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A Critical Review and Evaluation of the Lean Concept and Corporate Social Responsibility/Sustainability

Investigating Their Interrelation and Contribution in Terms of Business Competitive Positioning

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‘To our parents, Georgios and Meri’

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DECLARATION OF AUTHENTICITY

By submitting the present thesis electronically, we acknowledge that the entire work is our own, a result of genuine personal effort. All sources that have been used throughout the pages are listed with the related references in an explicit manner. We declare therefore that the entirety of the work therein is our own and we are the owners of the copyright. It does not contain any implicit or unidentified work from unstated sources. We have read the University Regulations referring to plagiarism and we entirely abide by them. We also concur with the unwritten yet fundamental ethics, which require the advancement of academic research through mutual respect and acknowledgment to the efforts of colleagues and members of the academic community and the use of solely accepted means of inquiry. Lastly we would like to assure that the present work has not been partially or in total submitted anywhere for obtaining any qualification.

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List of Abbreviations:

AA	AccountAbility (Standard)
CI	Continuous Improvement
CSR	Corporate Social Responsibility
EPA	Environmental Protection Agency (in the USA)
ERP	Enterprise Resource Planning
GRI	Global Reporting Initiative
GSCM	Green Supply Chain Management
CLSC	Closed Loop Supply Chain
EMAS	Eco-Management (and) Audit Scheme
IMS	Integrated Management System
ISO	International Standards Organization
JIT	Just-In-Time
KLD	Kinder Lyndberg Domini (Database)
KPI	Key Performance Indicator
LAI	Lean Advancement Initiative
LCA	Life Cycle Assessment
MNC	Multi National Corporation
OECD	Organization for Economic Co-operation and Development
OHSAS	Occupational Health (and) Safety Advisory Services
PCR	Product Category Rule
SA	Social Accountability (Standard)
SCF	Supply Chain Finance
SCM	Supply Chain Management
SME	Small and Medium (Sized) Enterprise
SS	Service System
SSCM	Sustainable Supply Chain Management
TPS	Toyota Production System
TQM	Total Quality Management
VBA	Value Balance Accountability
VSM	Value Stream Mapping
WCSD	World Council (for) Sustainable Development
WIP	Work-In-Progress

Note: Throughout the pages of the current work the terms CSR and Sustainability will be used interchangeably. In several cases, we simultaneously use both words in the form of CSR/Sustainability so as to indicate this choice of equivalence that we use for this connotation.

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Chapter 1 Abstract and General Introduction

The contemporary competitive business environment is characterized by the evolution of technology and knowledge as well as the proliferation of production, distribution and monitoring systems for the provision of qualitative and valuable products to end users i.e. the different categories of customers. This in turn poses mainly a great amount of uncertainty related to the strategic choices and competitive orientation of modern organizations and secondary has heightened implication for all modern business aspects such as planning, purchasing, production, logistics, business analysis, business control, auditing, marketing and market positioning. These conditions have created the need to develop and implement management systems that will recognize the systemic nature of business and will treat in a holistic manner the set of parameters that may deliver competitive advantage. This is the point in which we believe that the Lean concept interrelates with the CSR and sustainability dimension of corporate behaviour where both aim to deliver value to firm stakeholders. Briefly put, Lean management could serve as a facilitator of instigating greater co-operation and alignment in the design, development and implementation, both intra-organizationally and on a supply chain level, of more environmentally friendly processes and products.

The purpose of the present thesis is to uncover any possible synergies and interrelations in terms of adding value to companies between Corporate Social Responsibility/Sustainability and Lean. In this sense, the objective is placed upon unveiling the strategic character and the reinforcing and supportive role of both concepts (Lean and Corporate Social Responsibility/CSR) into becoming more economically justified and efficient, offering benefits in terms of cost savings and economic effectiveness. In this sense, the following lines serve as a means of providing a developmental account and a thorough understanding of the current reality concerning the two concepts. In order to objectify and concretize the rather vague notion of value and provide a comprehensive yet elaborate understanding of the contribution of Lean and CSR to strategic advantage, we have framed the realization of value capture and appropriation through the competitive positioning framework.

The research project commences with the introduction and the outlining of our study context and the underpinning principles guiding our efforts. The overall research objective is to understand the way in which Lean and CSR contribute to business value. Therefore our

main research question under investigation, which aims at depicting the overlapping nature of the two concepts can be summarised in the following lines: ‘‘ Which key contributions and how does a company expect from the adoption of Lean practices and CSR/Sustainability activities’’? Briefly put, it seeks to provide insights into the ways and the circumstances that allow Lean to effectuate a strategic competitive advantage through the adoption of sustainability practices. This overarching question will be answered through the development of respective sub-questions in the different chapters. For reasons of confined space and in order to forward practicality of the present thesis, when referring to CSR/Sustainability in the chapters of the critical comparison and the case study research, we elaborate on the environmental dimension of socially responsible business behaviour. By no means do we reject the huge importance of the social dimension. However we incorporate this treatment since it is tightly connected to processes, which are considered intertwined with the Lean concept. Therefore it entails increased potential to provide tangible research results which can advance academic inquiry.

In the following parts we elaborate on the development of each concept separately and continue with a critical comparison between them. More explicitly, in Chapter 2 we answer to the sub-question of ‘‘How does the application of the Lean concept add value to a company and under what circumstances?’’. In Chapter 3 we aim at answering an equivalent question on the part of CSR and Sustainability, namely ‘‘How are business objectives realized through CSR/Sustainability activities and in what conditions?’’. These chapters embrace an inductive-deductive approach, hence they entail an abductive or else retroductive reasoning. Their contribution is twofold. On one hand they provide a detailed and up to date review of available academic work pertaining to both concepts and therefore contribute to the different literature sets. On the other hand, they explicate our different levels of induction and deduction in our effort to frame the relevant knowledge and simultaneously serve as building blocks for the following conceptual framework. Therefore these are crucial steps in structuring and framing our intended field of research. The notion of value is further explicated in the next chapters where it is objectified in terms of competitive advantage. Moving towards Chapter 4 this framework is developed and presented. It constitutes a delicate integration and synthesis of the preceding critical reviews. The issue with these two concepts relates to the fact that there are different works and literature sets that treat them separately without providing a depictively justified reasoning for meaningful integration in order to build new models and subsequently test them through practical case studies.

Consequently the question that needs to be addressed could be included in the forthcoming words ‘‘What are the unifying principles that underline both concepts in their contribution towards strategic positioning of a company?’’.

The present work heads these calls and moves towards this direction. In Chapter 5 we explain our epistemological and ontological position and elaborate on our research approach and the applied methodology. It includes our selected case study and the interpretation and presentation of the results. This chapter encompasses both theoretical and empirical material that are conducive to answering the question of ‘‘How can Lean practices be used under a strategic positioning perspective in greening a company’s operations and products?’’. The issue of greening operations and products is fundamentally tied to business objectives and the company’s strategic positioning. This question is vital for accomplishing our overall research objective as mentioned above and also leads to the critical academic and managerial implications that derive from this work. These implications are depicted on our conceptual framework that serves as a baseline, our theoretical model that depicts processes and factors crucial for competitive advantage, thus answering the whats and whys and a proposed typology that could provide a managerial tool of translating current or future oriented business actions. Lastly, Chapter 6 constitutes the conclusive section where suggestions for any future research attempt are provided and justified according to literature, the newly developed framework and results of the thesis.

It also presents the development of both a proposed typology and the outline of a theoretical framework, which embarks from the literature review and the empirical results and aims at offering an explanatory justification. Our work highlights that the Lean concept constitutes a practical framework and is preferred due to the different tools and methods it uses. In this sense it translates the broader concept of CSR/Sustainability into distinctive objectives, steps and points of reference in both the economic, environmental and social dimensions in order to accomplish the company’s goals. What emerges as a crucial precondition from our research is the need to incorporate both the corporate social responsibility concept and lean into the strategic planning of the company, in order to provide tangible and long lasting results with coherent effects in the various business practices. As a concluding remark, the thesis elucidates the mutual interdependency of the two concepts within the quest of adding significant value to the company and provides a strong ground for

integrating sustainability issues at the operational level, combining tactical and strategic considerations.

Our research intentions are aimed at serving a threefold objective as clarified in the following lines:

- a) For readers and practitioners: To raise their interest in two highly relevant academic concepts that entail various practicalities for everyday business life and reflect a more collective and process oriented mentality
- b) For students: Especially for those in the fields of project management, total quality management, business management and strategic planning, to offer insights relevant to needs for increased awareness about the complexity, adaptability and usefulness of Lean and CSR/Sustainability and how these can be operationalized and under what circumstances in applied real life settings
- c) For academics: To develop a comprehensive interpretive lenses in order to realize the criticality of Lean practices. By discussing available empirical research in both domains, developing new theory and explicating it against a real case study example, we couple them in a unified way with sustainability principles in order to orient future research avenues and common conceptual and empirically validated frameworks

In a summative account and providing an objective breakdown structure of our thesis, the research focus is presented as follows:

Main Research Objective: Which key contribution and how does a company expect from the adoption of Lean practices and CSR/Sustainability activities?

Briefly put, we attempt to provide clarifications and insights into the ways and circumstances that allow Lean to effectuate a strategic competitive advantage through the adoption of sustainability (environmental in more specific) practices.

Research Sub-Question number 1: How does the application of the Lean concept add value to a company and under what circumstances?

We tackle this issue in Chapter 2.

Research Sub-Question number 2: How are business objectives realized through CSR/Sustainability activities and in what conditions?

This theme is subject to inquiry in Chapter 3.

These two chapters serve a twofold aim, which on one hand aims at providing an exhaustive literature review of the two different literature sets and on the other hand to indicate our levels of abduction in order to synthesize available academic work into a newly developed conceptual framework that in turn will serve as the baseline for our empirical and further theoretical research treatment. Visualizing this attempt, we could view these two chapters (Chapter 2 and Chapter 3) as a linkage attempt to disembark from a parallel and incoherent treatment of Lean and Sustainability into one coherent track in order to unveil new research avenues and build new knowledge perspectives.

Research Sub-Question number 3: Subsequently, this question is phrased as: What are the unifying principles that underline both concepts in their contribution towards strategic positioning of a company?

This issue is dealt with in Chapter 4.

Research Sub-Question number 4: How can Lean practices be used under a strategic positioning perspective in greening a company's operations and products?

This question is substantiated within the writings of Chapter 5.

The above mentioned set of main and sub- research questions aims at explicating a unifying framework that will serve as roadmap in our effort of providing insight in a sequential and seamlessly integrated manner in order to further explicate the importance and research implications of the current study.

As the remainder part of this chapter, we have opted for grounding our literature review approach, which constitutes considerable part of both Chapters 2 and 3. Adequate scholarship entails the essence of academic rigor and practical breadth, which both incorporate the personal element, in more specific the authoritative and qualitative interpretations of current research. In a supportive manner and very relevant to the literature review process, Czarniawska

(1999) offered an insightful perspective and highlighted the strength of narratives in disseminating knowledge and enriching learning. A narrative according to her can be viewed under the lenses of explication, explanation and exploration and includes the elements of authoritative and translative authorship. The central component of these processes consists of interpretation. Last but not least, we consider it proper to make a connection to Singhal and Singhal (2012) who maintain that an opportunity of developing science lies within the premises of accepting outliers as a source of potential insight instead of treating them as mere deviations that produce statistical noise. A contractual type of literature review is reminiscent of this flawed treatment whereas the authorship review could be aligned with the sensitiveness and inclusion of under-studied cases as well.

We also resort to Alvesson and Sandberg (2011) who refer to the prevalent practice of generating research questions as a ‘gap-spotting and filling’ tendency, where researchers try to demonstrate deficiencies in existing research and therefore suggest the treatment of these underdeveloped areas. This might be acceptable and even constructive as the authors also recognize but it is usually not enough. Through the quantitative treatment of content analysis and literature reviews, there is an inherent capacity limit, a ceiling in the potential of producing novelty and allowing for contesting ideas and concepts. Reviews lead to findings which in turn provide the baseline for making a conceptual contribution. According to Suddaby (2010), if we aim for increasing the conceptual appeal of our effort, then we should seek for the following three constituent parts: precise delineation of constructs, elaborate articulation of relationships and scope. The quantitative approach of content analysis which is usually adopted when conducting a literature review fails to encompass the breadth and width of the content itself resulting in possible misunderstanding, confusion and on behalf of the reader, to numerous interpretations of possible explanations and purposes that were intended by the author. Good theory presupposes elegant yet clarified explanations. As van de Ven (1989) states ‘Good theory is practical precisely because it advances knowledge in a scientific discipline, guides research towards crucial questions, and enlightens the profession of management’. It is a result that explains, predicts and delights through disciplined imagination (Weick, 1995). By providing synoptic accounts of the current literature standing through a review, we sometimes either neglect or unconsciously forget to shed light on the different connections and abductions that have been made in search of reaching the end-results.

Considering the limitations outlined in the previous section, it becomes apparent that we aim at adopting an argumentative approach. In this fall, we entirely agree with Webster and Watson (2002) who state that a qualitative literature review is focused on a concept-centric rather than a chronological or an author-centric understanding. A review does not consist of a mere annotation of citations nor does it aim for a summative report. According to Hart (1998) it is much more and it is defined as “the use of ideas in the literature to justify the particular approach to the topic, the selection of methods and demonstration that this research contributes something new” and therefore should not be underestimated. Therefore the concept-centric approach is considered more suitable since it answers to the identification and explanation of the different dimensions that constitute both Lean and CSR/Sustainability different sets of literature. Furthermore, the combined discipline of Lean and CSR is an emerging one and in the words of Kuhn we are still in a pre-paradigmatic mode of inquiry. This causes the deficiency of well-established and unambiguous concepts and terms and this in turn renders improper a contractual type of review approach. A substantive, thorough, sophisticated literature review is a precondition for doing substantive, thorough and sophisticated research (Boote and Beile, 2005).

Therefore, a concept-centric literature review holds significant potential for constructive engagement with the concepts’ flourishing past and promising future and by this means for providing researchers and practitioners with a tabulation of untapped areas for future research. Following the premises of the work of Levy and Ellis (2006) we indulged into a sequential procedure of selecting, knowing, comprehending, applying, analyzing, synthesizing and evaluating the respective literature sets. From this perspective, our treatment is also consistent with Creswell’s (1994) viewpoint that calls for not only statically presenting previously accomplished work but on the contrary relating it onto an ongoing dialogue through the provision of novel frameworks with reasoned structural components. Our endeavor is also targeted towards this directions. To this end, we have read the literature back and forth, delving into different related articles of academic journals through the most widely used search engines and critically evaluating their contributions and relevance through an abductive approach for the purposes of our own research. Additionally, hallmark articles that market the initiation of a new era in the literature sets of Lean and sustainability have also been considered through a citation tracking approach. Grey literature, such as anecdotal work or working papers, was also advised in case it included novice and valuable knowledge and acting consequently as outliers. Book chapters were also part of the literature review in order

to supplement our targeted sampling frame and possibly enrich our potential insight. In the end, the relevant contents did not deviate from existing academic literature and always referred to major articles and authors whose work had already been consulted.

Being claimed as “parallel universes” (Larson and Greenwood, 2004) Lean and CSR/Sustainability represent more than just an amicable interaction. They are fundamentally strategic and from a competitive positioning perspective, they constitute in most cases the two different sides of the same coin. Our overall aim, departing from the critical literature reviews, is to synthesize a coherent conceptual framework and in turn empirically validate and identify potential areas in which companies could possibly integrate green consideration into existing business practices either through incremental changes or more radical steps by adopting smaller or larger degrees of innovation steps. By doing so, an implicit and underlying assumption which somehow constitutes our research roadmap is that under specific circumstances and through explicit ways, Lean and CSR/Sustainability constitute a strong supportive argument of providing an encompassing framework for competitive advantage.

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Chapter 2 The Concept of Lean

Research Sub-Question to be answered: ‘How does the application of the Lean concept add value to a company and under what circumstances?’

2.1 What is Lean? - Definition

The Lean philosophy concept is originated in post-war Japan and the efforts of Toyota Motor Company to compete with the well established systems of mass production practiced by the leading industry companies in the United States such as Ford and General Motors. After the grandiose penetration of Toyota in this market, the first academic effort to record the ideas, principles and practices that led to the company’s success commenced by the Motor Vehicle Programme of the Massachusetts Institute of Technology (MIT). Based on the survey results, Womack et. al. (1990) published the famous book ‘ ‘ The Machine that Changed the World ‘ ‘ which introduced the different concepts of the lean production system and compared these practices adopted by Toyota against the respective ones from companies in the United States and Europe (Baines et. al., 2006). It became quickly apparent the changes were needed in the traditional mode of the industry in order to regain market competitiveness. The lean production model and the subsequent resulting model of lean enterprise were considered by many as the answer to the essential changes necessary.

In the early sessions of adopting the lean model by the western world, in the beginnings of 90’s, the focus of implementation was on the factory level (lean production) and comprised of attempts to locate waste₍₁₎ and establish pull systems₍₂₎. As it became obvious in the first years, the implementation of the lean production system did not rescue the United States companies’ competitiveness, it only allowed them to regain some of the lost ground against the impressive gains that efficient Asian competitors had been earning. In specific, there was a shift towards a more efficient production of these companies but they continued to remain stuck on the grounds of a massive production governing philosophy. Thus, the experiences in this sector showed that lean production was insufficient, or at least not better than other initiatives like Total Quality Management (TQM), the Business Process Reengineering (BPR) and other popular management approaches of that time in providing a stable competitive advantage.

But soon it was realised that the principles and practices of the lean model were applicable to other industries as well. One of the most prominent moves towards establishing the lean concept and strengthening its acceptance was marked by the United States Aerospace Industry which operated in a highly complex and ever changing environment. The Lean Aerospace Initiative was created in MIT in 1993. It represented an interdisciplinary effort of academic, industrial and governmental bodies in search of developing a lean model which would be applicable to the aerospace industry and lead it effectively and efficiently to the new era of the 21st century. As a result a new business model took place that surpassed the scope of the aerospace industry. A model that viewed companies from a holistic perspective and was not limited only to the production activities. After more than a decade of successful implementation of this model and the impressive results, lean concept is relevant more than ever and constitutes a field of intense academic and business interest.

In the beginning of the present work and our effort of initiating the expected research about the interrelationship between Lean and Corporate Social Responsibility (CSR) and after the short introduction to the initiation of the Lean concept, a few questions are inextricably connected to our thinking and critical questioning of the relevant literature. For example, what exactly is Lean and how has it been defined so far? A first surprising attribute and to be frank quite unexpected to us when commencing our research, was the fact that there is no well established definition up to present. Irrespective of the concept's wide applicability and popularity and even though it has been subject to a broad academic and practice oriented scrutiny, we still abstain from concluding to an accepted and solid definition. According to Parker (2003), the multiplicity of available interpretations hinders the effectiveness contribution that Lean entails and therefore transforming it into a highly contingent subject of scrutiny each time we apply relevant research. In this perspective though, the definition of lean remains highly elusive (Pettersen, 2009). Therefore the term "lean" is an example of ill-defined jargon which is probably connected for most people as red meat with very little fat or the image of an athlete's trim physique (Stone, 2012). It attaches to the general notion of "less is more". Some authors refer to this as "doing more with less" (e.g. Ziskovsky and Ziskovsky, 2007). As a consequence, we witness nowadays a great level of confusion about the meaning and a notable level of convolution of the "Lean Production" as it was defined by Womack and Jones (1990).

