands		
Milestone changes in the process are implemented to reflect changes in the business environment		
Conceptual changes in the process are guided by emerging global trends/external debates		
ADAPTATION <i>(Elaborating disclosure reflects both institutional demands and company specific targets and is adapting to changes in external debate)</i>		
Elaborating of the discourse demands ensuring consistency with set business targets	Elaborating of the discourse demands ensuring consistency in reporting the content which is material provided the set targets and institutional demands	<p style="text-align: center;">ADAPTATION <i>(Elaborating disclosure reflects both institutional demands and company specific targets and is adapting to changes in external debate)</i></p>
Elaborating of the discourse demands ensuring consistency with institutional frameworks		
Elaborating of the discourse demands ensuring consistency with the identified material content		
Global trends as a sources of framing disclosure	Elaborating of the discourse is complemented by external sources	
Benchmarking with competitors' disclosure is a source of good practice of framing discourse		
Implementing new ideas or visions requires relevance with the business strategy	Implementation of new initiatives/discourse is reflected in the company's business strategy and culture	
Implementing new ideas or visions requires relevance to the company's culture and identity		

Organizations give feedback to rating agencies' analysts	Organizations affect changes in the rating agencies' questionnaires indirectly	CO-CREATION <i>(Organizations as actors capable of influencing the organizational field)</i>
Organizational rhetoric reflects conceptual changes and promote recent trends	Potential power of organizational rhetoric to influence the ongoing debate	

Findings

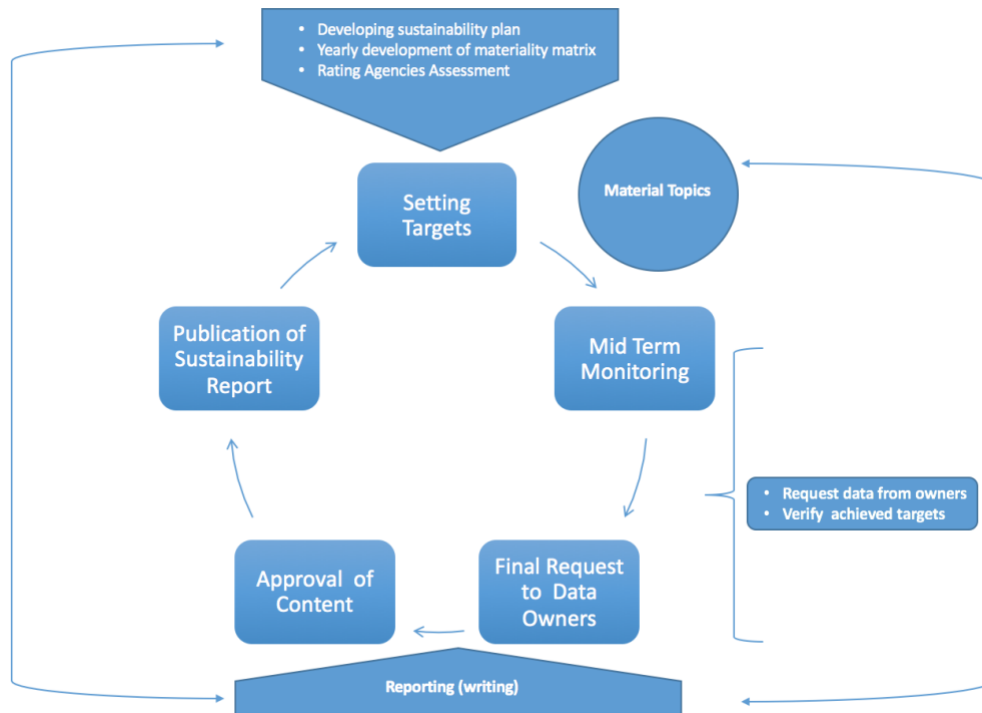
In what follows I present together my first- and second-order findings comprising of empirical observations and the theoretical insights derived from them as suggested in Eisenhardt and Graebner (2007). A summary presentation of the analyzed data is given in the Appendix. In the remainder of the section I explain step by step how each empirical observation lead me to the respective theoretical observation and constructs giving an answer to my research questions, namely 1) *What is the process of SR?* and 2) *What are the forces that affect the way the process is organized and realized?*

The process of Sustainability Reporting

The process of sustainability reporting at the focal company was characterized as a “365-day-a-year” work aimed at achieving set sustainability targets related to the sustainability commitment of the company. An overview of the process as it unfolded from the primary data is shown in Figure 5.

The process of SR observed in the focal organization resonates with what Feldman and Pentland (2003) refer to as a more basic understanding of a meta-routine which is “the inherent capability of every organizational routine to generate change, merely by its ongoing performance” (Feldman and Pentland 2003, p. 94).

Figure 5: Sustainability Reporting Process



This meta-routine unfolds in 3 milestone steps that at first glance resembles any reporting routine following 1) data collection, 2) data processing and 3) reporting. Those steps observed in the SR routine however emerge as a purely operational activity which is dependent on several stages which are preliminary to this process, namely the 1) referring to the sustainability plan, 2) yearly development of a materiality matrix and 3) implementing inputs from the yearly assessment of RAs.

Benchmarking as Source of Formulating Material Content

The above mentioned preliminary stages in the SR routine have been translated to the theoretical observation that formulating the material content is a result of different types of benchmarking activity, namely benchmarking with competitors, referring to institutional frameworks and inputs from third-parties' assessment combined with a reference to the developed sustainability plan. In the case of the focal company the sustainability plan has been recently revised to contain long-term sustainability targets to be achieved by 2020 with the “commitment of conducting yearly re-analysis to ensure their continued relevance towards

incorporating of economic, environmental and social aspects into business practices that at the same time reflect ongoing changes in the operating sector” (Sustainability Report, 2014). As explained by a Senior Sustainability Specialist responsible for the monitoring of sustainability targets achievements:

“We started 2 years ago to look again at the sustainability plan in order to change our vision from medium- and short-term target to long-term targets. We developed in 2014 a sustainability plan that covers all the functions of the company and it was approved by the Board of Directors.” (SS5, Interview, 2016)

The process of referring to the sustainability plan however is not a straightforward sequence of setting targets and monitoring progress against their achievement but it unfolds as a continuous process characterized by proposing and updating targets which ensures their continuous relevance to the external environment and its consistency with the organization’s business strategy. This inference was confirmed in the data triangulation process, illustrated in the following statement retrieved from the company’s 2016 sustainability report from:

“In 2016, an analysis of [Company]’s sustainability commitments and targets was completed to ensure their continued relevance and alignment with both the Group’s direction and the United Nations Sustainable Development Goals (SDGs)” (Sustainability Report, 2016)

As the narrative shows the aim of the sustainability plan is to be a cornerstone that guides the reporting process (i.e. presents targets against which a progress is tracked), but at the same be inherently flexible to allow adaptations to the ongoing changes in the environment.

Another milestone in the reporting process is the development of a materiality matrix informed by a materiality analysis. Materiality analysis is standard procedure employed in the SR process and is an activity by which the organization identifies and prioritizes the most material aspects, i.e. those which are important for “reflecting the organization’s economic, environmental and social impacts, or influencing the decisions of stakeholders“ (GRI-G4, 2013) to report on, based on the input from both internal and external stakeholders. Besides inputs from stakeholder engagement activities the determination of the material topics also incorporates factors such as “strategic priorities, corporate values, industry trends, information

of interest for investors and societal standards and expectations “(Sustainability report, 2016). The materiality matrix therefore is a living object, the output of which changes every year reflecting both the external stakeholders’ demands and internal business requirements.

The third preliminary stage is realized through the incorporation of RAs’ feedback in the formulation of material topics (the most important topics on which the company will report on) and seeking avenues for improvement of the company performance by potentially incorporating this feedback in the business activities. As explained by a Senior Sustainability Specialist responsible for improving the sustainability performance:

“...According to the feedback that we receive from rating agencies I identify main areas for improving and then I compare these areas with competitors' sustainability reports. And then I identify the most relevant initiative that I can find in the [competitors'] sustainability reports and use this as an example of best practice to be showcased to my colleagues...I try to verify if there are any opportunities to implement these kinds of initiatives in our company, but also if there are such initiatives for which I don't know. And if they agree we try to implement during the year...” (SS2, Interview 2016)

It is made evident that reporting efforts don't have the sole function of collecting material information to be disclosed among interested stakeholders but also drives towards continuous efforts for improvement through launching new initiatives. It is essential to stress the role of the third-party's assessment (i.e. RA) and competitors' disclosure in influencing the direction of setting sustainability goals. While competitors' disclosure can serve as a source of extracting best-in-class templates for conducting business activities, the role of RAs can be seen as one of the institutional stakeholder which have the power to set rules for conduct and potentially punish non-compliant behavior. This inference was made evident in one of the team discussions addressing the challenge of aggregating data that measures the amount of donations to evaluate the benefit for local communities. The main challenge in this task was that since raw data were collected in different ways from each business entity within the group (some of the entities pull data from a financial system while other entities prepare manually a spreadsheet reporting all realized donations and categorizes them in different categories such as education, social welfare, health, etc.), the aggregation of data and specifically its

categorization required harmonization. One of the milestone points in this discussion was marked by the decision:

“Let’s wait for the analysis from Robeco¹¹ in order to clean up the process. We may lose a point” (SS1, Field Notes, 2016).

In another discussion, this inference was also made evident as per the following quote:

“..CDP¹² last year started asking for CO2 emissions from our plants and we have never collected *data in that way*. Actually, it was possible to calculate it but it was a very detailed analysis that would take a lot of time. And in terms of scoring it was not giving us any more points. So, we decided to wait and publish such kind of analysis this year, not last year. We decided not to fill in the question in the questionnaire, because it was not giving us any punishment...and was just giving us a lot of work - for reworking data.” (SS6, Interview, 2016)

As anticipated in the beginning of the section the rest of the process follows a straightforward logic of monitoring, collecting data, elaboration on the content and reporting. After having identified the most material topics to report on, the sustainability team performs two times a year a monitoring activity to verify the progress made on targets. This process is preliminary to the formulation of the texts that is then subject to hierarchical steps of approval for publication from the data owners, through the review of the Legal Department and finally to the Board of Directors and the Sustainability Disclosure Committee (a more detailed discussion of the writing stage is given the Section The Construction of Discourse in the Sustainability Reporting Process).

In summary, as illustrated in Figure 5, the overall process of SR is continuous and living, in the sense that both inputs and outputs are interconnected and interdependent whilst mutually shaping each other on a cyclical basis (mid-term or yearly). In this process, it can be observed that the prominent role of institutions (i.e. frameworks, RAs) and external stakeholders (i.e. competitors and other actors, being part of the materiality analysis and the benchmarking

¹¹ RobecoSAM is an investment specialist focused on sustainability investing. It supports the calculation of the Dow Jones Sustainability Indexes.

¹² CDP (formerly the Carbon Disclosure Project) is an initiative, which provides an independent assessment of companies approach and performance in combating climate change. It publishes CDP’s Climate A and Water A Lists which comprise of companies identified as having an A grade for their actions in mitigating climate change and managing water risks.

activities) have the capacity to impact, re-shape, and to set new directions in the disclosure process.

Changes in the Process of Sustainability Reporting

As observed, several elements of the process are stable and could be described as purely operational activities such as monitoring of set targets, collecting data and reporting. However, changing elements in the process prevailed. This invoked a more in-depth investigation of forces that drive those changes. When asked explicitly to describe the context in which changes occurred in the process, it has become evident that changes have a prominent role in re-shaping the reporting routine and re-defining business activities and are provoked by different forces as explained in more details in the subsequent sections.