An insightful research was conducted by Pettersen (2009) in an effort to provide a contemporary view of the concept. The most common characteristics and their grouping can be summarized on the following table:

Collective Term	Characteristics
Just in Time practices	e.g. Production leveling, Pull system, Process synchronization
Resource reduction	e.g. Waste elimination, Lead time reduction, Inventory reduction
Improvement strategies	e.g. Continuous improvement, Root cause analysis, Improvement circles
Defects control	e.g. Failure prevention, 100% inspection, Line stop
Standardization	e.g. 5S, Visual control and management
Scientific management	e.g. Cellular manufacturing, policy deployment, work-force reduction
Bundled techniques	e.g. Statistical quality control, Total productive maintenance
Human relations management	e.g. Team organizing, Cross training,, Employee involvement
Supply chain management	e.g. Value stream mapping, Supplier involvement

Source: Adapted from Pettersen, 2009

What is apparent from the aforementioned figures is the fact that there is a great diversification in elaborating the lean concept. This adds to confusion and uncertainty. Many different terms such as Just-in-Time (JIT), Total Quality Management (TQM), Six Sigma and Continuous Improvement (CI) to name a few, exist and this does not add clarity to our effort of conceptual definition. We abide by Hallam (2003) who suggested that the proper delineation of a concept should be summarised in the following three elements: one describing the end state ⁽¹⁾, one referring to the processes achieving this end state ⁽²⁾ and lastly

a term that refers to the tools used in order to execute the processes ⁽³⁾. Therefore Lean and in more specific Lean Thinking within the pages of the present thesis work will be approached as an operational philosophy. An operating philosophy which encompasses not only governing principles, but materialises through specific processes and is juxtaposed against specific outcomes. In doing so, we fall within the same line of reasoning with Stone (2012) who argues that lean principles are associated with the tools used to carry out lean strategies and realize a state of leanness, a state of a transformed organization in practicing the lean concept. By adopting this point of view we strongly concur with Womack and Jones (2003) and Rother and Shook (1999) who argue that Lean thinking is connected to the continuous tracking and effective elimination of waste from the different organisational processes in search of achieving a value adding reality throughout the entire value stream of a company. Moreover, we abide by the origins of the concept as introduced by Womack et. al. (1990) and incorporate also the principles constituent which was brought up by Womack and Jones (1996) in an effort to depict the importance of waste identification and reduction and the moving towards value adding activities (Hines et. al., 2004). Thus, we achieve a disentanglement of the lean concept from merely locating it within the production floor to embracing the different systems and subsystems that interact within and with the company (see for example Seddon and Caulkin, 2007 who insisted on the importance of a systems thinking perspective when referring to Lean). Adhering to the above definition, we acknowledge that the fundamental reason of business is focused on value creation through applying a systemic thinking process that is constantly evolving, customer centered and knowledge based.

2.2 An Evolution Perspective of Lean

Taking as a given the lack of resources and of human potential in the post-industrial environment that deprived Toyota of the opportunity to implement mass production, Toyota had to focus on production efficiency in order to gain competitiveness in its industry. It was inspired by Ford's mass production system as well as the work done by Deming and Juran about focusing on quality (Liker 2004, Womack et. al., 1990). In this context the company developed the famous "Toyota Production System/TPS", which formed the basis for what would later become known as "Lean Production". The main objective of this system was to achieve the greatest possible results with the less available resources. Even though the TPS

was based on the ideas of many people, Shigeo Shingo and Taiichi Ohno had the greatest influence and are therefore considered the fathers of this system (Womack et. al., 1990).

The academic adoption of the ‘‘Lean’’ term became a reality exactly because this production method used fewer resources compared to the mass production system in terms of inventory, time and factory space. This was achieved by mainly two specific steps: eliminating every process consuming resources without adding value to the final outcome/product₍₁₎ and standardizing the work in question₍₂₎. The first article indirectly referring to the concept of Lean, was written by the famous strategy leader Peter Drucker in the beginning of the 70’s. This article can be viewed as the predecessor of the contemporary vast literature about the concept of lean. Drucker (1971) referred to different at that time Japanese management practices such as action oriented problem solving, process improvements and decisions by consensus to name a few. It constitutes an influential attempt of documenting the decisive influence of the Japanese method which later became known as lean (New, 2007). Sugimori et. al. (1977) referred to the Toyota Production System and Kanban as a system of Just-In-Time (JIT) control. The first scholarly use of the term is attributed to Krafcik (1988). The dissemination phase of the concept was marketed in the beginning until the middle of the 90’s. Different terms with mixed or overlapping meaning became public, dealing with various constituencies of the Toyota Production System (see for example Forza 1996, Karlsson and Ahlstrom 1996, Kosonen and Buhanist 1995, Oliver et. al. 1994).

As happens with every major novelty that is introduced and has reached a level of written and academically established maturity, so did happen with the lean concept and after the dissemination phase, a phase of practical exploration and attempt of justification took place by supplementing it with empirical studies too (see for example Bamber and Dale 2000, Perez and Sanchez 2000). If we can discern a milestone in this era of lean, we can undoubtedly refer to the ‘‘ Lean Thinking ‘‘ book by Womack and Jones (1996). It extended the ideas of lean production system in order to cover other business aspects as well by providing a more holistic approach of this particular thinking philosophy. It proved inspirational and of great significance in extending the lean intervention from shop floor perspective to both boardrooms and other critical company activities such as product development, marketing, service support and accounting (Holton 2003, Holweg and Pil 2001). Their book became the hallmark of reference of many articles in the upcoming years (e.g.

Lewis 2000, Storch and Linn 1999, Kippenberger 1997). The last years that we have gone through constitute the most recent era in the development of lean and is coupled with attempts of measuring lean performance and the articulation of specific key indexes apart from the classical ones like quality, cost and delivery (Doolen et. al., 2006). Many leading companies have thus implemented Lean Manufacturing Programs which yield increased efficiency, reduced costs, improved customer response and descending waste generation (Bergmiller and McCright, 2009).

The common factor that is evident in the aforementioned historical path of the Lean literature can be centered around two main summarizing comments:

a) The long established mass production systems proven to serve adequately the needs of the industry, were gradually being questioned and consequently outperformed by the more flexible and novel concept of lean production. In an effort to offer us a comparative insight between the ‘old’ and ‘new’ school of thought and their related implications on both business and operational levels, Jackson (1999) presented the following figure:

Affected Areas	Mass Production	Lean Production
Company Strategy	Strategies focused on product leading to economies of scale for the production of stable products and commodities	Customer centered strategy focused on identifying and fully exploiting a continuously changing competitive advantage
Business Structure and Hierarchy	Hierarchical structures encouraging the application of instructions and discouraging significant information flows targeted at revealing product defects, operating errors, equipment problems and organizational flaws	Flat/Horizontal structures encouraging initiatives and information flows that highlight product deficiencies, operating problems and equipment errors
Business Competency	Obsolete tools based on extended production units and top down working environment without promoting skill development and problem solving	Seamless product flows from suppliers to manufacturers and in turn to customers. Smart tools based on standardized work, ability of problem identification, review and experimentation

In conjunction with this Table, we can provide another supplementary view of the differences between the systems of mass production and the Lean concept according to Killpatrick (2003) and Petö (2012) relatively, as follows:

Concept	Traditional Organization	Lean Organization
Inventory	An asset, as defined by accounting terminology	A waste – ties up capital and increases processing lead-time
Ideal Economic Order Quantity & Batch Size	Very large – run large batch sizes to make up for process downtime	ONE – continuous efforts are made to reduce downtime to zero
People Utilization	All people must be busy at all times	Because work is performed based directly upon customer demand, people might not be busy
Process Utilization	Use high-speed processes and run them all the time	Processes need to only be designed to keep up with demand
Work Scheduling	Build products to forecast	Build products to demand
Labor Costs	Variable	Fixed
Work Groups	Traditional (functional) departments	Cross-functional teams
Accounting	By traditional FASB* guidelines	“Through-put” Accounting
Quality	Inspect/sort work at end of process to make sure we find all errors	Processes, products, and services are designed to eliminate errors

Source: Killpatrick (2003)

	Mass Production	Lean Production
Basis	Ford	Toyota
People-design	Narrowly skilled professionals	Teams of multi-skilled workers at all levels in the organization
Organizational philosophy	Hierarchical management takes responsibility	Value streams using appropriate levels of empowerment, pushing responsibility further down the organization
Philosophy	Aim for “good enough”	Aim for perfection

Source: Petö, 2012

b) There is important knowledge to be gained through these different phases of the lean concept and its historical development. According to Stone (2012) it can be summarized and further delineated into the following sub notes:

- Lean originated in the manufacturing environment and evolved to become applicable in a wider set of industries
- The ‘‘Lean’’ term and the reference to different techniques and practices add confusion to its clear definition and applicability outside the manufacturing domain
- Toyota Motor Company inspired and still influences the implementation of Lean
- Employing Lean principles has dominated the ‘‘how-to-do’’ Lean literature
- The concept origins are traced in engineering and operations disciplines whereas the last years it has received attention from an organisational development perspective as well
- Lean transformations are proven to be more successful when incorporated into the wider strategic planning of the company

To summarize, lean is continuously evolving and therefore any attempt to outline a definition implies a ‘‘still’’ image of a concept that alters through the passage of time, therefore only offering a statutory depiction of its meaning, hence providing a definition of limited validity (Hines et. al., 2004). Furthermore, the Toyota Production System has been the inspirational source and driving factor of the principles and practices of Lean methodology, references to the company are thus inevitable. This will become more apparent through the reading in the following thesis lines. Last but not least, the ‘‘Lean’’ journey does not constitute a universally accepted ability and reality for all companies. It is instead highly dependent upon the different business conditions (Cooney, 2002).

2.3 The Building Blocks of Lean ‘‘ Value North ’’

In the following lines we are outlining the basic principles that guide the implementation of lean and underlie the value benefits that derive from it. They also serve as the facilitators for making an organisation live, breathe and mentor Lean in all of its aspects

(Elliot, 2001). We use as our reference the work by Womack and Jones (2003) because it provides an elaborate overview and is considered a hallmark in the lean literature. According to the authors, the main propositions, or else called “core principles” are:

a) Determine the Product Value

The value of a product or service is defined as the ability offered to the customer at the appropriate time and on the suitable price as defined in each case by the customer. In economic terms it is represented by the price that the customer is willing to pay in order to have the product delivered wherever and whenever requested, at the desired quality level. Focusing on customer value, an enterprise can reduce all activities that do not contribute to its creation (those that the customer is not willing to pay for), and therefore save time and money.

b) Identifying the Value Chain

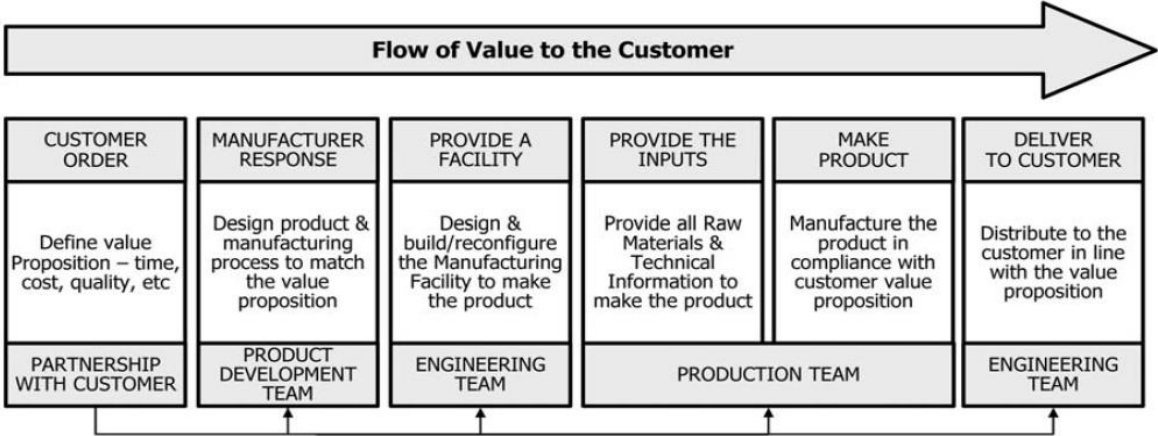
The Value Chain comprises the whole set of activities necessary in order to transform raw materials into the final product for the customer, irrespective of the fact whether they add value or not. Value Chain usually extends to other partners such as suppliers and end-assemblers. Therefore, the examination of the “weak/useless” activities is realized in cooperation and integration with other parts and this entail multiple benefits for the final result and act as a multiplier on the process of value delivery to the customer. According to the authors, all activities can be included in the following grouping:

- ***Value Adding Activities:*** Every action that converts materials or pieces of information into possibility and ability to the customer, at the appropriate time and at the expected quality
- ***Necessary but not Value Adding Activities:*** Those activities that cannot be avoided
- ***Non-Value Adding Activities:*** Any action that consumes resources without adding value and therefore should immediately be limited

One of the most effective methods to depict and analyze the Value Chain of a process is mapping. This technique is widely known as Value Stream Mapping (VSM) and enables

the graphical depiction of the information and material flows between the various activities. It has been proven valuable in the domain of production. In more specific, the mapping techniques presented by Rother and Shook (1999) in their famous book ‘‘Learning to See’’ have proved very useful in identifying waste and improving procedures. In sum a total approach is required in order to contribute to making Lean effective instead of just using isolated tools and disconnected practices (Liker, 2004).

According to Melton (2005) a simple typical value stream which shows only the main value adding steps and the key multifunctional teams involved can be depicted in the following figure:



c) Seamless Material and Information Flow

After the determination of the product value and the identification of the Value Chain, the focus is on seamless processing within the various stages of the value creation process. This means that the resulting product of each sub-process should be transmitted smoothly to the next stage. Otherwise semi-finished parts and queues of information compile bottlenecks between the processes. This stock concentration constitutes unwanted waste.

The idea of the intermediate product flow in the production line was adopted by Henry Ford in the early 20th century. It is worth mentioning that Ford was particularly efficient for his era and the methods he used resulted in achieving high speed assembly. Furthermore the unrestricted flow has played a key role in the development of the inventory management system Just-In-Time (JIT) based on the Kanban and having the purpose of small batch production.

In order to make this more evident, we offer in the following lines the words of Henry Ford (1926) by himself:

“ One of the most noteworthy accomplishments in keeping the price of Ford products low is the gradual shortening of the production cycle. The longer an article is in the process of manufacture and the more it is moved about, the greater is its ultimate cost ”

d) Aligning Production with Demand

This principle implies that a stage within the production line cannot be initiated before the next stage asks for its end-product. The system of harmonized production and demand (pull system) is the opposite of the planned production (push system) and each stage is performed in predetermined time and its resulting product waits until being promoted to the next stage. This favours stockpile and is usually the result of large batch production systems. Within a factory environment, promoting a large lot of material into the next step, not only creates stock but can also lead to large amounts of rejection if a flow is located on the quality of these materials. In a perfectly harmonized system, an order placed by the end-customer, is simultaneously placed by the end of the production line, creating what is now called “single-piece-flow”.

e) Pursuing Perfection

It is common sense that all sources of waste generation cannot be restricted at the same time and the production systems call for considerable time and effort in order to achieve seamless flow. The implementation of Lean is among other things a serious commitment and represents a radical change in the way the company operates. Vertical and rigid structures which have proven effective throughout the years are likely to require reorganizing leading to the development of new functionalities and product groups. Furthermore a fundamental cultural change should be envisaged to the whole company so that all the employees become engaged and show willingness not only to do their own job but also be committed in contributing to the enhancement of the whole system. The importance of the cultural factor for a successful lean adoption is also stressed by Utley et. al. (1997). In this way, lean becomes a part of the way doing business, therefore it is ‘ a journey that never ends ‘ (Turfa, 2003). It constitutes a permanent attribute of the company and quality enhancement is

forwarded by attaining to the real customer needs and attempting to minimize the production of waste (Lewis 2001, Repenning and Sterman, 2001).

Liker's (2004) research attempt is highly relevant and worth mentioning. After studying the TPS for over a period of twenty years in both Japan and the USA and with unrestricted access to executives, employees and facilities, he revealed the fourteen (14) principles constituting the Lean manufacturing system. Consequently, Liker (2004) organized these fourteen (14) principles into his famous 4P Model which in brief includes the following areas of interest:

- a) **Philosophy:** Long term philosophy
- b) **Process:** Continuous flow, pull systems, level workload, emphasis on quality, standardized tasks and processes, visual controls, proven technology
- c) **People:** Leaders who "live" the lean philosophy, employees who follow the lean philosophy, helping partners and suppliers improve
- d) **Problem Solving:** Managers who inspect problems by themselves, consensus in decision making and rapid implementation, building a learning organization and continuously improving

As a concluding remark concerning the aforementioned constituent principles of Lean, we can say that it becomes evident that Lean is not a philosophy strictly placed within the production line but receives an extended notion and practicality. According to Karlsson and Åhlström (2001), Lean ranges from a company's products development up to its distribution logistics and can be very eloquently depicted in the following line:

Lean development + Lean procurement + Lean manufacturing + Lean distribution

If we would like to outline the common features spanning across all the principles of the Lean philosophy, we concur with Bhasin and Burcher (2006) and would point out that in order to embrace Lean, a firm should:

- a) Apply simultaneously different technical tools
- b) View the Lean adventure as a long term journey
- c) Empower a continuous improvement viewpoint
- d) Attempt to implement systematic cultural change by facilitating involvement, abide by and make visible all the principles throughout the Value Chain

It is made obviously clear from the above building blocks that Lean is not constrained on the shop floor, immediately attached to the production process. The inventor of the TPS Taiichi Ohno claimed that:

“ Toyota’s production system is not a mere production system. I am convinced that it will reveal its potential as a management system, modified to the needs of the contemporary era where globalization and advanced information systems are prevalent “.

In this sense Lean encompasses not only the firm’s operations but it is inextricably connected to its supply chain and the customer interface as well. It renders a management system where strategic, tactical and operational goals are interdependent and in seamless integration. According to LAI of MIT (2007):

“ Lean refers to people and procedures which deliver value to all stakeholders. This entails the lean accomplishment on enterprise level. The idea of value creation from the Lean perspective surpasses the best methods of getting work done. It also involves of getting the right work done. Value creation means to deliver what customers want, to ensure the stock performance that shareholders expect, the development of an educative and enjoyable working environment and employee training throughout the employment. It also means to be able to share the tangible benefits with your suppliers so that they continue to act as good partner in both good and bad times. Last but not least, it assumes that we should deliver benefits to society in general reflective of its expectations “.