Institutional Pressures Drive Potential changes in the Process

Not surprisingly, the fact that nowadays implementing sustainable practices has become institutionalized (Risi, 2016) implies that SR should also be an institutionalized activity governed by institutional frameworks. Therefore, institutional pressures drive changes in the reporting routine. What is interesting in the case of SR observed at the focal company, however, is that institutional demands (coming from the GRI and the RAs) can bring changes in the process which stems from the that fact that changes are inherent in the life of institutions. This has been demonstrated in the following statement:

“Every year rating agencies are improving their questionnaire. So, you publish the sustainability report and then in April, normally, you discover that they are asking new stuff which you didn't include in the sustainability report... [For example] they started asking about environmental violations. And we had never collected that data *in that specific format*, we were collecting violations in general. So, we started to collect specific environmental violations...” (SS6, Interview, 2016)

It has been made evident that the institutional demands play an active role in re-shaping the process of SR. More illustrative evidence supporting this theoretical observation can be found in the Appendix.

Changes are Inherent in the Process and are Provoked by Field Level Pressures (Institutions, Business Requirements and Industry Trends, Global Trends)

As anticipated in the previous section changes are inherent in the observed process of reporting. For analytical reasons, changes described by the informants, were categorized into three main categories: incremental, milestone and conceptual changes.

Majority of the reported changes were *incremental* and operational in nature such as changes aimed to improve the effectiveness of day-to-day-communication, improvement in the process of requesting data from data owners, and improvements in the measurement tools used (i.e. fine-graining or developing new measuring tools). An example of such changes is best illustrated in the following quote:

“Sometimes we have the perception that even if our data respond to specific indicator, these are not exhaustive or are not quite aligned with the framework requirements [GRI]. For example, in order to provide some data for sustainability application in suppliers’ organizations we implemented a new tool... So, we started to change the sustainability self-assessment questionnaire [a questionnaire that the focal company uses to report on sustainability along its supply chain] we used before, in previous years. Even if it was a valid tool to report, in some cases we perceived that the tool could be improved, so we changed the approach... Because the previous tool didn't allow us to distinguish between environmental, social and financial areas, so we decided...to change the tool. We asked our ICT [Information and Communication Technology Department] to provide us with a new tool according to our requirements which came from benchmarking analysis related to the all the sustainability supplier tools available. So, we decided to change the process in July and in October we started implementing the new process in order to collect new data for the upcoming sustainability report.” (SS2, Interview, 2016).

Analytically, relating such changes to the SR routine, they can be characterized as ongoing and incremental, meaning that they had only minor impact on the reporting content and the process itself. Those changes were aimed at streamlining the process and were implemented mainly for efficiency reasons. On the other side, they were provoked by both institutional forces and specific business requirements.

Several events leading to *milestone* changes revealed to be i) revising the sustainability plan aimed at changing the company’s vision from short- and mid-term targets to long-term targets, ii) the annual development of the materiality matrix and iii) answering RA questionnaires. Those changes were categorized as milestones due to their capacity to set new directions. Based on the observations, they involved variety of actors (both internal and

external stakeholders) capable of influencing those directions as explained by a Senior Sustainability Specialist:

"For sure the materiality matrix is fundamental to determine which items are worthy to disclose on. It is very simple idea, but then it is not so easy to deploy it since there are many different stakeholders... Still, we believe we have a robust process. We try to involve many different persons, and the project is to create ideas, values and priorities...So we know what we are going to talk about." (SS7, Interview, 2016).

It is important to note here that such milestone changes may be driven by institutional demands, but reflect the inputs from a broader context – i.e. the institutional field actors but at the same time are they are provoked by the need for being up-to-date with the changing business requirements as evidenced in the following quote:

[Talking about big changes in the process] "...when we discuss the materiality matrix that goes to the Board of Directors. Everybody knows what is happening and we change our doing because of the business requirement." (SS5, Interview, 2016)

As showed, such changes in the SR process can be characterized as cyclical (i.e. the development of the materiality matrix and the assessment of the RAs is made yearly, the sustainability plan is changed on a cyclical basis, but analyzed on a yearly basis in order to be able to adapt to changes in the external environment). Further, milestone changes have a significant impact on the structure of the process which stems from their capacity to set new directions with the objective of adapting to the emergent external environment (both institutional and business). Against this backdrop, it is important to note the emerging role of the field level actors (RAs, global framework requirements and business requirements) as the main agents driving such hallmark changes. This has been inferred from the repetitive emergence of key words and phrases used to describe what was provoking the need for a change such as "different ways of benchmarking that in some cases comes from rating agencies", "refer to the GRI guidelines", "benchmark with competitors", "try to identify relevant topic not only in the same industry but also in other industries", "business requirements".

An interesting role of the ST members has emerged to be leading a third category of change which I refer to as a *conceptual* change. Such phenomenon can be observed in the following narrative:

“I see a new trend is interesting, [i.e.] there is a focus on circular economy... so I am searching for an example in the company in order to report on it.” (SS6, Interview, 2016)

It was made evident that the ST seeks to constantly update and improve the relevance of topics on which they report on and one of the practices to do that is to search for a match between new emerging global trends related to sustainability and existing practices inside the business (labeling). In this sense, the activity coined here as a conceptual change refers to the potential effect of such “labeling process” to become a driving force for a more holistic change once it is internally identified, formalized and finally communicated through the means of reporting.

In summary, the described conceptual change can be seen as a rhetorical means which is invoked by changes in an external debate coming from the outside environment. Thus, through changing the rhetoric, the objective is to gain legitimation through the discourse and thus to gain acceptance in the wider institutional environment.

Collectively, the second-order themes presented here (i.e. benchmarking as a source of formulating material content, institutional pressures driving potential changes in the process, and that changes are inherent in the process, and are provoked by field level pressures) were aggregated resulting in the emergent construct *Compliance*. It should be noted that compliance, theorized as a force influencing the process of SR, should not be understood merely as the fact the organizational behavior is guided and/or restricted by the prevailing generally accepted norms and rules of conduct coming from the institutional environment. What I observed was that those norms and rules of behavior are not stable in time and are underpinned by complex interactions and therefore have the capacity to drive changes in the

process. Therefore, the act of compliance in the context of SR should be understood as a confirmatory behavior with the dynamically changing generally accepted rules and norms of conduct.

The Construction of Discourse in the Sustainability Reporting Process

In what follows I will focus more in-depth on the construction of the sustainability discourse observed at the focal company with the aim of disentangling the mechanisms that underpin its realization. This have been achieved by summarizing the main elements of the writing stage of the SR process (see Figure 5).

Elaborating of the Discourse Demands Ensuring Consistency in Reporting the Content which is Material Provided the Set Targets and Institutional Demands

As anticipated in the previous section the step of compiling the content of the report (writing) is another milestone event that does not follow the simple logic of reporting on what has been collected, however requires ensuring the consistency in reporting the content which is material provided the set targets, the institutional demands and the business requirements. By institutional demands I mean a couple of entities that constitute pressures for adaptation with the external environment. When asked to describe the process by which sustainability specialists elaborate on specific section in the sustainability reports for which they are responsible of (i.e. corporate governance, products, employees, etc.), they described a process combining compliance with reporting standards and benchmarking activity while ensuring the consistency with set targets which can be best represented with the following descriptions:

“My starting point are the GRI guidelines...I go to all the KPIs concerning my areas and then I look at the competitors’ sustainability reports in order to identify if there are different ways to describe and to respond to these indicators compared to my exposition... and also for sure the feedback that we receive from the rating agencies” (SS2, Interview, 2016).

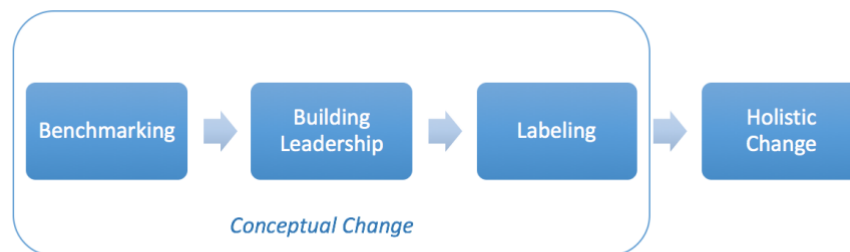
"We have the glide path: what we want to achieve year after year for each target and if we don't see at the mid-monitoring results any issue we go on directly to our owners... So, we go at the end of the year to our owner in order to verify if the results are in line with the glide path and we send to them some KPIs [to fill out] that gives us evidence for this..." (SS5, Interview, 2016)

The emerging role of institutions (the GRI framework indicators and the RAs' assessment) in this stage is more evident to have the power of guiding disclosure. While the role of competitors can be merely seen as a good exemplar for conveying the messages.

Elaborating of the Discourse is Complemented by External Sources

Along with benchmarking activities as a source of framing the discourse (for illustrative evidence see Appendix), an important external source of elaborating the discourse are global trends. This link is captured by the identified in the previous section conceptual change phenomenon. The observed phenomenon was further explored more in-depth by the means of a follow-up interview with key team members. The conceptual change mechanism and its drivers were explained through a process. An overview of the process is presented in Figure 6.

Figure 6: Conceptual Change Mechanism



As illustrated a conceptual change is provoked through a benchmarking activity (e.g. exploring global trends). A new idea or a vision coming from the benchmarking activity, then, needs to be legitimized in order to be implemented. Such legitimation process involves the engagement of the top management or as my informants coined it in their own terms “building the leadership around it” (SS1, Follow up interview, 2016), or put simply after discussing it and getting the approval from the top management. After being approved this new vision/trend starts to be sought inside the company practices and labeled (labeling step). As illustrated in

Figure 6 this process, I foresee, can have the power to drive the business to a more holistic change.

Implementation of New Initiatives/Discourse is Reflected in the Company's Business Strategy and Culture

It is evident from the conceptual change model (Figure 6), that a key ingredient for the successful implementation of such change is the involvement of the company leaders. It should be noted, however, that such change is not merely a labeling process but it is strictly related to the company's business and culture as illustrated by the following quote:

“... It is really that we need to test and check the idea we are pursuing will make sense for the business. To convince the management of a company like ours we need to know very well its culture. Because top managers really reflect this culture and are the highest expression of it” (SS1, Interview, 2016).

The assumed power of this conceptual change to drive to a more holistic change was evidenced by triangulating this inference with the 2016 sustainability report published in 2017 in which the identified focus on circular economy was incorporated in the company's business model. It should be noted, however, that such incorporation doesn't actually change the core of the business operation but serves as an overarching reference point of explain how the existent business practices contribute to the transition towards a circular economy.

In summary, the above mentioned second-order themes (i.e. elaborating of the discourse demands ensuring consistency in reporting the content which is material provided the set targets and institutional demands and complemented by external sources, implementation of new initiatives/discourse is reflected in the company's business strategy and culture) lead to explicating a second theoretical construct *Adaptation*. Adaptation, theorized as a force which affects the SR process, seem to be a logical consequence considering the numerous ongoing changes in the organizational field, the organization's own business operation and the process itself. Therefore, SR reflects collectively the institutional demands, the company specific targets and emerging global trends through adaptation in the discourse.

Sustainability Reporting as a Social Construction

As explained in more details in the Literature Review section the notion of social construction (Berger and Luckmann, 1966) suggests that a socially constructed reality is a product of an iterative process of individuals' multiple interactions to create a generally accepted meaning. In my observations, I found a couple of elements in the SR process which resonates with this idea as explained in more details in what follows.

Organizations Affect Changes in the Rating Agencies' Questionnaires Indirectly

Throughout the analysis what has been made evident numerous times was that organizations experience pressures from institutional stakeholders (such as the global frameworks and the RAs) and that the reporting content is also affected by those pressures. This is not surprising if we position the analysis in the institutional theory framework (DiMaggio and Powell 1991). An emergent element here is an observed, though *not direct*, effect that the organization has on institutions (e.g. RAs). This proposition was made based on the following evidence:

"...after we receive the final results, we are engaged by them [rating agencies] in order to tell them which was our feeling with the report, if we saw that there are things that might be improved or changed. And it is a period in which we have a contact with them. Of course, they try to understand better from us (the industry)..." (SS3, Interview, 2016)

"The link is not direct – through the feedback we give, it is possible that this might shape questions to better capture the value in certain activity, not necessary too specific for certain industry. The questionnaire is shaped by the call they have with us." (SS3, Interview, 2017)

The existence of a relationships and purposive influence that organizations potentially exert on institutions has also been widely discussed within the realm of institutional work according to which individuals and organizations can purposefully create, maintain or disrupt institutions (Lawrence and Suddaby 2006). What I observe in this setting, however, is something different – it is not a purposive act, but it is an invited dialogue, it is not aimed at disrupting, but at improving. Therefore, my theoretical observations resonate better with what social constructivism offers. It is through the multiple interactions (i.e. the assessments that RAs give to organizations and the feedback that organizations give to RAs) that actors are involved in

an iterative cycle of creating interpretations and acting on those interpretations in order to reach a shared and generally accepted meaning of a complex construct, i.e. - the assessment of sustainability.

Potential Power of Organizational Rhetoric to Influence the Ongoing Debate

In line with the social constructivist perspective my observations lead me to another speculative¹³ theoretical proposition which suggest that organizational rhetoric used in the SR process can have the power to influence and re-shape the ongoing rhetorical debate in the organizational field. As per my observations the way to do that is through the conceptual change mechanism explained in the previous section. According to my findings, organizations engage in a so-called labeling process in which they search and report on an existing business practice using a specific term which is an emerging, hot topic in the wider organizational field. The objective of such activity was identified to be a rhetorical one, aimed at adapting to a changing environment. This however, is not an instrumental, but fact-driven activity as evidenced in quotes in the Appendix. I speculate, that through such rhetorical moves organizations can have an impact on the ongoing debate (discourse) in the wider organizational field (including regulations, governments, the industry in which they operate and the economy as a whole) by legitimizing existing business activities and thus promoting emergent trends. From this end, according to institutional theory such trends should be later adopted by other actors from the organizational field (not necessarily only from the same industry) in order for them to gain/ maintain their legitimacy status. This speculation has been made based on the following evidence:

In the 2016 sustainability report published in 2017 circular economy is a highlight in the report and is mentioned in the CEO letter. The identified focus on circular economy was incorporated in the company's business model.

¹³ I call this theoretical proposition speculative at the current moment because even that I have and present here enough evidence to support my claims, I wish to acknowledge that more investigation (involving a larger time span and a more in-depth analysis of competitors' reporting practices) of the performative power of rhetoric should be carried out to confirm those initial observations. Moreover, as the conceptual change mechanism (manifested in the circular economy example which appeared for the first time in the 2016 sustainability report of the focal company) is a novel idea, it is practically impossible at the current moment to obtain enough evidence for its performative power. Since having solid evidence for it would require that this phenomenon is observed also in the next years and in other actors' sustainability reports which from this end would require a replication study conducted in competitor companies. Those issues along with other limitations have been discussed in more details in the Limitations, Implications and Future Lines of Research Section.

It should be noted, however, that such incorporation doesn't change the business model itself or the core of the business operation, but serves as an overarching reference point of explain how the existing business practices contribute to the transition towards circular economy. Furthermore, the circular economy theme is present also in the competitors' sustainability report as of 2016 (most importantly in the industry leader in sustainability as per DJSI). (Triangulation of data, 2017)

Overall, this theoretical proposition again resonates with the social constructivist thinking by showcasing how an ambiguous construct such as the circular economy can become a socially constructed reality through the multiple interactions among actors sharing their interpretation through discourse and acting on these interpretations with the aim to reach a collective generally accepted meaning.

Finally, the presented second-order themes (i.e. Organizations affect indirectly changes in the rating agencies questionnaires and Potential power of organizational rhetoric to influence the ongoing debate) were aggregated in a third theoretical construct *Co-creation*. Within the SR routine, I disentangle a third force - co-creation, which can be seen at a first glance as a by-product of the reporting routine, but can have the potential power to affect not only the process, but also the wider organizational field. Therefore, inspired by the social constructivist thinking, I suggest that organizations are actors capable of influencing, re-shaping and co-creating the norms and rules of conduct in the organizational field and the way to do that is through discourse.

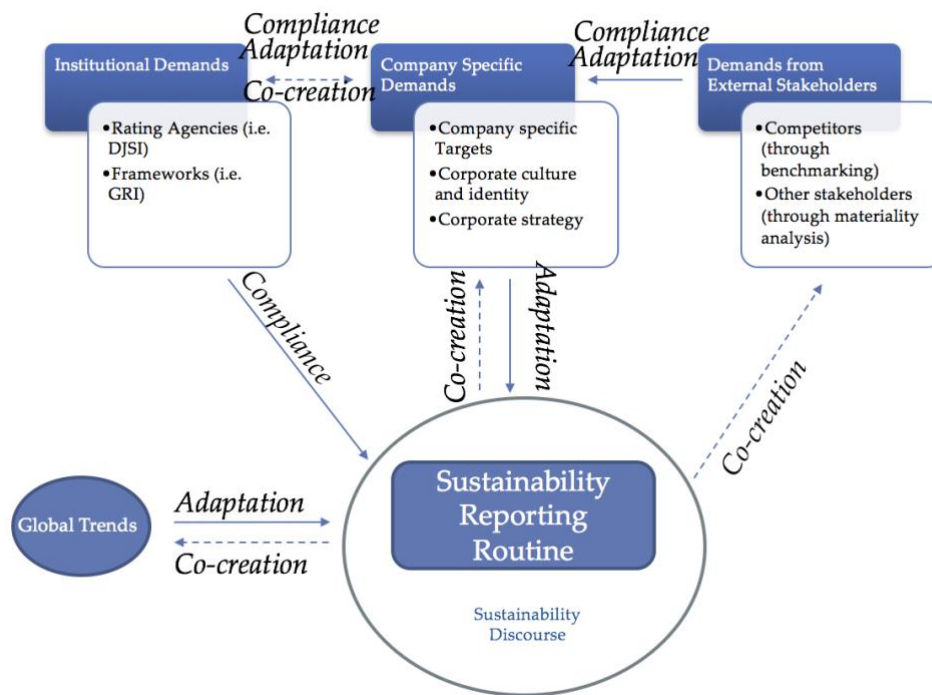
Discussion

A Grounded Model for Balancing Institutional and Business Pressures in the Sustainability Reporting Process

Motivated by the scarcity of exploratory approaches in studying SR, re-enforced by ethnostatistics, which calls for a more in-depth analysis of the processes of measurement, and embracing the central debate in institutional theory over the agency versus structure, in this study I aim to understand the mechanisms through which the SR process is realized. My findings reveal some interesting observations which both confirm and extend our current

knowledge in those streams of research. Figure 7 represents the theoretical framework developed based on my observations.

Figure 7: A Grounded Model for Balancing Institutional and Business Pressures in the Sustainability Reporting Process



Although the SR process follows a specific routine, it is characterized by constant changes which are an attempt to answer to different pressures. As the framework illustrates there are various driving forces which affect organizations’ sustainability disclosure. Those stem from diverse pressures from the organizational field (i.e. institutional and external stakeholders’ demand, the influences of recent trends, etc.) which shape the formulation of the material topics and targets set by the company. However, those pressures are translated into business practices and discourse by passing through the prism of the company’s identity and culture (company specific demands). There are two main mechanisms that guide the process by which an organization aims to be perceived as legitimate and generally accepted in the organizational field namely compliance and adaptation. A third interesting mechanism emerges – i.e. co-

creation, which marks the potential power of the SR process to influence the organizational field through the sustainability disclosure.

Contribution

Scholars investigating SR have largely focused their attention on the determinants of the adoption, extent and the quality of SR, while little attention has been paid to “opening its black boxes” and engaging in a more exploratory focus (Hahn and Kühnen, 2013). At a theoretical level, an important contribution of this study is the development of a process framework which identifies a set of mechanisms through which the SR process is realized. In this framework, I use the explanatory power of existing theories and perspectives, namely institutional, strategic legitimacy theory and social constructivism to conceptualize the SR routine. Against this backdrop, a key insight is that although SR is driven by various pressures from the organizational field (such as institutions, external stakeholders and global trends), the agentic role of the focal organization is prominent when external pressures are translated into business practices and reported through the discourse. Therefore, SR can be explained as a balancing act of *complying* and *adapting* to the demands for the organization filed (institutions, external stakeholders and other actors) and a strategic tool to maintain and control its legitimacy status. Another key insight from this study is the identified *co-creation* mechanism which overcomes the sole reliance on the institutional paradigm and offers an additional proposition that SR be conceptualized as a socially constructed reality obtained through an iterative process of numerous interactions, reflecting ongoing changes which re-shape and co-create the organizational field through discourse.

At a methodological level, this study contributes to the ethnostatistical method (Gephart 1988; 2006) by being potentially one of the first applications of ethnostatistical analysis in the world of practitioners to offer a real-time ethnography of the production of measurement-related discourse. Even though the ethnostatistical method offers a sound guidance in exploring

critically the production of quantification, it is currently not widely used approach in organization research. Nevertheless, some rare representative exceptions employing ethnostatistical approach to the study of organizational settings exist (e.g. Landrum and Boje, 2008; Boje, Gardner and Smith 2006, Kilduff and Oh 2006). However, those studies were not able to produce a real-time ethnography of quantification processes and instead used historical methods to reconstruct the context in which those occurred (for a methodological discussion see Study 3). Therefore, this study contributes also to methods by incorporating ethnostatistical perspective in its data analysis.

Limitations, Implications and Future Lines of Research

Before concluding, I would like to note several boundary conditions in the presented theoretical ideas and discuss further areas of investigation stemming from my findings. First, currently SR is still a voluntary disclosure, although the recent European Directive 2014/95/EU which lays down the rules on disclosure of non-financial and diversity information by large companies, amends the accounting directive 2013/34/EU, and will oblige companies to include non-financial statements in their annual reports from 2018 onwards. Therefore, my theoretical propositions are informed by and applicable in the moment in which SR is not yet enforced by law. A potential future line of research could investigate how this theoretical framework will be applicable in a strictly institutionalized (regulated) setting. It will be interesting to understand, in particular, to what extent the co-creation mechanisms will be present in the process and more importantly, whether and what performative power it may exert on setting the regulation agenda.

Second, stemming from the exploratory focus of the research, my findings do not offer any immediate implications for business practices. However, my observations of the co-creating power of SR can have managerial implications by pointing out that sustainability discourse is a powerful tool to gain or maintain legitimacy. Furthermore, the observed

conceptual change mechanism can be used as a strategic tool capable of influencing the organizational field in which an organization operates. Additionally, the presented SR process and the developed theoretical framework present a fine-grained analytical aid which can serve Sustainability Managers and Executives by abstracting the complexity of the process in simpler stages and thus facilitate decision-making.

Last, informed by a single case representing one of the best-in-class performers, this research is able to capture one side of the SR practice. A future line of research that can complement my findings could be a replication study or multi-case study approach to further confirm and enhance the suggested framework. Specifically, I wish to acknowledge that more investigation of the suggested performative power of rhetoric should be carried out to confirm my propositions. In this vein, future research can focus and explore in more depth the conceptual change mechanism by investigating 1) whether and how organizations use rhetorically the circular economy trend in their public discourse, and 2) whether such rhetoric can have performative power in the Callon sense (Callon 2007), or put simply whether it can have the power to change business practices. To obtain solid evidence for this proposition, a logical continuation of this study is to check whether the circular economy trend is observed also in the next years and in other actors' sustainability reports along with further exploration of how this trend is translated into business practice at the focal company. Furthermore, an in-depth investigation at competitors' companies (a replication study) would be required to further confirm the performative power of rhetoric. For sure, there exists another side of the SR which represents the other extreme that is theoretically interesting – a low performing company or a failure in SR. Therefore, an interesting line of research would be to investigate the reporting process and the construction of sustainability disclosure of a company which scores low in the RAs' assessments or have been removed from the Sustainability Indices due to violations. Finally, another element of the institutional environment (i.e. the practices of RAs) remain

under researched topic. Therefore, opening the black boxes of the sustainability assessment processed employed by RAs could offer additional insights. Although such a project research may be difficult to conduct given the sensitivity of the topic and potential problems of access, I foresee it as a promising research agenda which can give a more holistic view on how the business community experiences, implements and represents sustainability practices in their operations. Such a research agenda can make a significant contribution to organization and management theories by closing the gap between the world of practice and theory.