Indeed, the idea of an extended Lean philosophy prevalent throughout the whole company and in direct link with the suppliers, is largely imposed by the dominant trend of

nowadays. Advances in telecommunications and computing invoke an easier cooperation interface between companies compared to a few years ago and decades. The speed of knowledge evolution creates the need of specializing in core competencies, which increases likelihood of survival and competitive advantage. Additionally, the increasing complexity of products involves shifting business priority from manufacturing to product design and the effective and efficient management of its independent modules. Finally, the individualization of demand creates the need for a network approach of suppliers along with the establishment of flexible production capacity.

Dyer (2000) argues that the distinctive elements of the extended Lean notion concerning a company, are the following:

- Clear design of company limits: It includes the strategy identification for make or buy and the setting of the governance profile referring to direct and indirect long term agreements

- Direct investments: Definition of investments in factories, equipment, people and procedures with adaptation flexibility to the needs of a particular supplier or customer

- Processes for knowledge communication and management: Encompasses strategic vesting protection, trafficking and exploitation of knowledge produced within the wider company framework

- Heightened level of trust with suppliers: Includes continuous assessment of supplier reliability and consistency according to ability of living up to commitments and expectations even in adverse market conditions

In order to provide a practicality of the aforementioned features, we apply Liker and Wu (2000) who present some interesting information about Toyota and its competitors. According to the authors, the 22% (on average terms) of capital investments of Toyota's suppliers are so adapted to their main client (meaning Toyota), that in case Toyota decided to terminate the contract, this equipment could not be reused by the supplier. The average figure for the suppliers of the U.S competitors was even below 10%. In addition, Toyota regains a

low percentage of participation in its main suppliers, seeks for geographical proximity of production activities (average of 30 miles) and allows the transfer of worker teams as a means of knowledge generation, handling and dispersion. It is also notable that 20% of the suppliers' executive officers, derive from Toyota, which is an indication of cooperative infrastructures and a framework of developing and building on dynamic capabilities. As a means to this end, Toyota runs an Operations Management Consulting Division and the Toyota Supplier Support Center with the main object of enhancing and developing its suppliers (Spear and Bowen, 1999).

It becomes evident from the above that the notion of value creation⁽¹⁾ underlying the Lean concept and the important features of the extended enterprise⁽²⁾ redefine the conception of situating importance to different stakeholders as well as managing a more dynamic and knowledge based interface with constituents. We can also notice at this point that common features with CSR have emerged concerning Lean. Words and concepts such as value⁽¹⁾, stakeholders⁽²⁾, societal needs⁽³⁾ and employee training⁽⁴⁾ are reminiscent of the socially responsible business behavior. We will elaborate on these aspects in the next chapter of the thesis and we will continue with a critical comparison and integration of the common grounds between the two concepts in Chapter 4. The aim is to delineate the underlying value propositions and attached preconditions from the perspectives of both concepts in order to provide clarity in light of the case study research part of our work.

2.4 Critical Factors for Successful Implementation of Lean

In continuation of the summarizing points of Bhasin and Burcher (2006), we continue on unveiling in a more elaborate way the necessary conditions that should accompany any Lean initiative and the effort of establishing it into the wider organizational context.

a) Cultural Alignment and Penetration

The prevalent assumption deriving from the initial implementation of Lean systems in different companies pointed to the need that in order to reap the benefits out of Lean, it should first be adopted as the overarching culture of the organization, which in turn will be embraced by all the hierarchical structure of the company starting from top management and ending to the last employee. Toyota in more specific, before attaining heavily to the TPS, provided a

time period in order to make the new philosophy a guiding set of norms and rules inside the company. In order though to achieve such a commitment and organization-wide change when referring to the cultural adoption of the Lean philosophy, a strong and clear commitment from the top management is not only necessary but allow us to say that it is a prerequisite if we want to try to embody the organization with the new culture. A cultural change according to Balogun and Hailey (2004) is a company-wide change initiative and therefore requires the commitment and support from the upper company levels. This is imperative in order to make Lean effective and absorb it in the company's ways of "doing work" instead of treating it merely as another management fashion tool which will soon be rejected by the company's working force. By the active engagement of top management any necessary changes by introducing Lean will be supported, reviewed and finally institutionalized into the company's infrastructure, in its formal and informal structure.

Therefore, active management support is a determinant factor for the successful adoption of Lean. It impacts decisively on accommodating it to an intrinsic part of the company's culture by increasing the change readiness (e.g. Beer and Nohria 2000, Burnes 2004, Todnem 2005). In this line of argumentation, we contend that active management support and top level commitment will also predict and allow those training programmes necessary in order for organizational members to learn the culture of Lean concept. In this way, a process of cultural socialization arises both informally (from existing employees through myths, stories and patterns of acceptable and unacceptable behavior, see for instance Schein 1991, Martin and Powers 1983) and formally through induction training programmes (Wilson, 2001). Training can minimize fear of employees and the uncertainty felt about the eminent change (Vakola and Nikolaou, 2005), making it more easy and shape fertile grounds for the introduction of the Lean concept. Moreover, Schein (1991) argued that the operational manifestation of culture relies on a set of implicit assumptions which cannot change unless brought to the surface and challenged. In order therefore to establish and reinforce Lean, the pending adoption of Lean should, by the identification and corresponding "manipulation" of managers, to motivate employees to reexamine and in many cases if necessary alter their own perceptions and way of adhering to reality and their set of values.

b) Clear Deployment and Communication of Strategy

This is of vital importance if we aspire to transform an organization by adopting the Lean philosophy. The operationalisation of strategy is also known in business language with the term ‘policy deployment’. This entails a few critical characteristics that should be prevalent when trying to develop the Lean philosophy inside the firm. Following the strategic dimensions presented by Burke and Logsdon (1996) we make a short reference to each one. It should be made clear what the Lean adoption has to offer on company level and how close and suitable it is for the company’s needs and objectives. It should be clearly stated and consciously on the company’s mission statement as the current values dominating the generative thoughts and actions of all employees. Otherwise, Lean values will only remain the so called ‘espoused values’ which predict what employees will say and preach in different cases but will act differently in situations that these values should take effect (Argyris and Schön, 1978). Furthermore, it should be proactively adopted, meaning that the firm acts in anticipation of possible forthcoming challenges that Lean could be the answer to. At this point we would like to state that even though most companies have adopted Lean after a crisis incident, in our opinion it should be proactively implemented due to the ever-changing and highly complex and dynamic competition where customer needs are volatile and availability of resources constitutes a determinant factor affecting the tactical and operational business activity.

The other two elements that we deem necessary are inextricably connected to the notion of stakeholders. There should be a visibility of both the advantages and the needs that the adoption of Lean entails for both the internal stakeholders such as employees and the external stakeholder such as suppliers, customers and societal groups of general interest. This pertains to the communication element of the Lean adoption and is related to making it visible and open to possible amendments where the noteworthy opinions of viable stakeholders are recognized and accepted. Additionally, this could act as a navigator, indicating the current state of affairs and providing a valuable indication with reference to the whole picture. In essence everything is about accountability and transparency where the plan should be comprehensible and accessible to everyone inside the organization (Takeuchi et. al., 2008). The last element that could contribute towards the policy deployment of the Lean concept would be the company specific (internal and external) articulation of expected benefits. Internal stakeholders, such as employees, could be informed about the implications and

effects on their work whereas external stakeholders, such as suppliers, could in cooperation develop the necessary dynamic capabilities in order to remain competitive and in accordance with the value proposition logic of the company. Moreover, by communicating the Lean concept, vision will become clearly evident and explicitly articulated. The channeling of feedback among implementers, key decision makers and key users along with social audience can forestall and make constructive use of any possible resistance (Lewis, 2006).

c) Development of Effective Operational Processes

The prevailing and fundamental treatment on behalf of Toyota concerning the performance, metrics and processes can be summarized under the phrase ‘‘ brilliant processes ‘‘ which means that the core belief is that the right and improved processes, will lead to the appropriate and expected results (Womack, 2007). The role of continuous improvement on this aspect is of crucial importance since it contributes to efficient and reliable process and routines, based on the principle of seeking for perfection as we have already mentioned in the preceded lines. A proper establishment of performance has to simultaneously focus on three types of controls such as behavioral ⁽¹⁾, input ⁽²⁾ and output ⁽³⁾ controls (Wheelen and Hunger, 2008). In the aforementioned case, Toyota gives weight to the behavioral and input dimensions in search of achieving the performance objectives which are measured as outputs. Behavioral controls regulate the actions framework that employees have to cope with in order to accomplish the set targets and are used as a means to achieve the improvement goal (Yu and Ming, 2008). Input controls on the other hand involve the antecedent conditions of performance such as knowledge, abilities and motives of the employees and lastly output controls incorporate objectives and performance measurement targets providing flexibility in achieving desired ends (Snell, 1992).

Therefore, we should acknowledge that focusing on process improvement and aiming at achieving a sustained competitive advantage, presupposes the action of learning through the adoption of specific practices in relation to the work flow and working environment in general (for elaboration, see determinant factors of successful Lean adoption). Actions that strengthen organizational members’ capacity to detect and correct errors and to seek insights for alternative choices aiming at a constant enhancement of outcomes (Martin 2005, Martin et. al. 2005). Under this perspective, the company achieves an innovation capacity by altering existing processes or introducing new ones as supplementary and in incremental form with the

old/existing ones. It is more than obvious that concentration should be on the company itself, as Womack and Jones (1996) also support, not on the competitors. The desired end result will then be achieved as a natural consequence. We strongly believe that the following quote encompasses in a very depictive and explicitly stated manner, the importance of process improvement and perfection for sustaining any competitive advantage through value creation:

‘‘ We get brilliant results from ‘average’ people managing brilliant processes. We observe that our competitors often get average (or worse) results from brilliant people managing broken processes ‘‘

(Taiichi Ohno, LEI 2007)

d) Empowerment and Engagement of Employees

This will invoke and sustain organizational commitment by the employees, therefore will shape a receptive and fruitful background for the adoption of Lean. According to Falkenburg and Schyns (2007) commitment consists of affective, continuance and normative commitment. According to Becker (1992) it is broken down into compliance, identification and internalization. In both perspectives, the bottom line is that through commitment the employees will adopt the Lean change and will comply or even identify with it through a realization process. In general, employee commitment is very important (Strebel, 1996). Employees will adapt to and behave in alignment with the change programme (Avey et. al., 2008) and by the introduction of Lean will forge new ways of working and behavioral paths in order to attain the defined objectives. In this way, employees will experience positive emotions toward the Lean concept and therefore become more easily socially integrated in the organization and its daily operations, thus exhibit a higher level of engagement in the new situation (Fredrickson 2003, Wright and Staw 1999). They will be more probable to actively and constructively engage in the new processes, which are an end product of their own efforts.

A useful means that could be used in this case would be the establishment of reward, at least in the beginning of the Lean introduction within the company. This would alleviate any second thought concerning the internalization of the new values and proposed change and would lead to the sincere commitment of the employees after a period of benefiting the rewards (Armenakis et. al., 2011). In this manner, the staff will understand about the discrepancy of change, its appropriateness, its intended suitability, raise trust on their beliefs

about being able to carry out the implementation, about the personal benefits deriving from the adoption and the constructive and genuine support of the management (Armenakis and Wigand 2010, Armenakis and Harris 2002, Armenakis et. al. 1999). Since Lean is based on the principle of continuous improvement, this poses implications for the nature of the new settings characterizing the Lean working environment. Needs for professional skills in team settings will be prevalent (Rothenberg et. al., 2001) and therefore the human resource practices in light of the Lean concept should be adjusted. They should give weight to team based interventions and attend to the specification of desired tasks₍₁₎, the management of the different competencies₍₂₎, the motivation enhancement₍₃₎ and the creation of team opportunities₍₄₎ (Jackson and Schuler, 2002).

Therefore, on the argument of increasing employee engagement, empowerment and in final motivation for embracing the Lean philosophy, the human resource practices should be targeted at increasing the individual and team potential. In specific, they should include competencies practices, training activities, rewards as well as relation building practices (Joshi and Jackson, 2003). In a recent KPMG report it was mentioned that only by supportive front line engagement, root cause problem identification and continuous improvement, which are reflected on each employee's mind through the question 'How can I do it better?', will Lean initiatives sustain coherence and become successful in the long run (Black et. al., 2013).

2.5 Current Difficulties in Implementing Lean

We would like to start by stating that the aforementioned critical factors for implementing Lean constitute a necessary precondition in order to contribute to the lean efforts a company makes. Therefore by definition, any lack of one or more of these factors would constitute at once an impediment. So at the present section, we will mention briefly a few common misconceptions that are evident in real life practice concerning Lean initiatives, in order to clarify the contrasting treatment they receive compared to the critical success factors.

According to Pingyu and Yu (2010) and the survey they conducted, the important barriers amongst others that endanger the successful implementation of Lean in a company are:

- Conflicts with other initiatives: Different improvement methodologies such as Six Sigma and Total Quality Management can lead to conflict situations with implementing Lean initiatives and result in ‘‘competing camps’’ treatments that have as main difference which methodology should be used and where.
- Difficulties with ERP systems implementations. There are ERP providers encouraging the Lean manufacturing techniques. However, many companies struggle to find the appropriate balance to incorporate and fine tune simultaneously both introducing Lean programmes and implementing ERP systems. Real life experience has proved that Lean and Lean ERP functioning can effectively cooperate between each other as long as a solid planning exists.
- Lean production implemented mechanically: Many firms comply with the Lean concept but do it more in an imitating way since its inception on TPS and the benefits for Toyota have aspired them to do the same. What they do not realize though, is the fact that there are always different factors and variables that should be considered for every company.

About the first barrier, we deem it necessary for companies to change perspective and mentality when viewing the different improvement initiatives. We have already elaborated on this perspective about efficient integration in the section of critical success factors therefore at this point we would only like to briefly point out their interdependence. Weigel (2000) contends that they are congruent with Lean thinking and its principles and act supplementary. She asserts that Six Sigma methods constitute a way of bringing production processes into control to result in a reduction of defect rate. She continues arguing that TQM and quality circles are techniques that empower employees to get involved in management decisions and participate in problem solving. Employees are the ones closest to the production process and their insights are valuable.

As for the second impediment and the difficulties in integrating an ERP system and Lean, we would like to refer to the inherent danger of this situation. Companies end up resting themselves heavily on the different lean tools and get stuck and isolated on the process part with no broader view and conception. They rely on the false idea that these tools, by themselves, will sustain effective changes and contribute to value creation. What is important

though, is that a holistic approach is needed where a company-wide perspective is adopted (Womack 2007, Hines et. al. 2004). In this view ERP and Lean are not competing against each other but serve in an integrated manner as a means to achieve business objectives.

Concerning the third barrier, we would say that it depicts a ‘‘copy-paste’’ logic where firms rely either on benchmarking activities or on ‘‘crude’’ without even considering their strategic positioning and the relative configuration of wider environmental and context factors within their industry. According to Kaplan and Norton (2008) strategic positioning and environmental scanning constitute necessary steps within a company’s management system in order to effectively integrate decisions and actions to corporate strategy and translate them to operational processes.

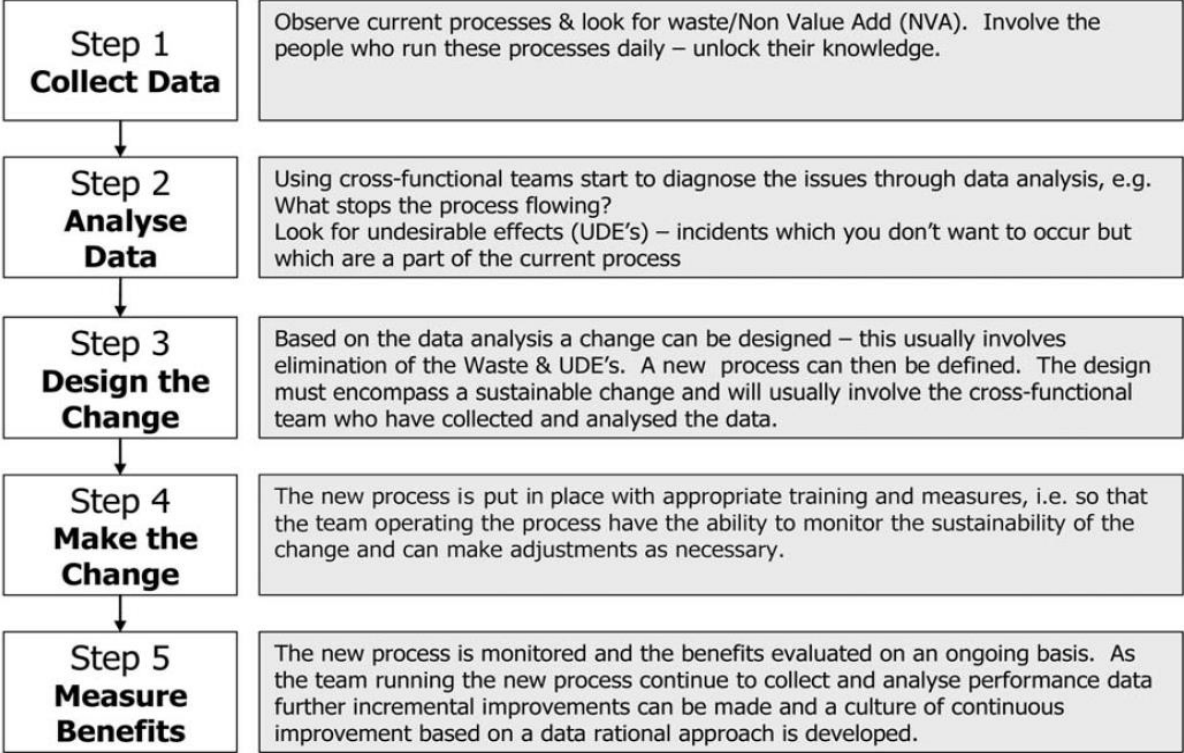
Last but not least, and as a closing note of our thought and conclusions drawn from the literature review, about the obstacles of Lean implementation is that the financial predominance over decisions may become an important threat. Rubrich (2004) states that there is a false understanding about the implication of Lean because many managers view it as a method of just cutting costs. This reminds us of the so call ‘‘hard wired’’ approach whereas according to Liker (2004) we need to focus on human motivation or as we understand it, on the ‘‘soft side’’.