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Appendix: Presentation of Empirical Observations with Illustrative Evidence and Derived Theoretical Insights

Empirical Observation (First-order concepts) and Illustrative Evidence	Theoretical Observation (Second-order themes)	Theoretical Constructs (Overarching dimension)
Benchmarking with competitors as a source of defining material content and improving performance	Benchmarking as source of formulating material content	COMPLIANCE <i>(Compliance with field level demands drive change)</i>
"This is something to check from XXX or XXX [sustainability reports of competitor companies - one of which is considered the industry leader in sustainability as per DJSI assessments as of 2016 and 2017]". (SS1, Field Notes, 2016)		
"I try to identify which are the relevant aspects that the rating agencies have highlighted as the main areas where the company needs to improve...but also comparing the company with other competitors not only in the same industry, but also in other industries." (SS2, Interview, 2016)		
Using institutional frameworks and guidelines as a source of formulating material content		
"We are compliant with GRI-G4 standards so most of the information that we need to produce the report (the comprehensive version) are suggested by the standard itself so we report approximately about all the indicators for the XX function that the GRI-G4 suggest. And in order to be able to report that information we prepare excel files...So every year by the specific period round December we send out these excel files that contain sometimes a comment box in which they [counterparts] can suggest something and then they fill it in with the required data and send them back to us." (SS3, Interview, 2016)		
"During the year, I collect from my counterparts in the different functions which are the main initiatives that have been carried out and I try to identify those that best fit with the GRI indicators and that are most related to the materiality matrix." (SS2, Interview, 2016)		
Rating agencies' feedback as a source of formulating material content and improving performance		
"...and [referring to] the rating agencies. It depends on the counterpart - if it is DJ [Dow Jones] for example - there is a questionnaire with key specific topics on which they try to evaluate our company (e.g. so how much we spent on innovation, how effective we are in spending the money as to produce something which is innovative etc.)." (SS4, Interview, 2016)		

<p>“...according the feedback that we receive from rating agencies I identify main areas for improving and then I compare these area for improving with competitors' sustainability reports. And then I identify the most relevant initiative that I can find in the [competitors'] sustainability reports and use this as an example of best practice to be showcased to my colleagues...I try to verify if there are any opportunities to implement these kinds of initiatives in our company, but also if there are such initiative for which I don't know. And I if they agree we try to implement during the year...” (SS2, Interview, 2016)</p>	<p>Benchmarking as source of formulating material content</p>	
<p>"This is a result from different inputs - part of the inputs come from rating agencies that for example ask for the level of satisfaction of your work force. I mean we don't do things for rating agencies. We try to think the best out of what rating agencies ask us." (SS3, Interview, 2016)</p> <p>[Author's clarification: RobecoSAM Questionnaire as of 2016 contains a question about Trends of Employee Satisfaction in which the companies are asked to provide percentage of satisfied employees and if there can be provided also a breakdown of results based on gender segments and percentage of employees taking the survey] (Triangulation of data, 2017)</p>		
<p>Referring to the sustainability plan as source of formulating material content and setting targets</p>		<p>COMPLIANCE <i>(Compliance with field level demands drive change)</i></p>
<p>"First of all, we started 2 years ago to look again at the sustainability plan in order to change our vision from medium-short term target to long term targets. We developed in 2014 a sustainability plan that covers all the functions of the company and that was approved by the Board of Directors...Starting from this point our work is a 356-day of the year and starts in July when we ask to our data owners to provide us evidence that the mid monitoring target (half of the year) are in line with the results that we require..." (SS5, Interview, 2016)</p>		
<p>Institutional demands drive changes in the reporting process</p>	<p>Institutional pressures drive potential changes in the process</p>	
<p>“...a big change was when we introduced the materiality matrix. I mean we were induced to think about the most materials things in our organization (when I say things I mean products, logistics, ICT, health and safety, etc.). It was not that we were not doing it but we were forced to stop and think about. So, we moved to a materiality analysis that pushed us to really concentrate our efforts on (not meaning that we don't do anything which is less material) the most material items in our materiality matrix. So, I think this was pretty shifting of the mind-set, not simply reporting...We were not [anymore] just collecting and using that in order to show it to the world, but we were thinking what is most material and what needs to have more space and what needs not to be so visible. So, I think this was a pretty strategical change in the approach of the company to sustainability” (SS3, Interview, 2016)</p> <p>[Author's clarification: the materiality matrix is a suggested visualization of the how an organization identifies and prioritizes the most material aspects (i.e. those which are important for “reflecting the organization’s economic, environmental and social impacts, or influencing the decisions of stakeholders“ as per GRI-G4)</p>		

<p>“Let’s wait the analysis from Robecco in order to clean up the process. We may lose a point” (SS1, Field Notes, 2016)</p>	<p>Institutional pressures drive potential changes in the process</p>	<p>COMPLIANCE <i>(Compliance with field level demands drive change)</i></p>
<p>Changes in the rating agency questionnaires drive changes in the reporting process</p>		
<p>“Every year rating agencies are improving their questionnaire so you publish the sustainability report and then in April normally you discover that they are asking new stuff that you didn't include in the sustainability report... [For example] they started asking about environmental violation and we had never collected that data <i>in that specific format</i>, we were collecting violations in general. So, we started to collect specific environmental violations...” (SS6, Interview, 2016)</p>		
<p>"We receive the questionnaire and we look at the new structure, the new requirements and so on and depending on the area we re-analyse our section [in the Sustainability Report]. For instance, last year, there was a new section on Brand management (this was under my responsibility) in the assessment questionnaire, so I try to collect all the functions that can give us help..." (SS5, Interview, 2016)</p>		
<p>“...CDP last year started asking emissions of CO2 from our plants and we never collected data in that way and actually it was possible to calculate it but was very detailed analysis that would take a lot of time and in terms of scoring was not giving any more point so we decided to wait and publish this kind of analysis this year, not last year. We decided not to fill any question of the questionnaire because it was not giving us any punishment, any problem and was just giving us a lot of work - for reworking data.” (SS6, Interview, 2016)</p>	<p>Changes are inherent in the process and are provoked by field level pressures (institutions, business requirements and industry trends, global trends)</p>	
<p>Incremental changes in the process are implemented for efficiency reasons and to comply with changing institutional demands</p>		
<p>"I remember when I started working here the procedure of getting data from data owners (because of different deadlines): we used to send one e-mail to fill in KPIs [Key Performance Indicators], then another mail for the text review, then another e-mail for updating target results. And we saw that it was really a waste of time because one single owner receives three mails with three different deadlines and for the most of them they lost some e-mails sometimes, or they remember to answer to just one e-mail. So, the year after we tried to see how to improve the process by providing the request with the three attachments (the three requirements). And this was really, really an improvement. And with the time [passing] for sure the owner is getting more and more part of the process so they now know when, more or less, we are starting to ask the questions..." (SS5, Interview, 2016)</p>		

<p>“Sometimes we have the perception that even if our data responds to specific indicator, these are not exhaustive or are not quite aligned with the framework requirements [GRI]. For example, in order to provide some data for sustainability application in suppliers’ organizations we implemented a new tool in order to verify the sustainability at our suppliers. So, we started to change the sustainability self-assessment questionnaire [a questionnaire that the focal company uses in order to report on sustainability along the supply chain] we used before in the previous year. Even if it was valid tool to report, in some cases we perceived that the tool could be approved so we changed the approach... Because the previous tool didn't allow us to distinguish between environmental, social and financial areas, so we decided in a couple of months to change the tool. We asked our ICT [Information and communication technology department] to provide us with new tool according to our requirements that came from benchmarking analysis related to the all the sustainability supplier tools available and we decided to change the process in July, started implementing the new process in October in order to collect new data for the upcoming sustainability report”. (SS2, Interview, 2016)</p>	<p>Changes are inherent in the process and are provoked by field level pressures (institutions, business requirements and industry trends, global trends)</p>	<p>COMPLIANCE <i>(Compliance with field level demands drive change)</i></p>
<p>"For example, we are developing an employee satisfaction survey [a global survey to measure employee satisfaction]. This is a result from different inputs - part of the inputs come from rating agencies that, for example, ask for what is the level of satisfaction of your work force.... To have a global overview on the level of satisfaction of employees was an input coming from the different source... Benchmarks also coming from other industries who claim in their sustainability reports that they do in a systematic manner and that they are experiencing positive results from it. Rating agencies from the other hand ask also about this, and inside the organization this is not done globally or systematically and so as we do every time we try to get this suggestion from the outside and try to customize it and deploy it in our reality.” (SS3, Interview, 2016)</p>		
<p>Milestone changes in the process are implemented to comply with institutional demands</p>		
<p>"We started 2 years ago to look again at the sustainability plan in order to change our vision from medium-short term target to long term targets. We developed in 2014 a sustainability plan that cover all the functions of the company and that was approved by the Board of Directors...For sure, this was one of the biggest change. It was the biggest change that I remember and that involved all of us..." (SS5, Interview, 2016).</p> <p>[Author's clarification: as per the company's sustainability report as of 2016: "In 2016, an analysis of FCA’s sustainability commitments and targets was completed to ensure their continued relevance and alignment with both the Group’s direction and the United Nations Sustainable Development Goals (SDGs)"].</p>		
<p>"And, rating agencies: we work very carefully on the DOW Jones assessment [analysing the RobecoSAM questionnaire which is used to develop DJSI] and every year the questionnaire changes - i.e. from one area to another, and not all of us are very strictly focused in the analysis of these</p>		

<p>changes...but after this analysis everybody is aligned."(SS5, Interview, 2016)</p>	<p>Changes are inherent in the process and are provoked by field level pressures (institutions, business requirements and industry trends, global trends)</p>	<p>COMPLIANCE <i>(Compliance with field level demands drive change)</i></p>
<p>"For sure the materiality matrix is fundamental to determine which items are worthy to disclose on. It is very simple idea but then it is not so easy to deploy it since there is a variety of different stakeholders... Still we believe we have a lot of robust process. We try to involve many different persons, and the project is to create ideas, values and priorities, and we see that is pretty much stable, year to year, so we know what we are going to talk about." (SS7, Interview, 2016)</p>		
<p>Milestone changes in the process are implemented to reflect changes in the business environment</p>		
<p>[Talking about big changes in the process] "...when we discuss the materiality matrix that goes to the Board of Directors. Everybody knows what is happening and we change our doing because of the business requirement." (SS5, Interview, 2016)</p>		
<p>"When I speak about emissions what happened in the automotive industry (the Dieselgate) - it changed our process... Well, let me say it was implemented even before, but it's a more structured - as a check-in loop the consistency of data that we put in the sustainability report. I mean we have already collected facts to demonstrate that we keep documentation that is consistent with what we write just to avoid any misleading message. In the last years, even if we were really consistent - we needed to double check it again with a really high involvement of all the business counterparts." (SS4, Interview, 2016)</p>		
<p>Conceptual changes in the process are guided by emerging global trends/external debates</p>		
<p>"I have been reading it everywhere: The 2016 topic for sustainability is the circular economy." (SS1, Field Notes, 2016)</p>		
<p>"I see a new trend is interesting, [i.e.] there is a focus on circular economy... so I am searching for an example in the company in order to report on it." (SS6, Interview, 2016)</p>		
<p>[Author's clarification: Circular economy trend is present also in competitors' sustainability report as of 2016 including the industry leader in sustainability as per DJSI. The concept of circular economy is incorporated in the business model of the organization as per the company's sustainability report as of 2016]. (Triangulation of data, 2017)</p>		
<p>"For example, we know that in the specific period there is a hot topic - that is the circular economy - it is very appreciated so we try to reason also around it and we did it also last year, but we will probably do it more significantly this year." (SS3, Interview, 2016)</p>		