To establish our argument, we would like to say that this financial predominance is tightly connected to the cost accounting methods that have extensively been used during the last years. Allocating costs on machines and hours, incentivises managers and especially the upper level to extract positive financial figures by having busy machines, hence many hours of operating. On the contrary, this leads to overproduction which means a surplus of inventory. Lean leads to a low level of inventories and this is translated on the Balance Sheet as low value of assets. In reality though, this is not true since cash flows will increase (reverse supply chain concept) and this will positively impact the company (see for example Womack and Jones, 1996). In this regard, we would like to refer to Agustiady and Badiru (2013) who explicate that inventory should always be looked at as dollar signs on the shelves and finished goods, even in-process items and raw materials, are not value added therefore JIT methodologies should be used to reduce excess inventory. Therefore, in order to introduce a viable Lean management philosophy a paradigm shift (e.g. Kuhn, 1970) is necessary and a

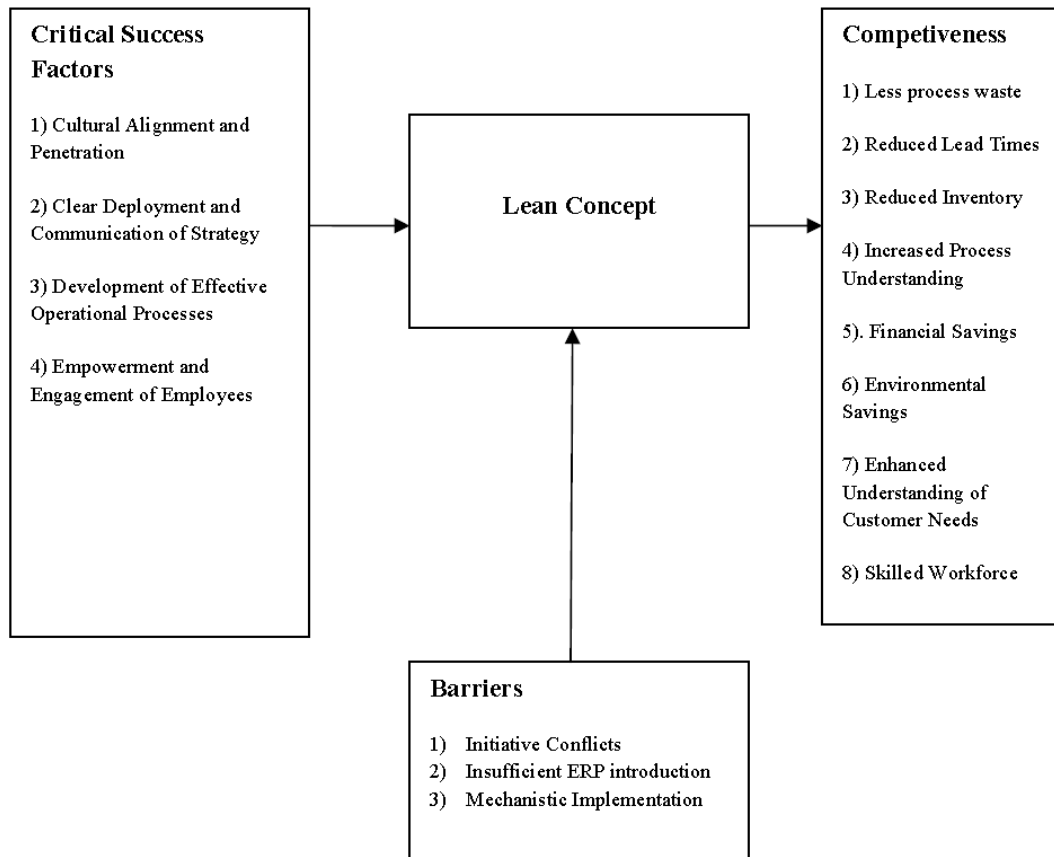
movement from estimating price per unit to allocating resources according to the job-to-be-done.

2.6 Summary of the Lean Concept’s Value

In conclusion of this chapter, the Lean concept entails several important value propositions for the company that adopts it. Except for the value proposition and as it has been already mentioned, the process of how to become lean is very important. Throughout the previous pages we referred to terms such as documentation of current process performance, definition of value and waste elimination, identification of undesirable effects and root causes, problem solution and redesign and continuous control. This process of ‘‘how to lean’’ can be depicted by using the following figure as adapted from Melton (2005):



Concerning the conceptual structure about the necessary preconditions of Lean application and the resulted benefits, along with the impediments that may hinder its realization, as a result of the literature review we have developed the following framework:



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Chapter 3 Corporate Social Responsibility (CSR)

Research Sub-Question to be answered: How are business objectives realized through CSR/Sustainability and in what conditions?’’

3.1 What is CSR? - Definition

The term ‘responsibility’ is prevalent in our attempt of describing and understanding the relationship of the business and society field. It answers to the proper role that business organizations have to adopt in the contemporary world and has been transformed into an extensive standard of behavior encompassing not only economic but social aspects as well (Kinias and Agrogiannis, 2011). While economic performance was used in the past as the predominant measure of a company’s success, nowadays financial results need to be accompanied by a corresponding attention to environmental and social aspects while carrying out business activities (Margolis and Walsh, 2003). Thus, in practice there are now only a few firms that have the luxurious ability of affording reasoning their decisions and daily operation just on shareholder value terms and ignore CSR (The Economist, 2008).

Corporate Social Responsibility (CSR) constitutes a complex set of principles, actions and outcomes and matches the free market economy where the pursuit of profit is not realized at the expense of collective or social welfare or to the detriment of future generations. In reality, there is no generally accepted definition. It means different things to different people (Crowther and Jatana, 2005). In light of this, therefore, CSR is both timeless and shares the same origins with the notion of business and entrepreneurship. It is based on the premise that companies constitute an integral part of society. Under this logic, the underpinning proposition about CSR is that companies should practically express their willingness and intention of returning to society a part of the added value that is created.

According to the World Council for Sustainable Development-WCSD (2001) CSR constitutes a concept whereby companies integrate social and environmental concern in their business operations and in their interactions with business stakeholder on a voluntary basis. The non profit organization and web of professional experts within the field, also known as Business for Social Responsibility-BSR (2000), treats CSR as the business decision making which is linked to ethical values, compliance with legal requirements and respect for people,

communities and the environment. The Global Corporate Social Responsibilities Policies Project (2001) defines CSR as business practices based on ethical values and respect for workers, communities and the environment.

Epstein (1987) views CSR as a means of achieving outcomes from organizational decisions concerning specific issues which have beneficial rather than adverse effects on corporate stakeholders. Gladwin (1995) asserts that CSR is the diversified from competitors business strategy entailing long term benefits. Clarkson (1995) and Waddock (2002) seem to agree upon the main idea behind the concept of CSR which is the obligation of businesses to operate in a way that meets the needs, interests and expectations of a wider set of stakeholders. One of the most prominent academics in the field of CSR has stated that it includes the economic, legal and moral obligations of the company towards society at any given time. In a similar way of reasoning with Carroll (1999) we find the definition developed by Lantos (2001) who stated that CSR encompasses the economic, legal and ethical expectations from society towards the companies. McWilliams and Siegel (2001) accept CSR as a set of actions that appear to further some social good, beyond the interests of the firm and that which is required by law. Jamali and Mirshak (2006) frame CSR as the set of management practices that aim at ensuring the maximization of positive effects of business operations to society.

Following the above and with respect to the relevant academic literature and the business implications and practicalities, we observe a particular emphasis on the following dimensions:

- a) Business benefit
- b) Stakeholders
- c) Concerns about responsible and irresponsible actions
- d) Ethical, environmental and social issues

Some researchers put the term ‘environmental’ under the general term ‘social’ since the social implications of the term responsibility comprise of the ‘environmental’ part even though the term environmental is not included in the CSR acronym (Lynes and Andrachuk, 2008). In continuation of these common features, we can fully comprehend that CSR refers to the management of stakeholder concerns for responsible and irresponsible

behaviours associated with ethical, environmental and social concerns in a way that produces benefit for the company (Vaaland and Heide, 2006).

As already been noticed, a great proliferation of CSR definitions has taken place during the last years. The establishment though of a widely accepted one, describing socially responsible business behavior, remains a complicated and highly contested matter (Matten and Moon 2004, Maignan and Ralston 2002, Rowley and Berman 2000). This difficulty is owed to the fact that conceptualizing socially responsible behavior remains a vexed question. On one hand, this effort is affected by objective or subjective criteria dependent on one's thoughts about CSR and on the other hand it seems to be influenced by the performance indicators and the dimensions we apply in order to operationalize it (Campbell 2007). The relative theoretical frame that we apply in order to develop and describe the concept, implies upon its content as well (Sorsa 2008, Garriga και Mele 2004). It is therefore easily understood why under this perspective, a widely accepted definition remains to be established (Lankoski, 2009). This problem is not something new but is inherent from the very beginning of the research in the field of business and society (Garriga και Mele 2004). In this sense, Votaw's (1973) words sound more contemporary than ever. According to him, the term CSR means something but not the same to everyone: some consider the moral attunements, other tie it up with charity whereas many resemble it with setting higher economic goals for business executives. It is by definition vague and contested, both in theory and practice (Coelho et. al., 2003).

But the real problem doesn't lie in the fact of the absence of such a definition. The difficulty comes from the great variety of the conceptual definitions that have been adopted, aimed at describing certain facets and points of interest concerning business activities (Meehan et. al. 2006, van Marrewijk 2003). Concepts such as corporate social responsibility, responsiveness, corporate citizenship, business ethics, stakeholder management and corporate performance, to name a few, are widely used for describing the kind of responsibilities that organizations should have in a societal context (Schwartz και Carroll 2008, Frederick 2008, Waddock 2004, van Marrewijk 2003, Windsor 2001, Carroll 1999, Wood 1991).

It has been alleged that some of these definitions encompass the other ones whereas in many cases they are identically treated and used with no discretion from both academics and business people (Schwartz και Carroll, 2008, Marsden 2000, McIntosh et. al. 1998).

Dahlsrud's (2008) study revealed that the majority of the various definitions referring to the concept of CSR bear resemblance in five dimensions. According to the author, CSR is a matter that involves stakeholders⁽¹⁾ and the economic⁽²⁾, environmental⁽³⁾, societal⁽⁴⁾ and voluntary⁽⁵⁾ dimension of contemporary business practice. As we can therefore see, there is a common reference to specific aspects. Consequently, the contentious point in the study of CSR within the pages of the present work is not confined in the mere development of a definition but transcends and lies within advancing an understanding of the practices that are involved within a business organization, its strategy formulation and the supportive framework of the tactical and operational dimensions.

Therefore, pertaining to our research aim and the purpose it will serve, we conceptualize the following CSR definition.

“ Corporate social responsibility or else socially responsible business behavior stands for the practices that firms adopt and implement throughout their operations in the light of a business case, involving simultaneously both internal and external stakeholder across their value chain “.

We have decided for this definition since it combines both a directive assertion and guidance of the stakeholders that are of crucial importance to the socially responsible stance it adopts at any given point of time along with a notion of strategic orientation or else win to win benefits for both sides (see also Maon et. al., 2010). In addition to this, our definition coincides with the VBA model of corporate social responsibility which stresses the guiding aims of socially responsible actions by paying attention to its descriptive implications (Schwartz and Carroll, 2008). By choosing this definition, we believe that we achieve having a practical yet thorough definition of CSR for the aims of the present master thesis since:

a) We focus on processes of CSR and by doing so we take a managerial and pragmatic approach to institutionalized company policies. In this way, we avoid tampering with the moral overtones of obligations or duties to others that the term responsibility encompasses and instead we focus on the term responsiveness which represents a “how to” mentality. Responsiveness refers to the way organizations interact with their environments and receives a more action-oriented and forward looking trait (Swanson, 2008). It reflects the actions taken by firms in respect of their social responsibility and emphasizes the response

procedure and changes that take place inside the organization (Frederick 2008, 1994). Even Donaldson and Preston (1995) in their paper attempting to divide stakeholder theory into several parts, or in other words the ways stakeholders are treated by companies in the light of CSR on a normative, descriptive and instrumental basis, they finally characterise it as ‘managerial in the broad sense’, hence intimately connected to the practice of CSR (Harris and Freeman 2008). Therefore, by applying a process and result oriented dimension on our CSR definition, we integrate the stakeholder concept with the managerial side of CSR. It is treated as a key function of management and therefore focuses attention on managerial decision making with respect to identifying and addressing stakeholder interests (Schwartz and Carroll, 2008).

b) In addition to these, we acknowledge that corporate social responsibility is an integral part of the business vocabulary. The term responsiveness falls within the micro-organizational level, encompassing the internal systems and processes developed, in order for businesses to achieve the largest possible flexibility in a highly volatile environment (Meehan et. al. 2006, Waddock 2004).

c) Choosing this managerial approach to socially responsible actions, we intend to study descriptive aspects of the stakeholder concept, which is central to the notion of CSR. Our point of interest moves to the scrutiny of processes and outcomes that socially responsible actions impose upon a firm’s internal stakeholders, hence giving attention to certain results of socially responsible behavior (de Bakker et. al. 2005, Frederick 1994, Wood 1991).

d) It is a valid and yet practical definition which will provide us with the opportunity of coupling it with the Lean concept in operational level. Thus, it provides us with the necessary rigidity in order to proceed with our research approach by ensuring the study of the two concepts within the appropriate breadth.

3.2 Development of the Concept of CSR

The commencing formal steps in the evolution of CSR were marked in the United States. Among the first scholars who have dealt with the issue of social responsibility we meet professors of Columbia and Harvard Universities, Adolf Berle and Merrick Dodd

respectively, in a series of articles published in the journal *Harvard Law Review* (Cochran, 2007). Berle argued that the only responsibility of business executives is only to shareholders while the side of the Dodd (1932) stated that managers beyond their responsibility to shareholders, should assume responsibility to wider society since the law allows and supports the business not because of the profits it generates to shareholders but because of the service offered by the company itself to the wider community. Several years later Berle (1954) took the view of Dodd. At that time we began witnessing the first steps of charitable donations being regarded as part of the wider societal responsibility on behalf of companies. The case against *Smith Barlow* is famous due to the notable decision of the Supreme Court of New Jersey in which it allowed the company '*Smith Manufacturing Company*' to donate \$ 1,500 to the University of Princeton, without this energy being regarded as a violation of the shareholder interests and their invested equity (Burlingame, 2004).

The first records of systematic study of the term are traced back to Bowen (1953) and his highly influential work ‘‘The Social Responsibilities of the Businessman’’ and he is therefore considered the father of the CSR concept as it has evolved today (Carroll, 1999). According to Windsor (2001) other important contributors to the CSR debate are considered to be Theodore Levitt, Benjamin Selekman and Ernest Dale. The discussion that became reality in the academic and business circles centered around the fact that CSR was desirable and should be accepted by corporations and business people. The justification attempt was mainly focused either on putting forward moral and ethical considerations or developing an enlightened notion that accompanied the adoption of CSR practices on behalf of the companies by contributing to their bottom line. Since then, a shift in the discussions about CSR has been market and instead of posing the question of ‘‘whether’’ a company should engage in responsible business practices, the issue at stake nowadays lies within answering the question of ‘‘how’’. This transposition of interest will unveil in the following lines.

3.3 Stakeholder Theory as a Framework for CSR

The notion of Stakeholder Theory was initially outlined by Rhenman and Stymne (1965) in Sweden, by Ansoff (1965), by Johnson (1971) and by the Stanford Research Institute (1982) (Laplume et. al., 2008). It became though famous and constituted one of the basic theoretical frameworks in order to study CSR, when Freeman (1984) in his famous book ‘‘ *Strategic Management: A Stakeholder Approach* ‘‘ introduced it as a means of confronting

the challenges imposed upon firms due to the fast paced changing environment. It aimed at giving a practical dimension to directly measure and compare the performance of companies, entailing a more strategically managed mentality, involving resource allocation decisions (Waddock and Graves, 1997). In this sense, it constituted an attempt to incorporate groups with a stake in the firm into managerial decision making (Garriga and Melé, 2004).

There is extensive literature regarding definitions of ‘‘Stakeholders and Interested Parties’’ of a business. The following table shows the main categories indicative of what have been recorded:

Stakeholders – Interested Parties		
1	According to Freeman (1984), Grenley-Foxall (1996) and Polonsky (1996)	According to Hopkins (2003)
2	Owners/Shareholders	Owners/Investors (Shareholders or Stockholders)
3	Top Management	Managers
4	Employees	Employees
5	Customers	Customers
6	Special Interest Groups	Natural Environment
7	Government	Wider Community (including Government)
8	Suppliers	Suppliers/Contractors
9	Competitors	

Source: (Bhattacharya et. al., 2008)

A common definition of the term ‘‘Stakeholders’’ is:

‘‘ those individuals and groups who may affect or be affected by the decisions, policies and practices of a business ‘‘

(Post et. al., 2002)

In the same perspective:

‘‘ Corporate social responsibility may be viewed as a process in which managers take responsibility for identifying and accommodating the interests of those affected by the organization’s actions ‘‘

(MacLagan, 1998)

These groups or else interested sides can be further divided into primary and secondary stakeholders, with the main criteria of distinction being whether they add to the firm's bottom line or not (Clarkson, 1995). It is therefore evident, that the whole process of identifying and sorting the groups of stakeholders entails the notion of prioritization. This ranking according to importance reasoning was assisted and advanced by Mitchell et. al.'s (1997) by combining the attributes of power, urgency and legitimacy, in an attempt to provide a comprehensive identification framework through mapping and classifying relevant stakeholders. Stakeholder classification and the fact that this should take place in the light of different key performance indicators deriving from the strategic management perspective (Porter and Kramer, 2006) has led the stakeholder identification and management of interested parties to constitute a vital part of modern success of CSR.

3.4 CSR and Contemporary Interest

CSR now includes the development and strengthening of links between business organizations and society and argues that it is possible to combine the production of profits with the simultaneous consideration of social and environmental responsibility for a wider group of stakeholders (Andriof et. al. 2002, Lyons 2001). The reasons why CSR entails business advantages have been investigated by various researchers (e.g. Doh and Guay 2006, Brammer and Pavelin 2005, Loza 2004, Hemingway and McLagan 2004, Brammer and Millington 2003, McWilliams and Siegel 2001). In an effort of summarizing the most important reasons for businesses to respond to the call of adopting CSR we can mention increased profits₍₁₎, access to resources through socially responsible investment₍₂₎, reduced operational costs and enhanced efficiency₍₃₎, improved brand name and enhanced corporate reputation₍₄₎, customer loyalty₍₅₎, increased ability to attract and retain skilled workforce₍₆₎, reduced risk₍₇₎, differentiation from competitors₍₈₎, reduction of potential legislative oversight₍₉₎ and increased productivity₍₁₀₎ (Gyves and O'Higgins, 2008). These outcomes that are generated by the adoption of CSR practices can be divided into monetary and non monetary ones (Weber 2008). On these contributions of CSR we would also add the dimension of innovation capability₍₁₁₎ which can be outlined in the categories of product innovation₍₁₎, marketing innovation₍₂₎, process innovation₍₃₎, organisational innovation₍₄₎ (OECD, 2006) and service system (SS) innovation₍₅₎ which is merely part of the process innovation constituent but is considered mainly a new form of management practice, hence treated as innovation. CSR driven innovation has as end-result products that have a sort of

social purpose (MacGregor and Fontrodona, 2008). Today indeed, most pioneering enterprises incorporate forms of innovative behaviour into their core activities and channel their capabilities into the direction of innovative products and services (Schwab, 2008). Innovative companies are now acting on a CSR premise (Larsen and Peck, 2001) and CSR innovation constitutes an opportunity for companies to gain competitive advantage (Manning, 2004).