<p>Elaborating of the discourse demands ensuring consistency with set business targets</p>		
<p>"We have the glide path: what we want to achieve year after year for each target and if we don't see at the mid-monitoring results any issue we go on directly to our owners... So, we go at the end of the year to our owner in order to verify if the results are in line with the glide path and we send to them some KPIs that gives us evidence for this and in October more or less we start reporting some of these results in the annual report and at the end of the year we start with the sustainability reporting. In some case, we report just the results of the plan, in some other cases prepare also material for qualitative input that we develop for the sustainability report (SS5, Interview, 2016)</p>	<p>Elaborating of the discourse demands ensuring consistency in reporting the content which is material provided the set targets and institutional demands</p>	<p>ADAPTATION <i>(Elaborating disclosure reflects both institutional demands and company specific targets and is adapting to changes in external debate)</i></p>
<p>Elaborating of the discourse demands ensuring consistency with institutional frameworks</p>		
<p>In discussing the content of "Our responsibilities" section the sustainability team members concluded that the main highlights should be "Human rights" and "Climate Change" (Field Notes, 2016).</p> <p>[Author's clarification: In the "Future Trends in Sustainability Reporting Report" issued by GRI in 2017 key trends fundamental to the UN Sustainable Development Goals include climate change, human rights, wealth inequality, and data and technology]. (Triangulation of data, 2017)</p>		
<p>Elaborating of the discourse demands ensuring consistency with the identified material content</p>		
<p>"We have been through a strong process of streamlining what is really material and what is not. So, now we are in the phase in which all the information in the report is material for the business. So, it's not a 400-pages report in which we put whatever it is in the company, but we select based on a process the information that is needed. Then, as I was saying, there might be a different input, to see which of the arguments should be stressed more than others, and this comes from the external [environment]" (SS3, Interview, 2016)</p>		
<p>Global trends as a sources of framing disclosure</p>		
<p>"Now there is a focus on circular economy for example so I am searching an example in the company that already fit with the circular economy thinking and there are lot. Before that we just didn't speak of them in that terms. We were talking about that but not using this particular term." (SS6, Interview, 2016)</p>		
<p>Benchmarking with competitors' disclosure is a source of good practice of framing discourse</p>		

<p>"There are some aspects of corporate governance, for example, that are very difficult to improve, because these are related to the company organization...In order to promote the change it is important to start improving the way you communicate something and then through benchmarking try to stimulate the advancement of something that is not simple to change. As I mentioned before it is related to some organizational aspects that have their time in order to be approved and modified. So, I think that the company corporate governance in terms of board of directors, activities, committees, is the most difficult part to be amended or to be improved, also, only in the way of disclosure. Even if we have a good level of disclosure in corporate governance, sometimes if you need to disclose something in different way it is very hard...I go to all the KPIs concerning my area and then I look to the competitors' sustainability reports in order to identify if there are different ways to describe and to respond to these indicators compared to my exposition" (SS2, Interview, 2016)</p>	<p>Elaborating of the discourse is complemented by external sources</p>	
<p>Implementing new ideas or visions requires relevance with the business strategy</p>	<p>Implementation of new initiatives/discourse is reflected in the company's business strategy and culture</p>	<p>ADAPTATION <i>(Elaborating disclosure reflects both institutional demands and company specific targets and is adapting to changes in external debate)</i></p>
<p>"I feel the responsibility to be able to detect the direction for the next step we should take. So, there is no-one that is formally required to take this direction but I feel this sense of urgency that we can't rest on what was perfect in our opinion last year, we are always moving step forward. That is why I benchmark, but I am not only benchmarking, I try to make meaningful any results from the benchmarking so that these results should be deployed within the company. I need to translate the benchmark into what is meaningful for the company. And it means that my duties are to be always strongly connected with what the business from the ground is driving" (SS1, Interview, 2016)</p>		
<p>"5 years ago, when I joined the team, the main responsibility of that part of this small group were Ok... these are the 300 to 500 pages you need to write down, keep in line with the referents and let's publish the sustainability report. And more or less that was it. Now, when I say we need to think strategically what I have in mind is that we need to support the business and to help the business going in the right direction that combine economic success, of course (because we are a profit company) and sustainability commitment and responsibility." (SS1, Interview, 2016)</p>		
<p>Implementing new ideas of visions requires relevance to the company's culture and identity</p>		
<p>"... It is really that we need to test and check the idea we are pursuing will make sense for the business. To convince the management of a company like ours we need to know very well its culture. Because top managers really reflect this culture and are the highest expression of it." (SS1, Interview, 2016)</p>		

<p>"Sometimes it is the case that the sustainability function might not have the perfect feeling about what HR [Human Resources Department] might have. So, it happens that HR teaches us something. Since we have an overview of the sustainability world that is more from the inside, we can go to the HR and say, "We have seen this best practice" or "We received this input" and then we can work together in order to achieve some results, intermediate results...Our objective is to integrate all the surveys on employee satisfaction that are taking place, so we can have the business asking the right questions to the right people. It's not saying that managers are not able to ask the right questions to their employees but in a way, we can guarantee the integration of the wording we use and the results that we get... So, I hope that this will enter in the mentality of the organization...Or maybe it can be used to set a map of where I can go and use the best practices that are already inside the organization and waiting there to be investigated, so it is not something necessary that I need to take from outside." (SS3, Interview, 2016)</p>		
<p>Organizations give feedback to rating agencies' analysts</p>	<p>Organizations affect changes in the rating agencies questionnaires indirectly</p>	<p>CO-CREATION <i>(Organizations as actors capable of influencing the organizational field)</i></p>
<p>"Of course, these rating agencies send their questionnaire to a number of industries - so it is very, very broad... Sometimes the questionnaire is changed... simply because they want to keep it up-to-date (so necessities change) and also because they received inputs from participants to the questionnaire. Of course, they cannot have the [same] perception of an industry such as the person working in the industry." (SS3, Interview, 2016)</p>		
<p>"...after we received the final result we are engaged by them [rating agencies] in order to tell them which was our feeling with the report, if we saw that there are things that might be improved or changed and it is a period in which we have a contact with them. Of course, they try to understand better from us (the industry)." (SS3, Interview, 2016)</p>		
<p>"The link is not direct – through the feedback we give, it is possible that it might shape questions to better capture the value in certain activity, not necessary too specific for industry. The questionnaire is shaped by the call they have with us." (SS3, Interview, 2017)</p>		
<p>Organizational rhetoric reflects conceptual changes and promote recent trends</p>		
<p>"A topic can be hot for different reasons (i.e. EU regulations, governmental level) ...So, identifying a hot topic for the industry?!...Circular economy is suitable for us, it may not work for XXX or other technologies. There are a lot of hot topics and you choose what is relevant for your company." (SS6, Interview, 2017)</p>		

<p>[Authors' clarification: In the 2016 sustainability report published in 2017 circular economy is a highlight in the report and is mentioned in the CEO letter as discussed in previous conversations. The identified focus on circular economy was incorporated in the company's business model. It should be noted however that such incorporation doesn't change the business model itself or the core of the business operations, but serves as an overarching reference point of explain how the existent business practices contribute to the transition towards a circular economy. The circular economy trend is present also in the competitors' sustainability report as of 2016 (most importantly in the industry leader in sustainability as per DJSI).] (Triangulation of data, 2017)</p>	<p>Potential power of organizational rhetoric to influence the ongoing debate</p>	<p>CO-CREATION <i>(Organizations as actors capable of influencing the organizational field)</i></p>
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Notes: 1. For the sake of keeping the privacy of the informants I have marked the authors of the quotes as SS1,2,3, etc. denoting Senior Sustainability Specialist or Sustainability Head. 2. Each quote or observation contains the source from which it was extracted and the year (i.e. interview, triangulation data, etc.) 3. Where necessary the authors inserted clarifications inside the quotes marked as [] or when longer clarification was need it was explicitly marked as [Author's clarification].

4. Study 3: Pluralistic Research Methodology for Ethnostatistics in Organization Studies: Towards a Historical Ethnostatistics*

** In collaboration with prof. Giovanni Favero, Department of Management, Ca' Foscari University of Venice, Italy*

Abstract: While quantification and performance measurement have proliferated widely in academia and the business world, management and organization scholars increasingly agree on the need for a more in-depth focus on the complex dynamics embedded in the construction, use and effects of quantitative measures. Ethnostatistics, a field of study that explores exactly how metrics are actually constructed and employed, has been introduced to organization research by Gephart (1988; 2006). By definition ethnostatistics is the qualitative study of quantification which involves three stages of enquiry: i) first-order ethnostatistics uses ethnography to focus on how statistics are constructed and interpreted in the settings in which they are produced ii) second-order ethnostatistics examines the technical and practical assumptions made in statistical analyses; iii) third-order ethnostatistical analysis treats quantitative information as literary documents in order to disentangle the rhetoric of numbers used to make persuasive claims about organizational realities. Although some valuable contributions employing ethnostatistical approach to organizational settings have appeared, management and organization scholars seem to be failing to deliver a proper ethnography of metrics construction (first-order ethnostatistics) and use instead “quasi-historical” approaches to reconstruct the historical context in which data were produced. While conducting a proper field ethnography of metrics might be extremely rare given time and access constraints, we argue that the use of organizational histories and archival materials must be done with caution as they tend to be used for specific organizational purposes in the present being part of a wider organizational rhetoric which can hamper their ability to represent an unbiased view of reality. Furthermore, source criticism and contextualization of archival materials can highlight elements of metrics and measurement construction which are not evident in secondary sources. To address this issue this study aims to i) present practical techniques for conducting ethnostatistical research in live organizational settings, and ii) discuss how historical approaches which focus on source criticism and contextual reconstruction could overcome the limitations of pure ethnographies, thus offering a pluralistic method for conducting ethnostatistical research. Therefore, it attempts to contribute to the ethnostatistical field by discussing the intersection between history and ethnography while discussing ways for their complementary use in organizational and management research.

Introduction

In the last couple of decades demands for transparency, accountability and efficiency have resulted in the proliferation of measures crafted to evaluate the performance of both individuals and organizations. In management and organization studies, a specific focus on the complex dynamics of the construction, use and effects of quantitative measures has been proposed by ethnostatistics (Gephart 2006; 1988). By definition ethnostatistics is “the study of the construction, interpretation, and display of statistics in quantitative social research” (Gephart 1988, p. 9). Therefore, ethnostatistics is an attempt “to bridge the gap between quantitative and qualitative research” (Gephart 1988, p. 6). Tracing its roots in Garfinkel's (1967) ethnomethodology, the ethnostatistics underlying assumptions rely on the premise that individuals have “native” or culturally specific systems and methods for comprehending and acting. Such sensemaking practices include tacit assumptions and informal practices used by actors in their everyday professional life which are somehow neglected and taken for granted by conventional social science. The object of enquiry of ethnostatistics is examining exactly those methods and practices and more specifically challenging the taken-for-granted nature of quantification. Or put simply, ethnostatistics seeks to describe what scientists or professionals actually do in the process of quantification (from data gathering, through data elaboration to final representation) and assumes a certain degree of variability in the undertaken practices and the practical reasoning employed by statistic producers which can ultimately lead to diverging results.

This underlying premise is elaborated in the three levels of ethnostatistical enquiry as described by Gephart (2009; 1988). First level ethnostatistics (Producing a statistic) studies how statistics are constructed by observing “the activities, meanings, and contexts involved in producing variables and statistics” (Gephart 1988, p. 13). Therefore, it studies the cultural features of groups of scientists or professionals at work and in general the social enterprise of quantitative knowledge creation deployed by them. This level of analysis is concerned with

producing a thick description of how a statistic is constructed focusing on “who said what to whom, how, when, where and why during the processes of counting social phenomena, assigning numbers or numerals to measure observations, and applying statistical analysis to measured observations” (Gephart 2009, p. 90).

Second level ethnostatistics (*Statistics at work*) focuses on the assumptions and the appropriateness of the statistical techniques used by scientists and professionals. At this level, quantitative methods along with computer simulations are used to explore and understand the technical and practical assumptions employed in the production and use of statistics (Gephart 1988). In particular, it addresses “how human and social features and contexts influence measurement outcomes, statistical results and findings” (Gephart 2009, p. 92).