What becomes evident through reading the preceding lines is that CSR is intrinsically connected to the strategic dimension of a business. It accordingly presupposes that socially responsible entrepreneurship should generate benefits for the company itself and therefore create a win-win situation (Porter και Kramer 2011, 2006, Jones 2007, Crawford και Scaletta 2005, Bhattacharya and Sen 2004). Incorporating CSR into the wider strategic planning will induce competitive advantage for companies (Hart, 1997). In the same line of reasoning, the decision about CSR should be viewed as a matter of strategic choice (Waldman and Siegel, 2008). So gradually, CSR is increasingly being recognized by firms as central to core business activities, as opposed to peripheral consideration largely associated with philanthropy (Bhattacharya et. al., 2008). Instead of making inconsistent and sporadic donations over time, direct alignment to core business activities can serve as a facilitator for funding on behalf of the company and be planned more effectively as well (Campbell and Slack, 2008). Freeman (1984) introduced the stakeholder concept into CSR theory with a strategic orientation, implying that the consideration of stakeholders' interests formed a crucial factor throughout the effort of enhancing an organization's performance. It provides a powerful tool for business organizations and their managers to utilize when establishing corporate strategy (Schwartz and Carroll 2008). This kind of thinking is vital in order for companies to draw their attention on issues of the greatest importance so as to mutually reap the benefits with the society (Porter and Kramer, 2006). Leaders should have the capacity to realize that everything a company does nowadays imposes a flow-on-effect either inside or outside the company, from customers and employees to communities and the environment (Andriof and McIntosh 2001). In this way, organizations can contribute in meaningful and effective ways by targeting their resources at societal issues that resonate with the mission and the values of the firm so as to benefit their strategic position and their bottom line (Saiia et. al., 2003).

But how easy is it for a company that decides to embark on the CSR movement, to transform its willingness into a successful transition and acting in a socially responsible

manner? At this point we can realize that there is a shift from whether a company should adopt CSR to the way it should do it. There is surely no magical recipe which will automatically create a CSR leader company. The bottom line rationale still dominates corporate decision making (Steger et. al., 2007) and a satisfactory implementation of the CSR concept remains rather an illusion (Kleine and von Hauff, 2009). But there are a few important considerations that ought to be taken into account as a means of increasing the possibilities of a promising kick off CSR adoption.

3.5 Development of Opportunity Thinking and a CSR Receptive Climate

Efficiency should not be demonstrated through cost-cutting but through value adding activities and should lead to the development of the relative strategies and the adoption of CSR (Smith and Sharicz, 2011). Therefore, a need for a paradigmatic shift in the way of treating CSR is apparent. We have born witnesses to many cases where companies assert being socially responsible without really identifying and comprehending what CSR involves due to the predominance of current accounting practices and persistence in the strength and domination of financial figures (Aras and Crowther, 2009). In order to move beyond the rhetoric of CSR, one of the first steps is to infuse social and environmental concerns into the strategic management and performance measurement systems that increasingly guide corporate decision-making and behavior (Pedersen and Neergard, 2009) as part of a systematic process linking socially responsible investment with the perceived outcomes (Knox and Maklan, 2004). If you cannot measure something, then definitely you cannot handle it. It is therefore important to instigate a twofold process which will develop the capacity of the company to be CSR receptive. On one hand, the company leaders should pay particular attention to the way the concept is being facilitated into the organization (Quinn and Dalton, 2009) in terms of systems introduction, empowerment and upgrading. On the other hand, it is equally important to sensitize the personnel and make them active, participators and change agents about the adoption and dispersion within the company of the CSR mindset. Communicating the desired behaviour and making sure that it turns into reality on operational level is a prerequisite (Morsing and Oswald, 2009). To succeed with their responsibilities, managers should exhibit the appropriate level of flexibility and spiritual vigour in order to establish CSR within the company. Systemic thinking, learning to embrace diversity and

fostering meaningful dialogue and diversity, all these accompanied by emotional awareness should be prevalent (Wilson et. al., 2006).

Crucial to the imposed changes that CSR practices of an organization bring about in its operation, is the leadership factor and the way it conceives of and directs the allocation of resources into social responsibility. Either we refer to the executive board and senior managers or to middle-level managers, the management of CSR issues is of crucial importance, if we want to better understand changes that come about. These two groups of stakeholders are important since they are responsible for promoting and ensuring that change processes are diffused inside the organization (Stolz and McLean, 2009). But research indicates that corporate social responsibility has to be reinforced by the top executives of a firm (Swanson 2008). This will subsequently be reflected on the formal structure chart. Carroll and Buchholtz (2006) contend that this leads to the respect of authority structure, conformity to organizational practices and the establishment of performance goals. This in turn shapes a more fertile ground for changes, stemming from adopted CSR practices, to effectively take place. For a company pending the adoption of a new CSR practice, or in the words of change, introducing a new process or practice, whether it adopts a rigid or a more flexible structure (Kotter 1996, Brown and Eisenhardt 1997) influences the ability to advance its CSR practices. Changing formal organizational structures and systems, is central to the success of an overall change process (Galbraith, 2000). If it is not possible to establish linkages between CSR and the management tools that companies use, social responsibility is likely to remain at the level of empty mission statements and add-on activities (Pedersen and Neergard 2009).

But an effective change process needs to focus simultaneously on the company's hardware-its business configuration and organizational structure- and its software – the motivation, values, commitments of the company's employees. In other words, together with the change in structure and systems, managers need to change as well what we call the behavioral context of the firm (Ghoshal and Bartlett, 1990). So depending on the company's CSR actions, different implications are entailed to its workforce. CSR practices need to articulate the need for change (Dunphy et. al., 2007). But staff is unlikely to recognize the need for change, unless managers create mechanisms allowing them to become familiar with the company's objectives and its stakeholders (Burnes 2004). Although these mechanisms are sometimes included in the formal structure, they may have more influence through informal

channels since employees get familiar to expectations and performance goals, not by what is being stated but by what is being actually done and paid attention to. So a company's criteria for allocating rewards, the way it reacts to critical incidents and crises, measures and controls in use and recruitment, promotion and retirement policies, have an impact on the assumptions concerning what employees "ought to" do. CSR needs to be incorporated into a company's DNA.

3.6 Adoption of Tailored Management Systems

The adoption of a proper management system is inextricably connected to the abovementioned. This system could refer to the environmental aspect of CSR as for example the ISO 14001 and EMAS. Or it could cover the social dimension of responsible business behaviour and accountability like SA 8000 and AA 1000 or deal with occupational health and safety such as OHSAS 18001. They provide a solid basis for an organization in the specific areas of CSR and ensures compliance with all legal requirements in question, meaningful stakeholder involvement as well as development, implementation and communication of CSR (Castka et. al., 2004). It is made clear that ISO management systems pertaining to CSR are both desirable and feasible (ISO/COPOLCO, 2002). Many researchers have argued that quality management constitutes also a dimension of CSR (see for example Hazlett et. al., 2007). We totally agree with this since the essential notions and constituent value creation arguments of quality can be broken down into the elements of CSR. For example, product quality and safety are critical criteria in the KLD database that is used to evaluate the social performance of businesses. Consequently adopting ISO 9001 is a promising step in our attempt to operationalize CSR (Christmann and Taylor, 2006). The adoption of these management standards can simply and convincingly demonstrate that companies have well articulated and effective management systems in order to forward CSR (Ledgard and Taylor, 2002). The management system will assist in the effective utilisation of the company resources in search of CSR and will provide the structure to manage the different stakeholder requirements in a coordinated manner (Asif et. al., 2011). The concept business responsibility is complicated and therefore calls for being treated as a systematic business process.

Therefore, a CSR performance measurement system ranging from strategic planning down to day to day operations should be adopted (Jamali, 2006). For organizations to successfully develop CSR, their activities have to be measured against identified objectives

and data and realised progress should be meaningfully reported. In this way, we will succeed in aligning the strategic, tactical and operational levels. At the strategic level, an Integrated Management System (IMS) provides a mechanism for increased interaction with stakeholders, a means of developing an informed understanding of their demands, and a way to structure the effective and efficient channelling of organizational resources (Karapetrovic, 2002, 2003). At the tactical level, it focuses on the design of an integrated management manual, work procedures, operational level work instructions, and processes, as well as developing the criteria and norms by which integration could be evaluated. At this level, the work instructions and work activities are integrated. Supporting activities, such as auditing and general administration, are also designed accordingly to address stakeholder demands in an integrated manner so as to promote efficiency, save resources, and reduce confusion amongst employees at the operational level. Additionally, the management system dealing with CSR can serve as the foundation for developing a business plan and integrate all important aspects and become part of the business planning process (Esquer-Peralta et. al., 2008). We do not hint that the business plan should be used as a tool for strategic planning. Instead, it bears the potential to introduce and establish the necessary steps for a successful integration of the CSR agenda. The same purpose can also be facilitated by the use of the Balanced Scorecard (Leon-Soriano et. al., 2010). In this way, firms by engaging their personnel in strategy formulation and discussion, posses increased possibilities of performing socially responsible practices towards their internal stakeholders (Covin and Miles, 2007).

At this point, we would like to underline the fact that even though some forms of certified management systems include the element of communication, we consider it of vital importance and elaborate on this separately in the lines to come. From a practical point of view, one can consider the communication channels and procedures outlined by the management systems as concerned exclusively with the very dimension of the subject which constitutes the central feature of the standard. On the other hand, we should also remember that there is a need for coordination of the different standards and the strategic integration into an all inclusive and timely communicative framework. This alternative side of communication is better understood by delineating separately its functionality and importance on a firm level. In this way, we can comprehend the high relevance of an integrated communication approach in structuring CSR programmes. Additionally, by developing it separately we want to emphasize its externally oriented nature and its reputation potential it encompasses.

3.7 Organizational Learning

Organisational learning is of crucial importance in attempting to embark on the CSR concept (Nattrass and Altomare, 1999). The conception of change towards CSR is implied to be realized by a learning and evolution process (Jamali, 2006). Businesses that exhibit CSR practices show the ability to learn through these practices and by changing, move towards advanced levels of CSR (Castello and Lozano 2009). Moving towards corporate social responsibility requires organizations to think and behave differently than they have done so far. Not only does it mean that organizations that have not yet given much thought to their responsibilities for sustainable development in the world will have to start thinking and acting with a broader range of goals in mind. It also means that many companies that have a long track record in the area of “corporate social responsibility” will also have to learn to expand their agendas and their repertoire of behaviours (Antal and Sobczak 2004). Either improving existing ways of doing things or applying new actions which fall within the socially responsible business practice of a company, it involves different levels of organizational learning. Improving on current practices adheres to the single loop learning (Argyris and Schon, 1996). But since a company reaches a more developed level of CSR practices, this means that new practices, norms and behavior consistent with the aspects of social responsibility are applied. This is a reconstructive learning challenging the values, policies and operating procedures the organization follows and is known as double loop learning.

Furthermore, since social responsibility involves different stakeholders with various interests and demands, a company must learn ‘how to learn’ in order to keep up with or ahead of new emerging issues of the CSR agenda (Antal and Sobczak 2004). This kind of learning is called triple loop learning (Argyris and Schon, 1996). CSR initiatives can be used as learning laboratories in order to study different ideas, methods and processes so as to use that knowledge to build the organizations competencies (Heslin and Ochoa, 2008). Only corporations with the necessary skills can show the commitment, willingness, and ability to take responsibilities and duties into account and fulfil their role as corporate citizens (Graafland and van de Ven, 2006). Or in other words, to develop through advancing stages of CSR by changing their knowledge, attitudes, structures and practices (Mirvis and Googins 2006, Zadek 2004). To achieve this and foster a learning tendency and ability that transcends the entire structure of a company managers in charge should seek to create an environment of diversity, decentralization and connectivity where CSR is learned through everyday practice,

active participation and interaction where questions are shared and approaches are invented (Fenwick, 2007). Through this perspective, organizational learning is a basic feature of organization development (Lien et. al., 2007) and can be viewed as knowledge acquisition through information sharing and evolution (Gond and Herrbach, 2006).

3.8 Development of a Reliable and a Two-Way Communication Framework

Corporate communication is related to the task of coordinating internal and external communication from a strategic to an operational level with the aim of building and maintaining an organisation's relationship with its stakeholders (Cornelissen, 2004). From a CSR point of view, this is translated into not only informing but exchanging views and taking into account the considerations about socially responsible practices and their relevant outcomes. It should involve both internal stakeholder such as employees and external ones such as suppliers, customers/consumers and the wider community. This encompasses direct communication through formal channels such as reports and indirect methods such as by word of mouth from employees and customers or the expressed opinion that certain stakeholders have about a company. It acts as a construct that captures the likelihood of an average consumer to be aware the firm's good or bad CSR performance (Schuler and Cording, 2006). In our opinion, there are two critical points in the effort of establishing a robust and effective CSR agenda for a company, when it comes down to the communication aspect. On one hand, this involves the mechanisms needed in order to interactively communicate CSR. On the other hand, it poses the question as to whether this process is considered an attempt to directly or indirectly appeal to stakeholders' beliefs.

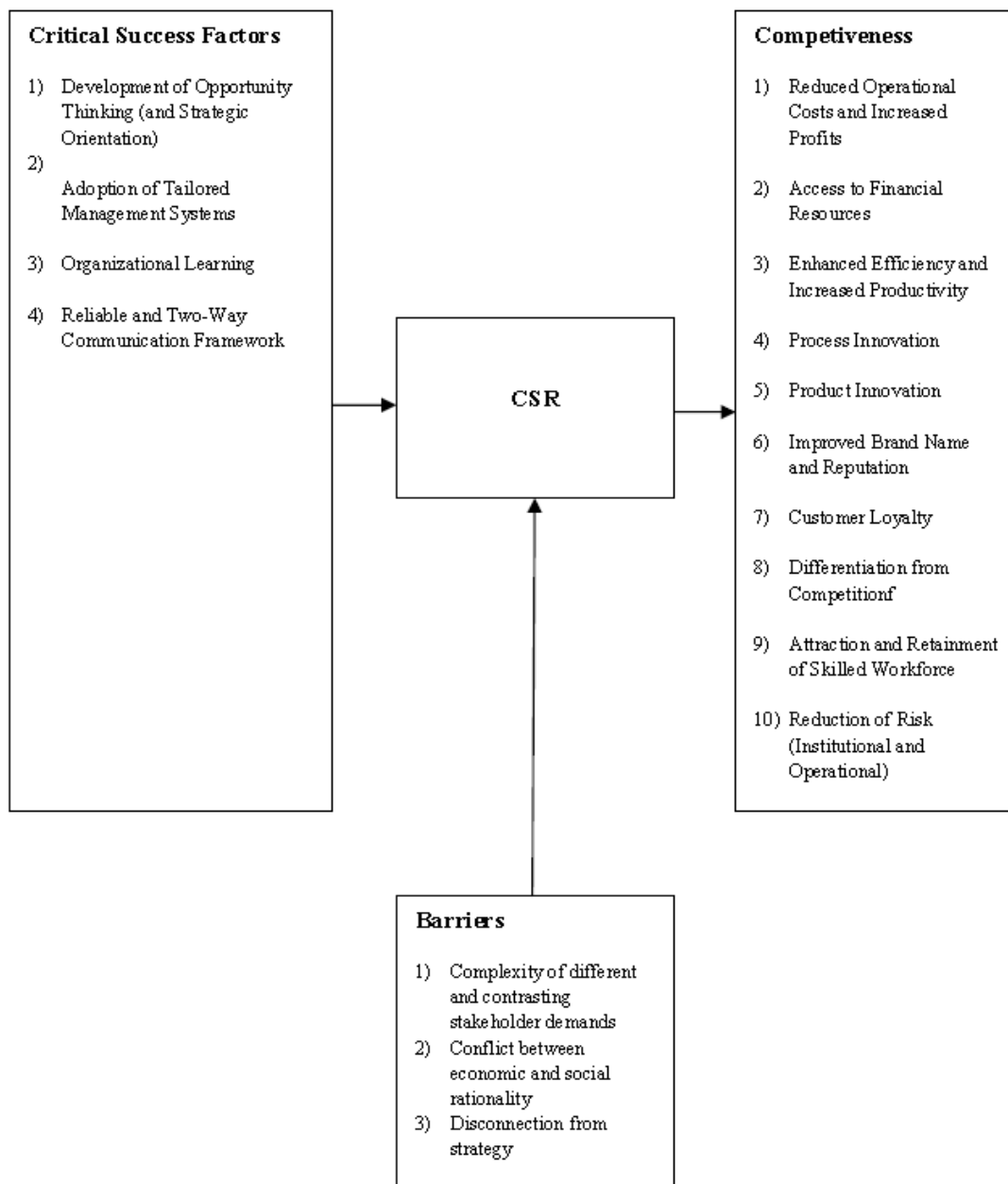
The point in question that arises is to which extent reporting motivated by the intention of reaping reputational benefits and managing stakeholder expectations can at the same time discharge accountability to the affected parties (Owen and O'Dwyer, 2008). But being accountable does not only include acting responsibly. Along with it comes the issue of providing sufficient, verifiable and accurate disclosure (Schwartz and Carroll, 2008). According to Swift (2001) though, only a 'soft' form of accountability can be delivered by the current engagement in communication practices, since limited or no information is available concerning the internal firm processes. According to Thomson and Bebbington (2005) this one way communication results in the limited potential of the reporting process to instigate an effective organizational change, hence, according to our opinion, fails to fully

support an effective transition to a more socially responsible business agenda. Acquiring instead an insight into the realized change within the organization, would enable us to form a perception and idea about the decision making processes for pending activities of CSR interest. Therefore, this absence of transparency may lead to a public relations exercise aimed at (manipulating) stakeholders (Unerman and Bennett, 2004). In this event, corporations consider reputation as a valuable asset. This however does not assure us of a company being socially responsible but instead operates as a subjective indicator of being socially responsible, formulated by the relevant stakeholders' notions (O'Sullivan and O'Dwyer, 2009). This sense is strengthened even more if one bears in mind that there are many cases of corporations providing only positive information supportive of their image (and reputation) and excluding negative disclosure which finally ends up in a discrepancy between what a firm says and what it actually does (Deegan and Rankin, 1996). Consumers in general need information in order to act in favour of or against a firm when purchasing goods (Deepphouse 2003, Szwajowski 2000).

So an important dimension that needs to be considered when aiming at a pragmatic development of CSR is whether accountability or reputational benefits are the generative factors. In case the former applies, then the firm has overcome one of the obstacles in implementing a successful CSR agenda. If the latter is the case, then it should be altered in order to meet the needs of accountability. In this way, reliable data is being provided concerning the socially responsible actions that the company has adopted. Reliable information in turn involves detailed performance and compliance data which are accompanied by the coordinating mechanisms necessary to systematically achieve the objectives. Moreover, it presupposes that a more integrative and participative decision making process is incorporated and the way in which aligning or competing stakeholder demands are considered is transparent. We argue that this is highly related and reinforced as well, by managing international supply chain networks. CSR is increasingly concerned with supply chain management (Millington, 2008) where the multiplicity of suppliers subject to different regulations constitute a complex bulk of information that needs to be included in the company's communication procedure and form the base against which performance and company actions should be measured and judged. Under this perspective, CSR communication can serve as a means of developing collective competencies, transmitting shared interpretations of CSR knowledge and institutionalising the CSR imperative within the company's culture and the identity of each individual employee.

3.9 Summary of the CSR/Sustainability Concept's Value

The conceptual model that we resulted into by conducting a literature review can be embraced by the figure following. This model represents the enablers and drivers of CSR and consider also the inhibitors in pursuit of the so called "business case" of being socially responsible.



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Chapter 4 Lean and CSR

Research Sub-Question to be answered: What are the unifying principles that underline both concepts in their contribution towards strategic positioning of a company?’’

4.1 Comparative Results of the Literature Review

The common features transcending both the concept of Lean and CSR can be comprehensively described by the following Table:

	Lean	CSR/Sustainability	Reality
1	Long term philosophy to create value for people, community (including environment), economy	Invest in long term, consider people, community, finance and the environment	It is true that both systems plan for long term but in case of Lean, the economic consideration is more important, unlike with CSR, where society and environment play significant roles
2	Create the right process to produce the right results	Ensure the eco-system is in balance, if necessary intervene in the system	In fact both systems consider well-functioning procedures necessary and make interventions in them. But while in CSR this happens globally, in Lean attention is paid only to sites and factories in areas where it is obliged by law (Roncz and Tohtne-Szita, 2011)
3	Add value by developing people and partners	Invest in people, consider stakeholders including your staff and partners (e.g. suppliers)	At this point the two systems could be in line with each other, but while Lean focuses mainly on the professional development, CSR pays attention to social development as well. The only obvious exception is Japan where the sustainability approach (CSR) is seldom applied towards employees (Fazekas and Ozsvald, 2000)
4	Continuously making problems visible and solving root causes derives organizational learning	Be transparent and consider the whole system vs treating symptoms	One of the main points of Lean principles is to reveal problems and find solutions instead of finding someone to blame for, and then to share results with other teams, department and sites (Cusumano and Nobeoka 1998, Melton 2005, Staats and Upton 2011). Unfortunately this point is hardly

			manageable outside the company where they find not against the symptoms but the causes. Channels which could transmit the information and achieved results do not exist and even if they do, they are often so bureaucratic that their efficiency is lost
5	Minimize or eliminate waste of any kind	Creating waste harms something else in the system	In this point, both concept are on the right track, however the motivation is different. Since companies are profit oriented, the distinction is inevitable (Dues et. al., 2012)

Source: Peto, 2012

A major feature transcending both concepts from the above Table is that they are quite similar. Lean and CSR/Sustainability require more leadership which is considered prerequisite and materializes through the managers who are expected to learn the talk, walk the talk, learn and walk. However, they have different decision making criteria (Langenwaller, 2006). Lean serves under the predominance of the economic factor whereas CSR incorporate the social (it also includes the environmental) aspect as well. At this point we should remind that CSR, according to the Stakeholder Theory and other predominant theories (such as Corporate Social Performance and Corporate Citizenship) has as main function the economic contribution to the firms’ operation but also facilitates the wider social and environmental context. Speaking of the environmental aspect, this is the main and overarching denominator of the two concepts. To make it clearer we resort to the studies of Florida (1996), King and Lenox (2001), Rothenberg et. al., (2001), EPA (2009) and Blanchard (2007) in order to establish a clear understanding that there is a positive correlation between Lean and the environmental aspect of CSR. Further we would like to mention as a characteristic case of implementing Lean and CSR systems the Boeing Corporation where its Len manufacturing program induced environmental improvements. In more specific, the reduced environmental waste was realized through process efficiency and quality improvements associated with ‘Leaning’ the Boeing’s manufacturing process (EPA, 2003).

As has been straightforwardly concluded, Lean embraces the operational level of SCM and from that perspective it represents the integration of CSR/Sustainability principles and practices on a SC spectrum. This became evident through the 90’s and the beginning of 2000’s,

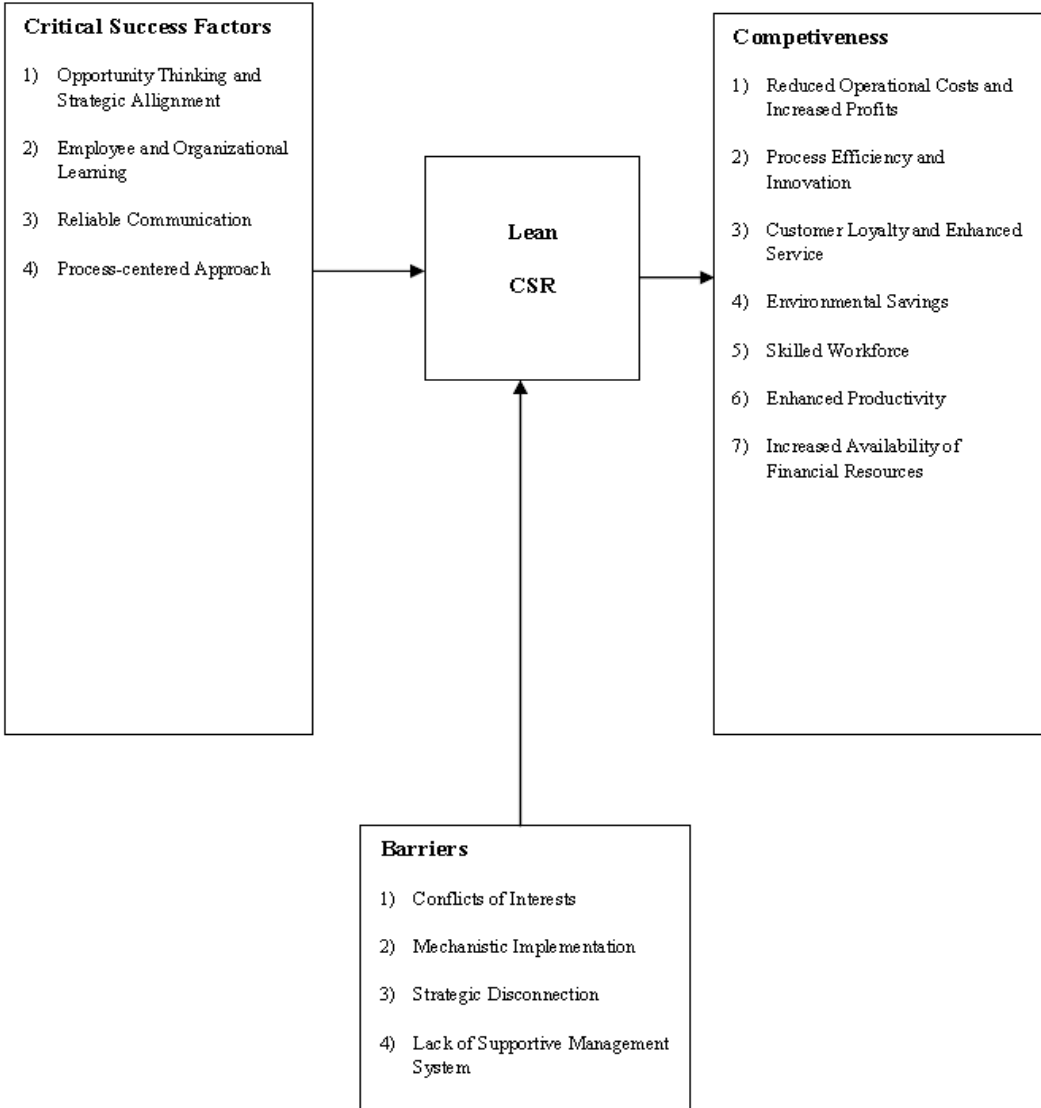
when increasing concerns about environmental matters called for the extension of the conventional SCs and the consideration of the whole life-cycle of a product (Morali and Searcy 2013, Lim and Park 2009) in order to eliminate or minimize waste (Hervani et. al., 2005). This is known as Green Supply Chain Management (GSCM) and many times is used interchangeably with the term SSCM. It can be further subdivided into activities of greening the SC and into practices of product-based green supply (Bowen et. al., 2001). This sustainable operations management is realized through resource productivity, green products and process improvements (Kleindorfer et. al., 2005) where joint development of new material, resources and processes is on the frontline (Sarkis 2003, Green et. al. 2000). It has its roots in environmental management and SCM literature and includes within its scope the activities of green operations and green design (Srivastava, 2007). A hallmark article referring to the importance of greening the SC comes from Porter and van der Linde (1995) who stress out the relevance of efficient material utilization and manufacturing processes. It was suggested that the consideration of the organizations' environmental impact on society could lead to enduring competitive advantage through pollution prevention and product stewardship practices (Hart, 1995). An overarching attribute of this discussion points towards the elimination of waste in a manifold direction towards material waste, process waste, human effort waste. Even the case of developing new and greener products is centered around the notion of waste.

The notion of environmental waste came into the present discussion, therefore we consider it necessary to make a fruitful and helpful comparison between the waste types of the Lean concept and the related environmental impacts. The following Table derives from EPA (2006) and is adopted in order to explicate their interrelation.

Waste Type	Environmental Impacts
Overproduction	More raw materials and energy consumed in making unnecessary products Extra materials used result in extra emissions, waste disposal, workers' exposure etc.
Inventory	More packaging to store work-in-process (WIP) Waste from deterioration or damage to stored WIP More energy used to heat, cool and light inventory space
Transportation and Motion	More energy use and emission from transport More space required for WIP movement increases lighting, heating and cooling More packaging required to protect components during movement Damage and spills during transport
Defects	Raw material and energy consumed in making defective products Defective components require recycling or disposal

	Space required for rework/repair increases energy use again for lighting, heating etc.
Over-processing	More parts and raw materials consumed per unit of production Unnecessary processing increases wastes, energy use and emissions
Waiting	Potential material spoilage or component damage causing waste Waste energy from heating, cooling and lighting during production downtime

Additionally, from both conceptual frameworks (presented in 2.6 and 3.9) there are further common grounds for these concepts. Especially concerning their contribution to a firm’s competitiveness. By summarising the two frameworks and integrating them as a result from the literature review, we derive the following figure:



This conceptual framework will serve as the starting point underpinning the practical research part and case study of the present master thesis. As a result of the literature review, this conceptual framework can be considered pre-theory (Meredith, 1993). In order to realize the extent of its validity we proceed with the empirical part. More details about the empirical dimension of our work, follows in the forthcoming pages (Chapter 5).

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Chapter 5 Research

Research Sub-Question to be answered: How can Lean practices be used under a strategic positioning perspective in greening a company's operations and products?''

Before elaborating on our distinct and core research methodology, we consider it necessary to unveil the main underlying characteristics of research within the academic field. According to Saunders et. al. (2009) the fundamental aspects of research can be divided into the systematic collection of data₍₁₎, the subsequent interpretation of it₍₂₎ and the clear purpose guiding the research attempt₍₃₎. In order to generate valuable knowledge and to be in line with the aforementioned characteristics, we will briefly refer to our research's developmental lenses.

5.1 Philosophical Assumptions and Ontological Positioning

This part is considered crucial since it possesses the potential of influencing our comprehension of reality and our subsequent actions (Johnson and Clark, 2006). We adopt a combinatory perspective that cannot be merely reduced to one specific approach or another. Consequently, we place great significance on the term "social actor" and how reality is constructed through an interpretive approach but at the same time we acknowledge the prevalence of facts, hence we also give weight to objectivity appeared through specific events. This means that we interpret the facts in accordance with the meanings we ascribe to them under a constant comparison to realized events. The adopted approach in this thesis was deemed more appropriate since the choice of methods is implicitly and explicitly accompanied by specific assumptions that the researcher makes pertaining to the nature of knowledge and how knowledge can be obtained through the essence of different phenomena that are to be studied (Morgan and Smircich, 1980). This process is realized through abduction, an iterative interplay between induction and deduction, wherein inferences and systematic combinations matching theory and reality take place (Locke, 2010). One can never be confident in absolute terms of what is really going on in the world. This in turn renders necessary the combination of different worldviews in order to encounter the inherent uncertainty of reality. This ambiguity is also accentuated by Taleb (2007) who supports that human beings are susceptible to the drawbacks of investigating the "historical" time, namely:

the illusion of completely understanding a complicated and random world⁽¹⁾, the assessment of events *a posteriori* as if they were in rearview mirror⁽²⁾ and the overvaluation of information leading to authoritative hence subjective creation of different schemata⁽³⁾. In Shenhav's (2005) terminology, researchers indulge into an administrative reconstruction of the apprehended reality in order to provide a *canonization*, a *decoding* of semiotically unpredictable propositions. And this also stresses the complex interplay between induction and deduction and in our opinion justifies our selected stance. Mounce (1997) maintains that instead of treating induction and deduction separately, in practice we experience a process of abduction where they constitute the mirror of each other (Eisenhardt and Graebner, 2007). And 'how categories are refined...is an art' according to Krippendorf (1980) and this calls for a tight coupling with reality from multiple standpoints. From this point of view, subjectivity and objectivity are not mutually excluded. They rather complement each other in terms of formulating a more nuanced conception of reality where a logical process is established based on the observations of particular events and the currently available literature.

Under these current perspectives, our defined ontological position leans towards critical realism in pursuit of achieving a richer level of both understanding and prediction in both terms of relations and qualities. From this point of view, subjectivity and objectivity are not mutually excluded but on the contrary they rather complement each other in terms of formulating a more nuanced conception of reality. Considering the aforementioned remarks, it becomes rather obvious that the current work adopts an argumentative and authoritative approach through the available literature and by carefully understanding and afterwards formulating our initial conceptual framework, we seek for any possible refinement through the focus on a qualitative case study so as to offer a more holistic picture of our subject of interest. The literature review that is comprehensively yet in an elaborate and encompassing manner presented in the preceding pages, serves as the baseline for the formulation of our initial conceptual framework that was presented in the previous chapter. This approach could also be considered in line with the necessary steps of developing a theoretical background. And this is a form of pre-theory development subject to subsequent testing. Miles and Huberman (1994) and Yin (2009) also suggest that one should construct a preliminary framework entailing theoretical considerations as a preparatory step of pending qualitative studies. In this sense, the use of previous literature is not distinct from this treatment and instead of presenting itself as a separate stage, it is more of an underlying process (Golicic et.

al., 2005) where one can constantly resort to and compare and refine the respective research findings. From this point of view, our previous chapters serve our argumentative approach, which leads to an initial framework. Our treatment is also concurrent with Webster and Watson (2002) who speak in favor of a concept-centric approach when conducting a literature study instead of merely confining ourselves in a chronological or an author centered understanding. We should not confuse author-centric understanding with author-immune collection of research work. In these cases the author is the main actor who collects, synthesizes and interprets the available literature in search of advancing the overall understanding. The difference lies within the premise of the elaborate comprehension of the field of interest instead of only grounding it on personal preferences. A review of this kind is considered as an exercise for novice and new into the academic field researchers. Therefore it serves as a learning experience and practicing exercise. It resembles the case where a conversation takes place by other people and we want to participate. In that instance we initially join by carefully listening to what is being said and afterwards we formulate our comments in order to express our point of view and advance the ongoing dialogue (Bloomberg and Volpe, 2008). A review does not consist of a mere annotation of citations nor does it aim for a summative report. According to Hart (1998) it is much more and it is defined as “the use of ideas in the literature to justify the particular approach to the topic, the selection of methods and demonstration that this research contributes something new” and therefore should not be underestimated. It is a piece of writing that presents a logically argued case founded on an elaborate understanding of the current state of knowledge. Through this process, a convincing argument about our intended study’s research question is established (Machi and McEvoy, 2009). In this sense it provides not only a snapshot of the current academic literature but also embraces novel explanations and suggestions about the subject of our study, which in more specific terms focuses around the value adding potential of Lean practices and the concept of CSR/Sustainability.

The scientific and theoretical positioning will also be explained according to the framework of Burrell and Morgan (1979). On the ontological level, our assumptions adhere to critical realism, hence we conceive of reality both as tangible manifestations of specific events and concepts as well as underlying events and actions that cannot be entirely immediately observed but on the contrary require intimate experience. As far as epistemology is concerned, the current thesis is representative of a mixture of positivistic and constructivist stance, thus we would argue in this case as well, that critical realism is our point of departure.

In turn, the present research falls within the functionalist⁽¹⁾ and interpretivist⁽²⁾ paradigms of social theory analysis. The methodological level is both deductive and inductive (please see previous explanation on the issue of abduction). In this line of reasoning, the work represents the initial stages of a mixed method approach where the commencement through the literature review and the qualitative case study could be regarded as the qualitative part that in turn could also be further tested and subject to scrutiny through quantitative methods (e.g. hypothesis testing). In terms of van de Ven and Poole's (2005) framework, the study includes both a variance (type I) and a processual (type II) approach. The qualitative case study through the semi-structured interviews comprises the processual approach which reduces processes into specific features and variables whereas the initial literature review and the constructive elaboration of the academic fields of CSR/Sustainability and Lean management provide the grounds for generating the main variables of our preliminary conceptual framework. Qualitative case study can be defined as an attempt to elicit meaning where the researcher by himself is the primary instrument of data collection and analysis by doing fieldwork and by adopting an inductive approach in order to generate descriptively rich findings (Merriam, 1998). It is valuable because it provides a detailed understanding of reality through which the researcher himself learns and enriches his/her knowledge and therefore being able to generate theoretical insight in relation to specific contexts (Flyvberg, 2006).

As we have mentioned on the above lines, our main objective is to absorb knowledge and create a clear and sharp comprehension of the scrutinized phenomenon under a specific context. Therefore, our research attempt is called to serve an explorative purpose and in this sense receives an exploratory character. We are adopting a single holistic case study (see also Yin 2009). The driving force in adopting this was our belief that it is the most suitable course of action in a well established company with strong learning and knowledge transferring structures, to gain understanding. Furthermore, this kind of study is considered more valuable and appropriate when studying processes and changes (Patel and Davidson, 1994) along with results and possible interrelationships. Complementary reasons were the scarce availability of alternative companies in different industries and business areas and the limited availability of time as well. Our case study includes the collection of data through a qualitative study, which will provide the founding element in acquiring and disseminating empirical results. Through this kind of study, interpretation and understanding of the phenomenon can be achieved through asking questions of 'how' and 'why' (Nyberg, 2000).