Third level ethnostatistics (*The rhetoric of statistics*) treats quantitative documents (reports, analysis, etc.) as rhetoric. Rhetoric is defined as the “art of persuasion that involves production of an argument claiming validity for a particular audience” (Gephart 1988, p. 47). At this level of analysis, it is assumed that the interpretation and use of statistics and measurement is an artful and strategic process by which numbers (and quantification in general) are used to create persuasion rather than an objective process aimed at reporting pure facts.

It is clear that such critical approach to quantification can grant certain practical benefits on both business and academic level, such as improving the effectiveness and validity of measurement. However, the method never became a mainstream in organization research despite Gephart’s invitation (2009). Some rare representative exceptions employing ethnostatistical approach to the study of organizational settings have appeared, such as Landrum and Boje's (2008) critical examination of the 1997 study released by Nike to resolve wage controversies in subcontracted Asian factories; Boje, Gardner and Smith’s (2006) investigation of the widely publicized failure of Enron Corporation; Mills, Weatherbee and Colwell’s (2006) case of Canadian business schools and universities usage of comparative

rankings and performance measures to signal to audiences about selected features and characteristics of their institutions; Carlon, Downs and Wert-Gray's (2006) clever explanation of the link between executives' compensation plans and financial performance by uncovering how compensation strategies have become fetishes, and Kilduff and Oh's (2006) examination of the scholarly organizational discourse related to the seminal study "Medical Innovation: A Diffusion Study" by Coleman, Katz and Menzel (1966).

While those valuable contributions are great examples of the application of ethnostatistics in organizational research, they have some limitations in terms of the proper (by-definition) use of the ethnostatistical method. They are not in fact producing real-time ethnographies (first-level of ethnostatistics) in their analysis and instead rely on "quasi-historical" methods to reconstruct the contexts in which events were taking place. The reasons for such drawbacks are obvious and can be sought on a pure practical level falling under either of the following conditions: i) in order for an event to become an object of ethnostatistical enquiry it should represent an instance of controversy and often major controversial cases or scandals are identified as such after a substantial time lag making a real-time ethnography practically impossible to conduct; ii) even in the absence of a critical event the access to organizational sites can be extremely difficult (potentially more difficult than for pure ethnographies) due to the intrinsic nature of the ethnostatistical enquiry to focus on organizational performance measures and indicators which could represent relatively sensitive topic for any organization.

Although we can easily accept that such practical constraints represent major hurdles in the proper application of the ethnostatistical method, we argue that the use historical methods as substitutions for conducting real-time ethnographies must be done with caution as it poses additional methodological concerns. We accept that in the case of practical impossibility to conduct real-time ethnographies, one has no other option than to resort to historical methods.

Whilst we draw on an argument that historical methods may mean different things for organizational scholars and historians, we find that resorting to historical methods (in the ways in which historians do) could be actually a way of overcoming some limitations existing in pure ethnographies. In particular, we argue that the use of organizational histories must be done with caution as they tend to be used for specific organizational purposes in the present being part of a wider organizational rhetoric which can hamper their ability to represent an unbiased view of reality. Further, archival materials can highlight elements of metrics and measurement construction that are not evident in secondary sources. However, a correct use of such sources requires the methodological awareness of their limitation and partiality. Historical sources are, in fact, secondary data for organizational researchers, i.e. they are not constructed by the researcher to answer their specific research questions (Rowlinson, Hassard and Decker 2014, p. 255-258). Archival materials are evidences that need to be interpreted in order to provide meaningful clues to reply to the researcher's queries.

To address those issues this study aims to discuss and propose a pluralistic method for conducting ethnostatistical research in live organizational settings by presenting practical techniques that could overcome the limitations of pure ethnographies. Furthermore, as such it attempts to contribute at a methodological level to the ethnostatistical field by discussing the intersection between history and ethnography while suggesting ways for their complementary use in organization and management research. To accomplish these purposes, we first discuss in more depth the three levels of ethnostatistics and its underlying assumptions. Then we review how this method has been applied by management and organization scholars. Followed by this, we discuss the methodological limitations of the ethnostatistical method. Finally, we propose a pluralistic method (model) for conducting ethnostatistical research in organizational settings based on the integration of i) research practices employed by one of the authors conducting ethnostatistical research in a large multinational organization and ii) best practices

from ethnographic and historical research. The paper concludes by outlining the potential benefits from the use of the suggested pluralistic method in the organization and management research domains.

The Ethnostatistical Method and its Underlying Assumptions

As previously described, the goal of ethnostatistics is to “describe, analyze, explain and understand how statistics are actually accomplished and used in the research process” (Gephart, 1988, p. 10). This can be achieved by examining three distinct levels in the process of quantification, i.e. the construction, interpretation, and final presentation of statistics. The emergence of ethnostatistics can be traced back in the late 1980’s, in Gephart’s seminal work (1988), with the recognition that while statistics as a discipline offers formal rules and guidelines for producing measures and statistics, the actual production of statistics is not exempt from informal practices, tacit assumptions and conventions used by professionals which lie outside the formal statistical and measurement rules. Furthermore, such practices are somehow inseparable and needed in the everyday practice of constructing and elaborating numerals. To give more precise examples of what is meant by informal practices, conventions and tacit assumptions inherent in the production of quantitative knowledge in what follows we will describe how those practices can be found on each level of constructing quantitative data and how this may have an effect in its final outcome.

In first order ethnostatistical analysis which explores the “how” of creating quantitative knowledge (Gephart, 2009), informal practices and conventions can be discovered in the data gathering process. For example, Gubrium and Buckholdt (1979), in a classic field work on the production of hard data in social service institutions, found that in the process of recording patients’ behavior not every event that should be countable gets counted and instead countable events become recorded after being “interpreted” by the staff. To illustrate that the authors describe cases in which a patient’s act of non-normal behavior was chosen not to be counted

by the staff because the patient had the motivation to behave “normally” but did not due to some extraordinary circumstances and therefore such abnormal behavior was not accounted for in the records. It can be seen from the example that the practical reasoning and the in-depth contextual knowledge of the data gatherers (in this case the nurses) imposes a certain degree of imprecision in the collected data.

In the second order ethnostatistics certain technical and practical assumptions (and conventions) can be identified in the process of elaborating data (i.e. producing statistics). Such assumptions include the appropriateness of using statistical procedures with data measured using particular types of scales (nominal, ordinal, interval and ratio). For example, at a technical level, it is often assumed that Likert-type scaling, which offers subjects ordered choices (e.g. strongly agree to strongly disagree with $n=5$ or $n=7$ categories in a questionnaire) is appropriate. Analysts often use parametric strategy (a means for transforming ordinal data into interval-level measures) to treat Likert-type responses as interval data. On a practical level, it is assumed that subjects can consistently and reliably assign numerals to categories, that the phenomena being measured have real quantitative underlying dimensions that correspond directly to measurement scales, that all subjects assign observations to categories and values in an equivalent manner, and can report true values (Cicourel 1964; Pawson 1982) . It is however common knowledge, that social actors lack complete information, behave inconsistently and have difficulties assigning numbers to experiences (Gephart 1988). Hence, if assignment of numbers is arbitrary, different actors will assign different meanings for the same values and variables. One can still assume that there exist true interval values for variables, but actors have difficulties reporting them or measurement instruments are not well-equipped to capture them. The common practice for social scientists in this situation is to produce ordinal measures to capture this phenomenon. The implication stemming from this is that for example two different subjects who share same meanings can report different values (i.e. 4 and 5). In similar veins,

subjects can forget previous selections and report 4 one time and 5 the next time holding the same meaning. Furthermore, some subjects have wider intervals while others narrower, meaning that for example good for one could be 90 on a 100-point scale, while to another good could be 2 on a 3-point scale. It is possible to question whether researchers are justified in the common assumption and practice of assigning interval values to ordinal data so that the data can be treated as interval for the purposes of further statistical analyses (such as regression analysis). In particular, if those technical and practical assumptions are justified, results from computer simulations where ordinal data were converted to interval data should be equivalent to results from true interval measures. To illustrate this case Gephart (1983) designs a simulation experiment to test whether imprecise measurement will produce statistics similar to true values. For these purposes, he compares the results from running regressions among variables with true values and imprecisely measured values (obtained through four transformations). The main results from the experiment show that transformations of ordinal to interval scales representing data in equal intervals are appropriate and capture fairly and precisely the phenomenon being measured. When representing data in unequal intervals, however, observed measures diverge substantially from true values. Furthermore, further statistical analysis run on both true values and transformed values gives divergent results. Based on this experiment, the author illustrates that imprecise measurement (e.g. transforming ordinal into interval data) will not produce statistics similar to true values. Thus, second order ethnostatistical analysis shows that common practices (i.e. conventions) employed by analysts in performing statistical analysis may distort final results.

In third order ethnostatistical analysis, which uses textual analysis methods to examine the persuasive properties of statistics in documents, another set of informal practices are found to be used in order to enforce the validity of the made claims. A nice illustration of this phenomenon is Gephart's (1986) examination of the rhetoric used in 16 quantitative

methodology papers exploring the adequacy of the parametric strategy. After having made a comparative thematic analysis of the papers, Gephart (1986) found that when discussing correlation coefficients in language terms, similar parts of speech (in specific adjectives) were applied to different values, as well as similar values were linked to different descriptive terms and those language tools were used to persuade the audience about the researchers' claims. In other words, the interpretation of correlation coefficients appeared to be a rhetorical process in which meanings were created by adjectives while absolute values of numerals or tests of statistical significance had minor role, confirming the claims made by McCloskey (1985). Such conventions and arbitrary use of language in quantification texts can surely challenge the taken-for-granted objectivity of hard data production.

The State-of-the-art of Ethnostatistics in Organization and Management Research

While there is an ample number of studies illustrating the use of each level of ethnostatistics in isolation from one another, ethnostatistical studies embracing holistically the different levels of enquiry are relatively rare (for exception see Landrum and Boje 2008; Boje *et al.* 2006, Mills *et al.* 2006; Carlon *at al.* 2006; Kilduff and Oh 2006). In what follows we will focus here on two exemplar studies to analyse how management and organisation scholars have applied the ethnostatistical method.

In one of the exemplar studies employing first- and second-order ethnostatistical analysis, Kilduff and Oh (2006) assess the classical text on diffusion of innovation "Medical Innovation: A Diffusion Study" by Coleman *et al.* (1966) and its three subsequent re-analyses. Their purpose is to demonstrate how reconstructing the context in which the original study was conducted and seeking for tacit assumptions employed in the level of statistical elaboration could shed light on the existing scholarly debate stemming from the controversial results reported in the subsequent studies. The scholarly debate revolving around the classical study on the diffusion of the antibiotic drug among medical practitioners and its subsequent re-

analyses was concerned with understanding whether physicians resolve the uncertainty of adopting the new drug through conversations with colleagues (i.e. the cohesion explanation) or through their perception of the action as proper for an occupant of their position in the social structure of colleagues (i.e. the structural equivalence explanation). The main controversy in this scholarly discourse was that while the results from the original study supported the cohesion explanation, its three subsequent re-analyses using the same data (i.e. Burt 1987; Marsden and Podolny 1990; Srang and Tuma 1993) either supported the same explanation or the alternative argument. In order to shed light on the debate, Kilduff and Oh (2006) applied first and second order ethnostatistical analysis by 1) reconstructing the historical context in which the data for the original study were gathered and 2) examining the statistical analysis applied in the subsequent re-analyses by focusing on how each study modified or preserved statistical assumptions and techniques contained in the previous study. Drawing on the reconstruction of the context and the economic climate in which the original study was conducted the authors showed that early prescribers of the new drug were more integrated to the medical community compared to later prescribers. This finding therefore supported the cohesion explanation. The first re-analysis of this study however focused on a subset of the original data and the conclusions of the original study was discarded offering a new one based on the idea of competition between similarly situated physicians (structurally equivalent). The further re-analyses showed a continuous struggle between the competing arguments reporting controversial results stemming from the arbitrary choice of focus on different parts of the data that can support different theoretical claims. It is clear that the ethnostatistical analysis provided by Kilduff and Oh (2006) could shed more light on the debate by data in the context from which it was generally abstracted. One can, however, ask what was the explicit method by which the contextual reconstruction was guided.