5.2 Data Collection Technique

The main means of collecting data within the present research project is considered the interview technique. From the three fundamental research types of interviews, which are structured, semi-structured and unstructured (Gill et. al., 2008) formats, we are determined to apply both unstructured and semi-structured interviews as the research unfolds. It is regarded as a consistent approach with our scientific preference mentioned above, since the interviews will not only be concerned with a mere data collection procedure but they are inextricable parts of the very own phenomenon, thus the interviews are part and parcel of the researched life itself where human embeddedness is inescapable (Cohen et. al., 2000). In this context, we will utilize the applied questions in a flexible and targeted manner in order to invoke fruitful results. These questions will be disentangled into the different categories that have been so far invented through the literature review. Therefore, the relevant questions will receive a dual character, both on motivating the respondent to give precise replies and at the same time avoiding biases (Hoyle et. al., 2002).

In this context, the research is not conducted in order to merely test and evaluate a proposition and hypothesis (David and Sutton, 2004). It will provide us with the ability, within the chosen framework, to use our questions as a source of elucidating and illuminating the observation and study of our topic (see also Patton 2002). The unstructured interviews will be used in the beginning since we deem this technique useful and as a prerequisite in order to gain an initial understanding and further strengthen the validity of our research by coupling them with the semi-structured interviews and the literature identified themes. The questionnaire used can be found in Appendix B. In designing the questionnaire we have actively acknowledged the importance of minimizing the measurement error. According to Biemer and Lyberg (2003) the six primary components contributing to the overall measurement error are the interviewer₍₁₎, the respondent₍₂₎, the data collection mode₍₃₎, the questionnaire itself₍₄₎, the interview setting₍₅₎ and the coding system₍₆₎. Therefore we have paid particular attention to directly collect the data as interviewers and our questions' wording. We facilitated the verbatim responses instead of using closed questions. Additionally, our questionnaire design aimed at serving the following two objectives: The overall research question of our thesis should be addresses by the different interview questions₍₁₎ and convey the meaning of the inquiry as intended by our initial research₍₂₎. Last but not least, the

questions are designed in a manner that minimizes the systematic and variable errors and provide the most accurate responses possible.

Concluding with the data collection technique, we would like to mention the fact that all the interviews took place with the presence of one of the two researchers, however the initial decomposition and coding was conducted independently by each researcher and in the end were compared and integrated into the resulting framework, as an attempt to decrease the interviewer variability and effect on our respondents and the subsequent data collected. Last but not least, we will draw on multiple sources of information and this data triangulation technique is considered important in search for minimizing social desirability bias that is inherent in issues concerning the wider topic of sustainability (Crane, 1999) and Lean management as well as a part of the environmental and economic responsibility inherent in the former concept. In conclusion, data were collected both directly through the semi-structured interviews and indirectly through the review and analysis of related documents (McCutcheon and Meredith, 1993). In the course of these approaches and in line with the suggestions of Gibbert et. al. (2008) we attempted to secure reliability⁽¹⁾, internal validity⁽²⁾ and construct validity⁽³⁾ as follows:

Table

Steps for Securing Validity and Reliability Throughout the Research

Reliability and/or Validity Criterion	Design	Data Gathering	Data Analysis
Reliability	Develop case study protocol	Common questionnaire for all the interviewed persons	Involvement of both actors Coding comparisons and checks
Internal validity	Theoretical (conceptual) framework	Recording of different factors with the potential of explaining the investigated phenomena	Pattern matching Triangulation of multiple information sources
Construct validity	Adoption of operationalized constructs and summative integration of	Various sources of information Multiple interviewees	Review of the case study initial findings from key informants

	these deriving from previous studies		
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5.3 Ethics of Applied Research

According to Saunders et. al. (2009) ethics is especially important when it concerns qualitative studies. Therefore, moral principles are applied throughout the encompassing stages of the research (please see also Myers, 2009). Furthermore, for reasons of confidentiality, we are determined to avoid the exposure on sensitive and delicate information referring to the company case study and for this reason: we intend to provide the company supervisor/sponsor with a copy of our thesis before its final submission. Furthermore our main objective while carrying out the research is centered around using impartially the methodological and survey tools in order to avoid misleading results and insufficient justifications. We consider within this research the protection against any misleading use and misinterpretation of collected data as a prerequisite.

5.4 Methodology

This part can be considered as an extension of the above mentioned 5.1 Philosophical Assumptions and Ontological Positioning and 5.2 Data Collection and Technique sections. However, we have decided to individually refer to this due to the critical role that our view of knowledge and the intention of the present work play in the research treatment that we apply. Our project encompasses both a **deductive** and an **inductive** character. It is inductive and deductive in the interview interpretation stage and the same research logic applies in the development of the theoretical framework. The purpose of our research is both exploratory and explanatory. Exploratory in the sense that we develop and propose new conceptual framework that in turn serve as the baseline to identify critical factors that contribute to the possibility of realizing competitive advantage through the adoption of green practices under the tenets of the Lean concept. It is also explanatory because it provides at the same time a theoretical framework as an end-product which is grounded in practice through our case study. Hence we will attempt to clarify the relationship between Lean practices and the realization of company strategic positioning by the adoption of sustainability/green initiatives. This does not mean that our research is devoid of direction and objection. On the contrary it

aims at providing a specific diagnose of a real case situation and by that, to translate and depict the findings in accordance with the conceptual framework that we have developed (chapter 4), resulting in the end with an explanatory output. This will allow us to build a case about the topic under scrutiny, in our case the concepts of Lean and CSR, and to determine how this body of knowledge addresses our intended research question (Machi and McEvoy, 2009). The conceptual framework that we formulated in Chapter 4, does not constitute a theory by itself even though it is a product of a thorough and systematic literature review encompassing the concepts of Lean and CSR. The framework is grounded on current relevant literature. Therefore it reflects a step in theory building (Meredith, 1993). In this manner, it can be treated as pre-theory, not meeting all necessary criteria to become a theory but contributing towards theory construction (Weick, 1995). Our conceptual model can be regarded according to Meredith (1993) as integrating distinguished publications on specific topics and conjoining them by summarizing similarities and enriching with new ideas. This framework that we have developed will serve as our baseline for the interviews since it can allow the grouping of data (Strauss and Corbin, 2008). In this view, our approach has a multifaceted character in terms of the theory generation process. It can also be regarded as part of theory building rooted in a grounded theory approach. In this sense it represents the discovery of theory from data (Glaser and Strauss, 1967) in order to explain and describe (Corbin and Strauss, 1990) and is considered vital towards identifying and organizing concepts and relationships into a coherent conceptual model through the connection between the case study material and the comparison of the relevant literature (Suddaby, 2006). And the data subsequently will ultimately point towards clarifying our main research question about the value creation role of both Lean and CSR.

5.5 Case Selection and Participants

Our main criterion according to which the case selection took place was to include a company which has a long established track record of implementing Lean principles and having also developed a considerable amount of CSR efforts. Concerning the CSR dimension, a critical factor that was taken into consideration was the fact whether there was an active publishing activity concerning CSR reports and summaries. The company, which we call Company X for reasons of confidentiality, belongs to the automotive and heavy vehicles

industry and is a manufacturer of commercial vehicles, in specific heavy trucks, buses and engines for other industrial applications.

The persons that participated in the interviews, were connected both within the operational and tactical/strategic levels of decision making and were actively involved in cases referring to environmental aspects of business behavior and Lean implementation and supervision. In more specific, we aimed at including key informant persons from different functions of the company in order to obtain a more inclusive and detailed picture about issues pertaining to sustainability and Lean management. This allowed for comparing and contrasting views (Huber and Power, 1985). The persons interviewed and their respective positioning within the company’s business and functional environment are depicted in the following Table:

Person	Organisation	Unit	Function	Position
Interviewee A	Production and Logistics	Global Industrial Development	Global Industrial Engineering	Head of Global Industrial Engineering
Interviewee B	Purchasing	Business Control and Analysis	Business Analysis	Business Analyst
Interviewee C	Production and Logistics	Powertrain Production	Transmission Machining	Main Director of Transmission Machining
Interviewee D	Human Resources	Human Resources Support Safety & Health and Environment	Global Environmental Support	Head of Global Environmental Support
Interviewee E	Production and Logistics	Global SPS Office	SPS Training Center	Industrial PhD Student
Interviewee F	Production and Logistics	Global SPS Office	SPS Training Center	Head of SPS Training Center

5.6 Research Results

This section includes abstracts from the different interviews conducted and they are indicative of the acquired knowledge that we achieved in terms of the initial conceptual framework that we had developed, based on the existing literature and the constructive comparison of the different facets of Sustainability and Lean management. These parts have

been divided into different sub-themes, namely according to the classification of our conceptual framework as an intention of: providing clear guidance to the reader(s) about the critical factors that come into play⁽¹⁾, making a straightforward connection with the conceptual framework hence explicitly demonstrating our theoretical contribution in a clear-cut manner⁽²⁾ and preparing the grounds for developing our propositions that could serve as the baseline for further research and hypothesis testing and development⁽³⁾. In this attempt of elucidating the findings, we present the results according to the break-down structure of our framework from the perspectives of enablers⁽¹⁾, barriers⁽²⁾ and performance outputs or else competitiveness results⁽³⁾. This deconstruction can also be viewed under the lens of thematic analysis that identifies repetitions, similarities and differences (Ryan and Bernard, 2003) and is inextricably connected to the level of abstraction that we utilize when describing and capturing real life phenomena. In summary the aforementioned factors can be viewed under the general background of external and internal organizational aspects along with their subsequent results.

5.6.1 Enablers

This section includes the Institutionalization Theme of the interview questionnaire and the overarching objective is to uncover critical success factors of organizational processes that allow the realization of competitive advantage on behalf of a company by introducing environmental policies and actions through Lean operations.

5.6.1.1 Opportunity Thinking and Strategic Alignment

” The end-reason of embracing both Lean and CSR/Sustainability is to ensure that we are profitable and efficient and in both cases it is a way of making sure that we can survive in the long term, an ideology if you can say that we are both productive and profitable, in essence making a company competitive“ (Interviewee A)

“ Lean and CSR/Sustainability are indicative of a company’s short and long term survival. Lean is the elimination of waste through continuous improvements. Sustainability is for a company about acting in a way that it wants to be part of society on longer term. I mean a company can act on short-term basis but if you want to have in mind as a principle that you

want to be a contributing part of society then you should embrace the wider concept of sustainability ‘‘ (Interviewee B)

‘‘ Lean and CSR/Sustainability are both very well aligned with the overall strategy. Sustainability is about the external orientation in terms of opportunities and threats whereas Lean is internally focused and dealing with strengths and weaknesses ‘‘ (Interviewee B)

‘‘ When we are looking at the environment, then we use on our daily work a lot of efforts in changing either our processes or implementing changes in our products ‘‘ (Interviewee C)

’’ There is a lot of environmental issues in CSR and when it comes to Lean together with CSR, it is also to take responsibility how we are using the natural resources as an elimination of waste and both go hand in hand with economy. Everything is connected to each other. And from a corporate perspective, a company’s perspective is money. We think long term but we start acting now ’’ (Interviewee D)

‘‘ Everyone in the company lives and breathes about Lean and Sustainability. It is in our culture, it is what we do for our customers by contributing to the environment and offering better and new and alternative products. We are driving in the same direction, we want the same thing ‘‘ (Interviewee D)

’’ You talk about flow, connection and value. It is also sort of the intent of the company to be a good member in society and this can be to reduce pollution, design products that have a lower environmental impact and be responsible towards your employees and society. They are a combination of the company’s interests, the customers’ perspectives and the employees’ standpoint. It is sort of a given that the customer, the employee and the company work within society’s context ‘‘ (Interviewee E)

‘‘ Our former CEO saw for Lean that ‘this is something for us’. For long term thinking, long term surviving and long term competition. And sustainability is also ‘lean done’. It’s very much long term. It must be long term. We have this ‘responsible for’ the society and the employees and it connects to customers and these values align themselves in a really lean way of thinking ‘‘ (Interviewee F)

“ The principle for both (i.e. Lean and sustainability) must be over long time. To keep on taking money we must be healthy in the long run so that we can contribute to society, contribute to employees. You must be focused on how to contribute to the company’s growth. So when it comes to lean and sustainability, they are both ‘here’ and they ‘work’ “ (Interviewee F)

These findings suggest that both Lean and Sustainability initiatives are inextricably connected to the overall strategy of a company and are treated as issues worth their strategic consideration. Consequently we can posit that:

P₁: *The higher the level of strategic awareness, the more likely are initiatives of Lean and Sustainability to be adopted*

5.6.1.2 Process Centered Approach

” Lean at C (i.e. our case company) is the basic principle to be more flow optimized you could say, or else process flow optimization ” (Interviewee A)

“ Now we also use the term CSR/Sustainability in the production part of our work. So we are starting up looking into step-wise introduction of this concept/way of thinking into different processes “ (Interviewee A)

“ We have strategies, the principles and the methods and then we have the results. So it is a stepwise process “ (Interviewee A)

“ Concerning the KPIs, it is better to divide a process on smaller ones in order to try to optimize each smaller part so as to contribute more to the general whole and score under a continuous improvement perspective “ (Interviewee B)

“ We have a policy and then every department or business area is responsible for developing their own environmental strategy and their specific related processes. So the only thing that Scania has in total is the environmental policy. So when it comes to production and logistics they have their unique environmental objectives “ (Interviewee D)

“ Every production unit, depending on what is applicable, has their own work doing their own improvements and pointing out which is the most significant area working for them “ (Interviewee D)

“ I think that the most important part is to see the target break-down and how it runs through the organization down to the individual and process specific levels where everyone ask themselves ‘How can we contribute to this overarching goal? ‘. And it could be small ones. Everyone, even though a small improvement, it is actually a large improvement cause everybody is doing it “ (Interviewee E)

“ We have a flow. It is input-process-output. You must know exactly what the different phases are and how your phase connects to the others. You must be hard working and you must be really good at the connection parts. (Interviewee F)

These abstracts of information confirm our initial predisposition towards considering it imperative to organize and outline an elaborate framework and the related actions in order to increase the effectiveness of different Lean and Sustainability decisions. Therefore:

P2: The more conscious and detailed responsiveness a company designs, the more successful Lean and Sustainability initiatives are

5.6.1.3 Reliable Communication and High Level Management Support

“ The key to make it (Lean and CSR/Sustainability) work is to communicate it and have all the staff believe that ‘We are doing this for the right reason’ “ (Interviewee A)

“ Before it was only to make sure that the improvement groups in the production floor were running and functioning, now it is complemented by the focus of the top management that takes responsibility for helping the workers to do this “ (Interviewee A)

” If you can show me as an employee a good example, then you can convince me ” (Interviewee B)

“ You should not enforce changes on people and try to force them do things. You should openly communicate it and be lenient towards accepting participation “ (Interviewee B)

“ Showing people cases of small wins and talking about these improvements is very important. You make it clear and quite obvious that the new way of working is much better than the old one “ (Interviewee B)

“ Because you can well write documents all day long and the related information, rules and recommendations and make them finally exist in these documents. But if the people do not read or do not apply these documents then it is a waste. Visualization on a continuous basis is important “ (Interviewee B)

“ We have an environmental policy at Scania and we communicate it “ (Interviewee D)

“ Event though everyone participates and contributes to his/her own area, we need, it is imperative, a very strong support from the management. Not only talking. They must also ‘walk the talk’. We need a strong leadership. Interest of management has recently started increasing since they have realized the business benefits. Management support is vital “ (Interviewee D)

“ Communication and visualization are very important in promoting both the concepts of Lean and Sustainability within the company “ (Interviewee D)

“ Change can be in any direction. But improvement is change in a particular direction. And the management should give us the sense that ‘Oh, this is our true north and this is where we are heading. We might not know exactly how to get there, but we will take it step by step’ “ (Interviewee E)

“ The management has to give the appropriate resources and incentives to implement the necessary changes concerning continuous improvement initiatives and sustainability issues. Motivation and incentives are a pre-requisite on their behalf “ (Interviewee E)

“ Change can be in any direction. But improvement is change in a particular direction. And the management should give us the sense that ‘Oh, this is our true north and this is where we

are heading. We might not know exactly how to get there, but we will take it step by step’ ‘’
(Interviewee E)

‘‘ The management should be committed. I have asked some times the management group: ‘Are you committed to doing this?’ and everyone of them says: ‘Yes, we are committed’. And when I go to the organization and ask them if they believe that the management is committed they say: ‘Well, I see them only once in a while but I don’t really know’. And then I ask the management team: ‘What do you mean by commitment?’. Then, they say: ‘Well, I’ve gone to my group and said that this is what we are committed to do’ and then I went away’. So knowing what commitment is in these contexts is the thing that management has to put first in place. You should go out and start seeing. That is a visible sign’’ (Interviewee E)

‘‘ Commitment, is a very important word. Commitment is the difference, not just another word. It starts from upper management, then it goes down to B, then it is about line managers and so on ‘’ (Interviewee F)

The above mentioned abstract from the interviews (and confirmed by the respective documents’ inquiry) point us towards confirming an important aspect of our initial conceptual framework. In more specific, there is a two-folded important relationship on an organizational level that is conducive to Lean and Sustainability and can be summarized under the following two propositions:

P_{3a}: *There is a positive relationship between Management’s involvement in pursuit of performance improvements and the application of introduction of Lean and Sustainability practices*

P_{3b}: *There is a positive relationship between intra-organizational communication and the promotion of Lean and Sustainability actions*

5.6.1.4 Employee Involvement and Organizational Learning

‘‘ You need to take advantage in the good sense of all people working in the company and everything they can think of improving the process ‘’ (Interviewee A)

“ It is also good for the individual cause then you realize that you can contribute, so working together is not contradictory at all with Lean and CSR/Sustainability “ (Interviewee A)

“ What we try to do is to make the lowest level managers the driving force implementing these improvements “ (Interviewee A)

“ Employees need the possibility to influence the workplace, improve it and so you get the responsibility and possibility to do so “ (Interviewee A)

” My experience is that you can present these ideas and facts to people. But you can never force or get over a person to embrace it. So people need time and it should be bases to a great extent on a voluntary basis “ (Interviewee B)

“ But for Lean and CSR/Sustainability to work in real terms, there must be a will by the participants to improve themselves and commit. The people involved must have the strive to get it better “ (Interviewee B)

“ In the beginning the change agents were the improvement coach with the improvement groups. But now each one on individual level becomes a change agent, so it’s quite easy to spread in the organization. You need the individual level to be responsible and take initiatives to start the necessary changes “ (Interviewee B)

“ Everyone contributes to the realization of thinking and acting Lean and forwarding sustainability “ (Interviewee D)

“ The management must respond to the demand of suggestions and improvements “ (Interviewee D)

“ Education of employees could assist them in understanding the interconnection between lean and sustainability “ (Interviewee D)

‘‘ Lean and CSR/Sustainability do not work unless you have people with you. They require people to be involved in what they are doing. You can have an actual impact on what you are doing and this is self-reinforcing ‘‘ (Interviewee E)

‘‘ The choice was to keep everyone that was fully employed and train them. Then we got two things. First of all, we get motivated and trusting employees. And then we have re-invested this time which was unique into putting ourselves into a better situation ‘‘ (Interviewee E)

‘‘ Knowledge, training and ability, in that order, are important. You have to see the problems, you have to know how to respond to these problems and you must have acquired the competence to respond to this situation ‘‘ (Interviewee E)

‘‘ Everybody has to support the effort. We have to learn and be critical. And involve everyone. If you go under the top level, then you find a lot of free thinking ‘‘ (Interviewee F)

‘‘ We have workshops and we must have it in the people’s mindset to see ‘what you can do on your own’. Being individually responsible is a good sign for behaving in the same way for the bigger picture. The more trained we are in this, the easier we can handle the challenges. And the more skilled we are in this, the easier we can have it in the future and we need to use all of our people ‘‘ (Interviewee F)

Employee participation and the intention of learning and further developing individual and collective competencies, retain a prominent position among the interview findings. This is in accordance with the relevant literature and is tied to the issue of building competencies and serving as a valuable and inimitable organizational resource. Therefore we could maintain that:

P_{4a}: *Individual development programs are positively linked with the successful outcome of Lean and Sustainability initiatives*

P_{4b}: *An organizational learning culture and mentality is positively associated with the support of Lean and Sustainability ideas*

5.6.2 Barriers

This sections corresponds to the Impediments Theme of the applied interview questionnaire and aims at unveiling and critically synthesizing the obstacles that are present in effectuating the relationship between Lean practices and strategic positioning through environmental activities.