Another representative study of the use of ethnostatistics in management and organization research is presented by Boje *et al.* (2006) who investigated how Enron Corporation, which underwent one of the largest bankruptcies in the US history, presented statistical and accounting data in a way to create a positive misleading image of the company, applying all three levels of ethnostatistics. What Boje *et al.* (2006) did in order to disentangle the case was 1) to reconstruct the context in which the company operated (first-order ethnostatistics), 2) to evaluate how the company used predictive statistical models to ground the pricing of their long-term contracts (second-order ethnostatistical analysis) and 3) to uncover how the rhetoric of numbers was accomplished theatrically in staged settings in order to persuade relevant audience about the company's success (third-order ethnostatistical analysis). What the authors found was that the context in which the company operated was a new highly deregulated market. This context easily allowed using impression management tactics, such as immediate recording of projected revenues from long-term contracts at arbitrary price assumptions therefore making it possible to inflate revenue figures as needed or keeping numerous debt related "off-the-balance-sheet deals" to demonstrate financial strength. At the second ethnostatistical level the authors found that Enron traders could mismark the forward pricing curves, producing fictitiously enlarged revenues, which granted them enlarged bonuses. Furthermore, the Boje *et al.*'s (2006) analysis uncovered that the risk management model the company used was led by overly optimistic assumptions thus presenting misleading information about risk to investors. Finally, at the third level of ethnostatistics the authors discovered how in each year between 1998 and 2001, Enron created temporary stage set and simulated a real trading floor thus persuading targeted audience (i.e. Wall street analysts and other relevant stakeholders) that the business was "booming". In this way, the rhetorical power of numbers was enacted theatrically to create misleading image of the company. Notwithstanding the cleverness and insightfulness of the Boje *et al.*'s (2006) study, one can

ask for the explicit methodology used for creating the historical contextual reconstruction employed in their study.

Collectively, both the representative studies applied ethnostatistical analysis, starting by referencing the outlined in Gephart's (1988) seminal work methodology. However, what was somehow missing as a methodological note was how they actually did the historical reconstruction in their studies. While for real-time ethnographies, organization and management scholars seem to be well equipped with methodological tools and usually pay significant attention to methods description, in those studies the "retrospective" ethnography produced somehow lacked thick description of employed methods. While we acknowledge that such shortcomings are not compromising the rigour and the validity of the obtained results, we use this observation to position our argument, namely that in the lack of practical ability to conduct real-time ethnographies, specific attention to historical sources should be paid as their use poses additional methodological concerns which are explicated in more details in the subsequent sections.

Limitations in the Application of Ethnostatistics in Organization and Management Studies: A Proper Historical Approach

As seen from the literature review presented above, organization and management scholarship applied ethnostatistical analyses in different settings delivering insightful explanations about ongoing controversies and uncovering hidden contextual facts to supplement their analysis. In all cases, however the first-order ethnostatistical analysis was done in retrospect. While we do not question the validity and the power of the delivered histories in those studies, we draw on an argument explained in detail elsewhere (Rowlinson *et al.* 2014) that the treatment of time (i.e. the past) for organization theorists and historians differs potentially raising methodological concerns. In specific, Rowlinson *et al.* (2014) suggested that 1) while historians are preoccupied with narrative construction, organization scholars tend to subordinate narratives to analyses; 2) while historical research uses verifiable

documentary sources, organization scholars construct data following replicable procedures and 3) whilst historians construct periodization from sources and historical contexts, organization theorists “tend to treat time as constant or else import periodization as given from historiography” (Rowlinson *et al.* 2014, p. 251). Bringing those arguments to the application of ethnostatistics in organization and management research we would like to pay specific attention to the fact that proper historical approach can substantially complement the development of the contextual reconstruction in the absence of the possibility to conduct real-time ethnographies, only if conducted with methodological awareness. Furthermore, historical approaches focusing on source criticism can supplement data triangulation and allow for a critical assessment of the changing meaning of measurement practices and results in the case of the impossibility to conduct real-time ethnographies.

The Intersection of History and Ethnography: Implications for Ethnostatistics

An historical approach can address some of the gaps coming from the limitations of ethnostatistical methods, as they are explicitly stated by Gephart (2009). History has a descriptive and explanatory approach in common with the ethnographic method, which puts prescriptive and transformative aims out of its reach. Yet the two disciplines diverge when political implications and intentional manipulations are concerned. The ethno-statistician accepts that the latter “do occur” and that the former are relevant, but assumes that they “are not fundamental to quantitative social and management research” (Gephart 2009, p. 100). On the other hand, historical studies on the development of quantitative inquiry provide useful insights on the relationship between intentional and unintentional selection and representation biases, showing that political questions were crucial to the development of new methods (Desrosières 2002; Yeo 2003), and that very sophisticated manipulations can be embodied in technicalities (Stapleford 2009). These threads of research in the history of statistics show also that history can shed light on the political and historical context in ways that are precluded to

ethnographic analysis, as far as it refers to the past only as it remains in the present perception of the actors (Clark and Rowlinson 2004, p. 345). In particular, a retrospective historical approach can highlight processes of black-boxing, reusing, reinterpreting data, measurements and metrics, that only take place in the medium and long term. The social life of data is not limited to their creation and immediate rhetoric use, but they remain as a reference for future quantification, for comparison and to build up trends and scenarios that frame the perception of a phenomenon and, finally, decision-making. In this perspective, putting into relationship documents, materials and events located in different times allows to follow the change of meaning that measurement can take, and the process of alterations involving different actors in different moments, highlighting the role of “boundary objects” that measurements and the resulting quantitative data can exert between different places and times (Merton 1973).

Consequently, historical approaches, with their focus on source criticism and contextual reconstruction, can usefully join ethnography, computer simulations, and rhetorical analysis, complementing these approaches especially where the interpretations and re-contextualization in the medium and long term by subsequent users of statistics are concerned. An historical ethnostatistics can restore the possibility to understand the long-period dynamics of quantification and to identify specific historical trajectories, particularly important where the transmission and validation of knowledge is involved (Barth 2002).

This way, the ethnostatistical attempt to provide qualitative foundations to quantitative research may also become more appealing to management and organization scholars who see further limitations in a purely ethnographic approach. There are however evident problems in complementing or substituting ethnography with a historical approach. By building a historical narrative based on secondary data, the ethnostatistical researcher takes on the unavoidable risk of imposing their own interpretation on the sources (Norman 1991). Also, by using secondary data as historical primary or secondary sources, researchers apparently resort to what Van

Maanen (1988, p. 76) defines as “pre-packaged” materials, so contradicting a main element of the ethnographic method.

Both the above cited objections can be dealt with by the means of what Kipping and Usdiken (2014) have defined as “historical cognizance”, i.e. the ability to incorporate the complexity of historical processes and the inherent partiality of historical sources in the process of theorization itself. First, the researcher can cope with the problem of imposing an interpretation when using historical materials (however without solving it) only by means of an explicit avoidance of objectivism, i.e. by making clear to the reader how the evidence was found and interpreted, and neatly distinguishing between what this evidence is saying and what is the result of their best possible interpretation. Second, archival sources may be “pre-packaged”. However, the historical researcher has many instruments of source criticism to “unpack” them, from cross-comparison and triangulation with other sources, to the study of the context and conditions presiding to their production, up to textual analysis. For the ethnographic purposes of ethnostatistics, in fact, the ability to read historical sources “against the grain”, i.e. using them in similar way as an ethnographer would use texts to interpret a culture, is crucial. It is worth highlighting however that in doing this, the ethnographer needs to be aware of the epistemological peculiarities of historical inquiry. Historical sources are idiosyncratic by definition, and cannot be treated under the assumption that what matters is the replicability of data construction and analysis, simply because they are not data. They are not constructed, but found, and provide an unavoidably partial view on whatever is the subject of the research. Hence, they cannot be simply analyzed, but they need to be retrospectively interpreted, leaving room for the possibility of other interpretations.

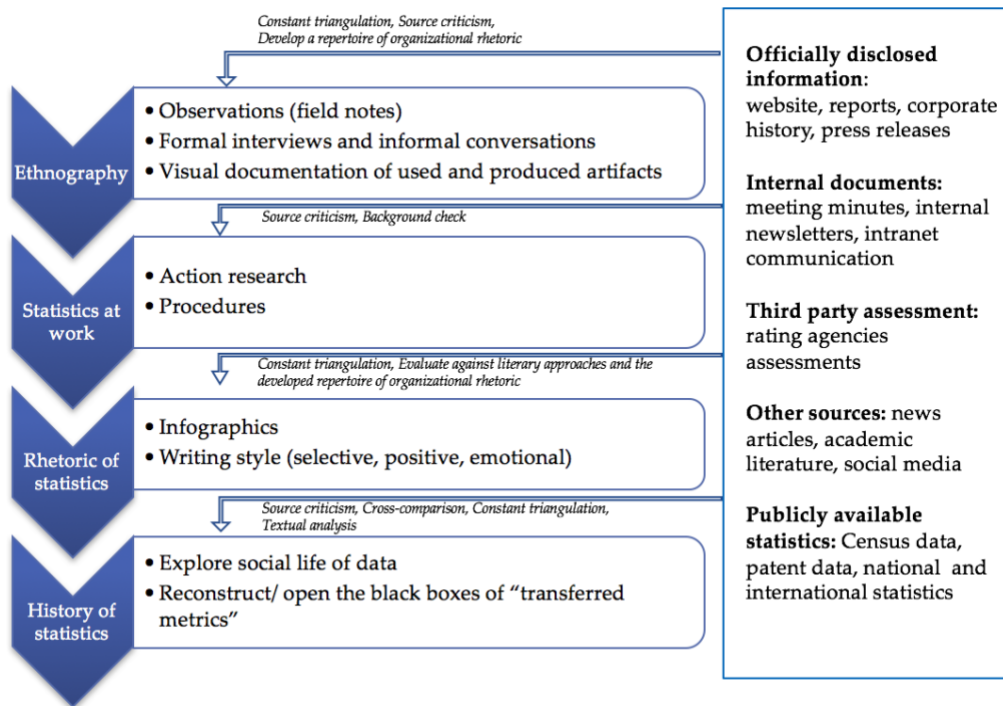
Towards a Historical Ethnostatistics

In what follows we outline a pluralistic method for conducting ethnostatistical research in organizational settings based on the integration of research practices employed by one of the

authors conducting ethnostatistical research in a large multinational company and best practices from ethnographic and historical research. The practical experience of conducting a real-time ethnostatistical enquiry was gained in the period of 7 months from September 2016 to March 2017 when one of the authors had the unique opportunity to explore the work of the Sustainability Department located in the headquarter of a large multinational company which has been one of the industry leaders in sustainability in the sector in which it operates according to independent rating agencies assessment for five consecutive years (i.e. 2009-2016). Over this period, she was able to make regular site visits ranging from 1 to 3 days in length lasting on average of 7-8 hours per day which included participating to team meetings, teleconferences and conducting formal interviews and informal talks (15 formal semi-structured and unstructured interviews). The data collection process was complemented using additional secondary sources such as the company publicly available data in the form of official documents available in the company's website, sustainability reports, press releases and news articles, rating agencies' questionnaire and reports, competitors' websites and sustainability reports.

In order to complement the suggested research methodology, the authors extracted best practices and techniques of conducting ethnographic research available in literature (i.e. Adderio 2014; Gioia and Chittipeddi 1991; Kaplan 2008; Risi and Wickert 2016; Slager, Gond and Moon 2012; Stigliani and Ravasi 2012; Turner and Rindova 2012) as well as best practices for conducting historical research. The integration of those research techniques is illustrated in Figure 8. As the Figure shows for each level of ethnostatistical enquiry (including one more level, i.e. the history of statistics) different research techniques have been suggested, further additional materials to be treated as secondary data has been identified and finally triangulation techniques are presented to complement the suggested analysis.

Figure 8: Pluralistic Research Methodology for Conducting Ethnostatistics in Organizational Settings



At the first-level of ethnostatistics (i.e. conducting an ethnography of measurement production) this framework suggests data collection methods commonly used for ethnographic research (e.g. Van Maanen 1979) spreading from participant observation, formal in-depth semi-structured interviews and informal conversations. To supplement the data collection process, visual documentation of used and produced artefacts during the participant observation has been suggested in an exemplar ethnographic research (i.e. Stigliani and Ravasi 2012). Such technique can prove to be specifically crucial especially in the cases in which sensitive data (such as Key Performance Indicators) are being elaborated or discussed. The actual documentation of such artefacts can be done by direct photographs (if permitted by the hosting organization) or by the researcher’s own graphic or descriptive means – by attempting to recreate graphically and descriptively the artefacts at stake. Within this level of analysis, a complementary set of secondary data, ranging from officially disclosed information through internal documents and other publicly available meta-data sources (see full list in Figure 8), has been suggested to be used for constant triangulation and to further the creation of a more

holistic picture about the general “climate” in which the organization operates. Within this level, we encourage that the researcher creates an initial repertoire of organizational rhetoric (i.e. seeking and documenting specifics in the language or attempting to develop a repertoire of the professional slang used by the observed organizational actors). This initial repertoire will be used later to compare with the official organizational rhetoric in the search for potential divergence that can inform the researcher in which cases the language tools are used to emphasize or de-emphasize a specific event.

Our framework suggests that a useful technique to develop the second-level of ethnostatistical analysis (Statistics at work) is by conducting it as an action research (Lewin 1947). In this method of research, it is presumed that the benefits from combining “action” with “research” is to overcome important social and organizational issues together with those practitioners who are experiencing the issues (McKay and Marshall 2001). Thus as opposed to case studies or simple participant observation methods, in action research members (both the researchers and organizational actors) actively participate in the cyclical process of planning, taking action, evaluating that action, leading to further planning, rather than merely being objects of the study (Olesen and Myers 1999). Therefore, the actors work together so that any issues may be resolved or an organizational system could be improved. While such a research can have operational value, on a purely practical level its value for ethnostatistics can be to grant the researcher potentially with a wider access to organizational documents, operating procedures and even closer, colleague-like relationships with the organizational actors thus allowing them to have more holistic insights on the actual process of creating statistics. Again, at this level of research any of the listed in Figure 8 secondary sources can supplement emerging insights. At analytical level in this stage it is suggested that the researcher uses the obtained sources as if they were historians (i.e. focusing on source criticism to uncover what the developed documents at stake are an answer to, and which specific bias they project on the

results). Further it is suggested as useful to gain more knowledge about the organizational actors' educational and professional background in order to give the research a potential anticipation and explanation of the "conventions" and informal practices they might be using in the process of data elaboration.

In the third level of ethnostatistical enquiry, the rhetoric of statistics, a specific focus on the organizational textual and visual presence is suggested as a means for evaluating how, where and why quantitative facts can be potentially used to create a sounder validity of organizational claims. At this level of analysis, we suggest evaluating the official company's disclosure against the developed (in the first stage of the analysis) repertoire of organizational rhetoric. Further it is suggested that the official organizational disclosure should be analyzed critically as a literary document searching for differences in the writing styles used in different documents, points of time or among sections within the same document. For example, too emotional or positive style can be a sign of the use of language as a strategic tool rather than to disclose pure facts. In this stage, again triangulation with additional data is suggested to complement the analysis and to give the researcher an indication of whether and why certain events might be discarded from the official organizational rhetoric.

Finally, we suggest adding a fourth level of analysis, the history of statistics, focusing on the longer-term evolution and change of the meaning assigned to the constructed metrics and to the collected data. As it is common knowledge, metrics and methods are often transferred from and/or to other organizations and/or institutions (i.e. standardized indicators, assessment methods, Key Performance Indicators), by which a complex dynamic of domestication and adaptation is involved. We suggest that such mechanisms can be studied using a retrospective approach resorting to the secondary data concerning the past phase and connecting it to the present situation that is then subject of ethnographic observation. Connecting the two phases requires establishing an interpretive connection between materials

having different origin and characteristics. Such an interpretation is impossible to achieve with a purely ethnographic approach whenever the metrics that are transferred are “black-boxed”, i.e. they are taken for granted in their working, focusing only on the results, this way concealing the details of their origin, and making their history unknown to their users (Latour 1999, p. 304). This in fact excludes the possibility to appreciate the details of their construction and transfer as they are not explicitly “embedded in the daily practices and symbolic life of the group studied” (Van Maanen 1988, p. 72). The same is true whenever the users of data take for granted the procedures by which they were produced elsewhere or in a different time, and go on elaborating and interpreting them for practical purposes. Furthermore, the “social life of data” is also a field of inquiry which requires almost by definition an historical approach in order to be extended further than a limited scope, and to assess what was lost and what was acquired in the transfer through different contexts (Blackman 2015). Therefore, at this level of analysis we suggest that exploration of the social life of data and the path of transferred metrics is needed to uncover the micro-dynamics of quantification processes (including building or adopting measurement tools and data generation) which grant the researcher the ability to trace and show the long-term trajectories of data which is lacking if one relies solely on pure observations of data generation and use in the *present*. At this level of analysis, historical approaches for source criticism can be used to open their black boxes ranging from cross-comparison and triangulation with other sources, the study of the context and conditions in which data and metrics were produced, to textual analysis. As illustrated in Figure 8 additional secondary sources can supplement this level of analysis.

Conclusion

As far as the professional world is becoming more and more performance driven, reliance on quantitative data has become a milestone to support the business decision-making

process and to create objective knowledge. In such a context, it is extremely important for both academics and business professionals to adopt critical lenses in the process of constructing and using measures. In this paper, we discuss how a promising method from organization and management research, ethnostatistics, can be used to guide such critical analysis. In specific we suggest how historical approaches can successfully join ethnostatistical enquiries in an attempt to overcome some limitations in existing conventional methods. Such an approach can bring certain benefits to both the academic and business world by increasing the methodological rigor in producing scientific knowledge at a theoretical level and by improving measurement practices employed by business professionals at a practical level.

We observe that, although scares, organization and management scholars, delivered excellent contributions by applying ethnostatistical analysis to solve highly debated and controversial cases. However, the practical impossibility of conducting real-time ethnographies has rendered that historical reconstruction can be used as a substitution. We use this observation to position our main argument, namely that historical approaches which focus on source criticism can be useful in solving existing problems in conventional ethnographies. To address these issues, we outline a pluralistic method for conducting ethnostatistical research encompassing practical research and triangulation techniques and offer a methodological discussion on how historical approaches which focus on source criticism and contextual reconstruction could overcome the limitations of pure ethnographies.

Finally, although we state explicitly that this research has been informed by the practical experience of one of the researchers complemented with best practices evident in the exact literature, we wish to acknowledge that the suggested framework is conceptual and empirical research is needed to ensure its applicability and further enhancement. Therefore, a promising avenue for future research is to apply the suggested method in real case studies (although not necessarily focused on pure quantification problems, but also in the rhetoric of

quantification as showcased in Study 2 of this Thesis). We believe that such research agenda and future improvements of the methodology can narrow the conceptual distance between practice and theory, and within academia: between historic and organization and management research. While we acknowledge that such a method can be both time-consuming and rare given time and access constraints, we see it as a promising contribution to methods. In specific, we believe that this paper contributes to the ethnostatistical field by discussing the intersection between history and ethnography while suggesting ways for their complementary use in organizational and management research.

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5. Conclusion

Motivated by ethnostatistical thinking, this research project was aimed at engaging organizational and management disciplines into in a more critical investigation of the foundations and practices of measurement construction. Discussing this overarching question in the case of sustainability performance measurement, I have presented three studies giving three different perspectives on how this idea can be employed. Additionally, I have attempted to contribute to ongoing debates within the respective research streams.

More precisely, at a conceptual level, in my *review article* I have identified five foundational conceptualizations of sustainability and its measures within the management and organization scholarship: 1) Sustainable Development as a macro perspective; 2) Ecological economics (capital-based approach) as a macro perspective; 3) Environmental management/ Ecological sustainability foundational perspective; 4) Sustaincentrism, Corporate sustainability & Sustainable Organizations foundational perspective; and 5) Corporate social responsibility/ Corporate social performance foundational perspective. I have then elaborated a historical progression of the identified conceptualizations and summarized my main observations regarding the state of the art in sustainability performance measurement, suggesting areas for future investigation. The main findings of this research show that even if they followed different historical paths, nowadays the different conceptualizations of sustainability tend to converge in terms of both definitions and measures, with the prevalence of the use of third-party assessments as a proxy for sustainable corporate performance. A plausible explanation for this observation can be found in Kuhn's (1970) reflections on the evolution of scientific knowledge where he distinguishes different phases in the ways scientific progress is made (i.e. pre-paradigm, normal science, paradigm shift and post revolution). Using this distinction as analytical lens, I can position the current status of the state of the art in sustainability measurement in the phase between normal science and paradigm shift. As

observed, the fact that concepts and measures of sustainability tend to converge nowadays advocates that current research efforts have already gained consensus in the discipline (additionally, despite several inconsistent results sustainability scholarship is in agreement that “it pays to be green”). On the other hand, however, real-time crises (as the example of the Volkswagen scandal given in the Thesis Introduction) ring the bell that a paradigm shift may be in front of us and is needed to solve existing gaps between practice and theory.

Drawing on these observations, I have presented several recommendations and emerging questions to guide future research. The presented questions stem from the awareness that a paradigm shift in the research agenda is need. In specific, focusing on exploratory and normative approaches should be capable of closing gap between academia and practice.

My second contribution is an *empirical study* offering a different perspective on the issue. I designed an inquiry aimed at investigating the “rhetorical” element of quantification by exploring the process of sustainability reporting and the field level forces that affect its realization. At a theoretical level, an important contribution of this study is the development of a theoretical framework which identifies three mechanisms through which the sustainability reporting process is realized using the explanatory power of institutional theory, strategic legitimacy theory and social constructionism. In this perspective, sustainability reporting resulted as a strategic tool through which organizations maintain and control their legitimacy status in order to 1) *Comply* and 2) *Adapt* to the demands coming from the organizational field (institutions, external stakeholders and other actors). However, the sustainability reporting process displays also social constructivist elements such the identified 3) *Co-creation* mechanism, and can thus be conceptualized as a socially constructed reality obtained through an iterative process of numerous interactions, reflecting ongoing changes which re-shape and co-create the organizational field through discourse. Thus, this study overcomes the sole

reliance on the institutional and strategical legitimacy paradigms and offers an alternative, social constructivist explanation of the sustainability reporting practice.

At a *methodological level*, in collaboration with prof. Giovanni Favero, we offered a third contribution by discussing how historical approaches can successfully join ethnostatistical enquiries in an attempt to overcome some limitations in the existing conventional methods. We suggest that such an approach can bring benefits to both the academic and business world by increasing the methodological rigor in producing scientific knowledge at a theoretical level and by improving the awareness of the implications of the measurement practices employed by business professionals at a practical level.

Although as comprehensive as possible, it is my intention that the project will be complemented with two more lines of research: 1) an investigation of the practice of producing in-house metrics (which is an ongoing research project based on the ethnographic research presented in the field study of the second paper) and 2) an investigation of the practice of rating agencies in preparing sustainability assessments of companies. I foresee that such future lines of research can not only engage a dialogue with important theoretical debates within the organization and management literature, but will also provide a more complete picture of how sustainability is measured in practice, opening a whole new research agenda within the sustainability performance measurement literature.

Collectively, the three studies were able to approach and discuss general problems of quantification (both within the field of sustainability performance measurement and in general) offering a critical point of view. It is important to note here that adopting a critical lens within the project is not an end but an analytical device able to capture and explore the complexity of the investigated phenomena. In this sense, opening the “black boxes” of sustainability measurement is a way forward to improving the rigour in both academic and business practices.

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