5.6.2.1 Lack of Supportive Management System

” We need to have more clear requirements from the highest management that we need common ways of working and support the whole process of breaking down the target(s) from the highest level way down to the lowest one and accordingly adjust their meaning and measurement “ (Interviewee A)

“ Descriptions, guidelines and established policies are present on daily basis when we are looking on lean issues or environmental matters. Otherwise it leads to a lack of a unified sense of direction and absence of appropriate operational actions “ (Interviewee C)

“ The overall strategic plan should and has both a top-down and a bottom-up approach, involving everyone “ (Interviewee C)

“ The direction and the tools should be given by the existing management system. It is important to have targets and overall policies. Otherwise you do not know what kind of definitions and consequently what necessary measure need to be taken in order to deal with the given situation “ (Interviewee E)

“ You need to systematize it in your target breakdown and the supportive mechanisms. Otherwise you will of course do what you should do but you don't do what you can really do. Everything should be systematically connected. Facilities, personnel, products and customers “ (Interviewee F)

” It is really important that people sitting high up in the hierarchy want to ease your work that entail changes about lean and sustainability. And this can be done by both informing and

enabling people to share common concerns and attitudes and establishing the supportive framework of co-operating. You have to steer the right person to focus on the right direction. We need good problem solving tools not only short term focused hierarchy energy ‘’ (Interviewee F)

These findings highlighted the necessity of developing an appropriate and holistic management system that would support and accompany every Lean or Sustainability effort in a coherent manner. Consequently we could deduce that:

Ps: *The absence of an organizational management system is related to the reduced effectiveness of Lean initiatives and processes related to Sustainability*

5.6.2.2 Conflicts of Interests

‘’ One thing that is difficult for the supportive functions when we discuss Lean and CSR/Sustainability is that it most times from a production perspective that has parts and components and it is difficult for the supportive functions to see what it exactly means. All the support functions need to think of themselves ‘Ok, what does it mean for me’ and we need to work a little bit together and reinvent this way of thinking everywhere at the same time ‘’ (Interviewee A)

‘’ People do not want to change the way they are working, they are afraid of changes and that these kinds of activities would generate threats for them and would increase their workload ‘’ (Interviewee B)

‘’ We also have the codes of conduct when it comes to machinery purchasing and we absolutely follow that. We are not for sale. You should declare from the beginning that you are not interested in any kind of bribery and that you should look into the most efficient implementation of Lean and Sustainability issues ‘’ (Interviewee C)

‘’ People should see the merits and there should be a business case for them as well. If they can trust that they will keep their jobs and they will have growth and development, then they will probably be more creative. Otherwise any initiative will face obstacles ‘’ (Interviewee E)

‘‘ This is all about motivation where you should have a good story. Why do we work with this? Why it this important? You must have the ability to show the merit and the promise for the employees’ work. Both the smaller and the bigger picture. Cause otherwise, people are human beings and they feel safe in the way they have been doing things up to now and they won’t change themselves ‘‘ (Interviewee F)

‘‘ The part of changing in the working level entails challenges that you will see. And many times management does not want to change. For their own reasons or because of new balances in the everyday workload. And this is more obvious in the middle management where they will try to do something else ‘‘ (Interviewee F)

5.6.2.3 Mechanistic Implementation

‘‘ You should not see it disconnected and alienated from the overall management system. You have specific responsibilities and targets for both efficiency objectives and environmental issues such as energy consumption or water usage and social ones such as numbers of accidents. Employees should be able to see the wider picture and not implement incoherent actions because then you lose time and effort in doing things that might not be as successful as initially intended ‘‘ (Interviewee C)

‘‘ And for the employees I think it is important to explain that we are not talking about lean only and they must understand and see other things going hand in hand instead of solely treating the whole process unidimensionally and mechanistically. We need to get a detailed and down to practice understanding that lean and Sustainability are both ways and interchangeable ‘‘ (Interviewee D)

‘‘ You need to change attitudes into conscious comprehension. Not only applying a method wrongly in a copy-paste manner. You have to have the sense of what needs to be done, what is applicable as a solution and then apply it ‘‘ (Interviewee E)

‘‘ Instead of being a ‘checking’ organization, it is important for us to transform to a proper ‘solving’ organization ‘‘ (Interviewee E)

‘‘ I’m really worried about the Swedish and western European industry because we are still too technically focused on the different tools. For example, you are good at CAD, but can you really design? And for both Lean and sustainability, you must be able to do the work and also manage. In the bottom line it’s the management flow and this is a way of thinking ’’ (Interviewee F)

‘‘ In an industrial setting, engineers should be managers and vice versa. Otherwise you have disconnections, which lead to fluctuations and this consequently causes waste and loss of customer centered approach ’’ (Interviewee F)

‘‘ The work might prove out that it was not as the management had thought of and the disturbance were bigger than had been expected. But ok, this is reality. The important is to always be on the move, meaning to try to enhance performance. Sometimes instead of taking action, even to an unknown direction to some level, we continue analyzing it. But then you postpone or even worse, cancel any potential. You need to understand but you do this by working at the same time and testing and trying and so on ’’ (Interviewee F)

Our next proposition encompasses both the aforementioned sections, namely ‘‘Conflicts of Interests’’ and ‘‘Mechanistic Implementation’’. They are somehow the two different sides of the same coin and both pertain to the alteration, in a constructive manner, of an ongoing situation and the movement towards better performance. If we were to put a label on these interview abstracts, we would rather say that ‘‘Knowing what and why you are doing something, is much more important than simply doing it’’. This is also related to the strategic nature and the intra-organizational participation level that we have talked about in the preceding lines but it is also important from a change management perspective and the criticality of a well-designed and appropriately implemented change initiative that embraces collectivity and individuality is smoothly aligned under the bigger picture. This is also in line with the precepts of change management about self-efficacy, communication, engagement and directive orientation. Therefore, it seems reasonable and scientifically justified to support that:

P6: *The lower the level of adaptive interaction the more likely it is that requirements, functions and outcomes of Lean and Sustainability initiatives will be less successful*

5.6.2.4 Strategic Disconnection

‘‘ We have examples when the management are talking about it but you can’t see it going down completely in the structure ‘’ (Interviewee D)

The issue of strategic disconnection was explicitly referred to by only one interviewee. Even though at first sight it might seem contradictory, we feel fortunate that we only had one response, because we believe that this is due to the fact that both Lean and CSR are inextricably connected to the overall business strategy. Therefore when somebody talks about these two concepts, it can be taken for granted that these two presuppose the strategic alignment facet and vice-versa. For our initially outlined conceptual framework perspective, we could either ignore this dimension or continue to include it in order to be more depictive about the necessity of strategic integration and the consequences of its lack. It is solely a matter of perspective. We decided to exclude this factor from our final framework, consequently we are not developing any specific proposition related to this.

5.6.3 Competiveness

This segment is related to the Organizational Implementation Theme of the interview questionnaire and the main reasoning of its utilization resides upon the objective of the current work to combine the interface of operations management through the Lean concept and the competitive advantage achievements that unveil an upper managerial-strategic intent through the application of environmentally friendly initiatives.

We have followed a different approach in the case of competitiveness. We adhere to an elaborate and individually developed presentation of the various benefits that follow the implementation of Lean and Sustainability initiatives for reasons of offering clarity and detailed understanding to the reader(s). However, we do not develop individual and sectional propositions. On the contrary, we will develop a summative account in the end and categorize these benefits under common rationale and value proposition logic and then in turn outline a few respective propositions. The reason for doing so can be found in the precepts of strategic management literature and the different orientations that a company can decide to compete on the market, namely low-cost strategy⁽¹⁾ and a differentiation⁽²⁾ strategy. Both are widely

accepted in contemporary literature as the two most valid generic strategies and we believe that they are applicable for the intentions and benefits of the current thesis. In this line of reasoning, this approach is fully consistent with the outlined justification preceding the development of the forthcoming typology. It is also worth mentioning that in the case of competitiveness, we elaborate the analysis and constant comparison through the application of lower to higher order schemes as a means of helping the reader to understand our interpretation, which is used as a stepping stone for developing in the following pages our theoretical framework. These schemes, along with the detailed explanation of the strategic positioning literature pertaining to Lean and Sustainability initiatives and the derived typology, serve as extensive explanations of the strategic advantage dimension. They are reminiscent of the logical chain of translations through inductive and deductive logics, hence facilitate constant comparison between theory and empirical data, which scientifically ground the working assumptions and the previous academic literature to the empirical results. The application of lower and higher order schemes could be visualized as a transcending movement between two different points. The first point that also serves as the departure point constitutes the empirical results that are depicted through the different interviews. In essence, it encompasses the meaning attributed by the respondents and acts as an instigator of reflective and critical examination against available theory and our developed conceptual frameworks. The second point constitutes the final destination and is presented as the result of the abductive reasoning that derives from the lower level scheme. In practice, it represents one of the dimensions of our theoretical framework that will be later elaborated and an underlying characteristic of our predefined and derived conceptual framework.

5.6.3.1 Environmental Savings

“ At the moment there is a lot of focus about saving energy cause it is very tangible and you can measure it and see the benefits ” (Interviewee A)

“ The decisive factor to choose from a supplier from Japan or Germany is Life Cycle Cost. We have the environmental side so we do not buy absolutely the cheapest ones but also look into energy consumption and chemical substances that can be run in the machine for 10 or 15 or even 20 years ” (Interviewee C)

‘‘ If we look at energy use, we follow the total amount of energy. So we produce so much more vehicles but we have fairly the same amount of energy ‘‘ (Interviewee D)

‘‘ And lower costs through material reduction mean lower environmental impact. It is a good idea to take care of the environment ‘‘ (Interviewee E)

The first order scheme refers to material reduction usage which in turn leads to the second order scheme of energy savings and consequently the final (third) order scheme touches upon low cost competitive advantage.

5.6.3.2 Reduced Operational Costs and Increased Profits

‘‘ We have the basic principles of lowering the cost of energy ‘‘ (Interviewee A)

‘‘ Lean and CSR/Sustainability want to minimize the amount of waste because that improves your profitability ‘‘ (Interviewee A)

‘‘ The main reason is to make sure that we are profitable and efficient, it’s a way of making sure that we can survive in the long term ‘‘ (Interviewee A)

‘‘ Lean and CSR/Sustainability are certainly within economic objectives and being profitable because the company becomes more efficient so it is actually an investment to become better ‘‘ (Interviewee B)

‘‘ Maybe we go to the most expensive part and then we have to defend the decision in the sourcing board. And then we can show that even though the initial investment is higher for us, we have good reasons for longer term costs as for example lower maintenance or operational costs ‘‘ (Interviewee C)

‘‘ If we can help for example the suppliers to lower their energy consumption, they can produce at a lower price and we try to get it cheaper ‘‘ (Interviewee D)

‘‘ Wasting in general costs money. And everything that we are doing at harming the environment is waste. If we reduce waste, hence being more environmentally friendly then you can also reduce the money it costs to you ‘‘ (Interviewee E)

‘‘ We can recycle and we can reduce costs ‘‘ (Interviewee E)

In this sub section, the first order scheme is waste reduction and is followed by the second order scheme of process efficiency, which is finally actualized through the higher (third) order scheme of low cost competitive advantage.

5.6.3.3 Enhanced Productivity and Process Efficiency

‘‘ Lean and CSR/Sustainability is somehow like two parts. When you talk about waste, then you have waste of work, waste of time and several other definitions where you do not actually consider minimizing the actual production waste. The latter one is about CSR/Sustainability and you need to bring that also. Basically they are about the same idea and make sure that you don't do unnecessary things ‘‘ (Interviewee A)

‘‘ We minimize waste in its different forms such as natural resources or physical materials ‘‘ (Interviewee C)

‘‘ We have worked with continuous improvements in getting the production structure more efficient. So we are getting better and we also gain in production speed ‘‘ (Interviewee D)

‘‘ If we reduce material consumption we reduce waste ‘‘ (Interviewee E)

The first order scheme refers to waste reduction and is accompanied by the second order scheme of process efficiency, which in turn is justified by means of the third order scheme of achieving reduced costs, hence low cost competitive positioning.

5.6.3.4 Customer Loyalty and Reputation

‘‘ When you look at the news nowadays, the reports of companies that use child labor or if there is some form of waste with the management that is not according to the laws and so on,

you get such a bad publicity and you risk losing your customers and reputation. You can then derive this back to a purely economic example ‘’ (Interviewee B)

‘’ Our customers are also talking about the 3ple bottom line. So what is good for us is also good for them ‘’ (Interviewee D)

‘’ Good and skilled people want to work for ‘good’ companies. So we are a ‘good’ company and we can hire ‘good’ people ‘’ (Interviewee E)

5.6.3.5 Process and Product Innovation

‘’ And the people in R&D should see how the issues of Lean and CSR/Sustainability are translated into their work and affect their expected output ‘’ (Interviewee A)

‘’ It is about process efficiency and new quality ‘’ (Interviewee C)

‘’ It is also about alternative fuels and it is the eco-lution concept as well, both new introductions compare to mainstream practices that aim at offering value to us and the customers ‘’ (Interviewee D)

The first order scheme refers to altering existing ways of doing business and is succeeded by the second order scheme of different offerings. This in turn is followed by the third order scheme of product and process innovation that is equivalent to product and process differentiation strategic advantage.

5.6.3.6 Skilled and Satisfied Workforce

‘’ Our core value is respect for the individual- It is the core and fundamental way of looking into our business, a part of our culture. We are open with students from schools, we have contracts with people from universities and many of those doing their theses become late our employees and we have been arranging for many year the Summer Internship programme and the Industrial PhDs concept. And all these are integrated into our business ‘’ (Interviewee C)

‘’ Our employees are satisfied and proud of working at the company that is taking responsibility, it will also I suppose benefit the employees in some ways and I think it is important with the feeling that you can also somehow contribute to ‘not wasting’ ‘’ (Interviewee D)

5.6.3.7 Summary about the Competiveness Dimension – A Typology of Value

From the preceding discussion we conclude that there is little room nowadays to question the benefits of adopting Lean through Sustainability principles for the corporations that operate in competitive environments, wherein a multitude of expectations and needs should be simultaneously considered. It has been seen that the level of benefits depends on a wide area of different variables. However, these benefits could be subsumed under the generic themes of either organizational processes₍₁₎ or organizational products₍₂₎ and both of them are an issue of a firm’s strategic positioning (Orsato, 2006). And these benefits revolve around the idea of value, both in tangible issues such as cost reductions and therefore larger profit margins and intangible aspects such as reputation and legitimacy.

All these Lean and Sustainability strategies aim at providing either a short term₍₁₎ or a long term₍₂₎ competitive advantage. The core notion of the first category is summarized under the perception on firms’ behalf that sustainability is an additional cost (e.g. see Orlitzky 2008, McWilliams and Siegel 2001) and can manifest as a reputation enabler. In the second category we find reputation enhancement (again) and attainment strategies as well as cost leadership and differentiation ones (e.g. see Siegel 2009, Kurucz et. al. 2008, Dunphy et. al. 2007, Kotler and Lee 2005, Fombrun 1996). These perspectives are treated as investment decisions, entailing a core strategic essence (McWilliams et. al., 2006). Therefore we can easily conclude that in the first case, while compliance strategies may provide a temporary advantage for the firm, usually in form of retaining the current reality, they will diminish within the shorter on longer run to the detriment of the firm’s interest. This assumed working hypothesis is evident in the article of Porter and Kramer (2011) where the authors contend that a sustained competitive advantage of sustainability is achieved through a differentiation strategy and that short-term focus on more or less reactive responses are deemed to become inefficient. On the contrary, in the second case, uniqueness is secured and according to Smith

(2005) sustainability practices set firms apart from their competitors under a long term perspective. A sustained competitive advantage derives from a paradigm shift, where instead of a short-term focus, a longer-term planning concerning strategy and sustainability is needed. Lean is inextricably related to sustainability since it constitutes on one hand the operational aspects of the wider notion of sustainability and therefore is strongly related to process efficiencies and operational development and on the other hand comprises a strong principle that should accompany every differentiation effort in terms of product developments and new forms of innovation.

There is a fundamental pre-requisite when trying to answer the question of when it is beneficial to deploy lean practices through environmental sustainability initiatives in order to unveil the underlying business case. This pre-condition requires the coupling of respective lean practices with those environment related decisions and the potential of the latter to initiate or sustain a competitive advantage. Briefly put, lean practices under specific conditionalities of environmental initiatives could serve as sources for strategic (re)positioning in order to realize business opportunities.

The present work follows the reasoning of Orsato (2006) who builds his argumentation on the ‘Porter Hypothesis’ and outlines four different competitive strategies in pursuit of generating advantage through embracing different environmental policies and objectives. He differentiates between products/services and organizational processes. In a recent article Xin Xu et. al. (2014) elaborate on the different dimensions of Orsato’s typology and maintain that in the first two strategies (eco-efficiency₍₁₎ and beyond compliance leadership₍₂₎) the company aims at either reducing waste or achieving a differentiation from its competitors through the evaluation of market customers for tangible outcomes and improved product performance. Conversely, the authors support that in the latter two strategies (eco-branding₍₃₎ and environmental cost leadership₍₄₎) companies can either gain an advantage either through operational efficiency that in turn allows for reduced prices compared to competition or by taking advantage of emotional resonance with consumers without actually changing the underlying fundamentals and basic premises of their business model. This typology is highly relevant for the current thesis and is presented below:



Source: Orsato, 2006

The depicted decoupling is materialized under the assumption that the four different strategies encompassed in the various typology facets work separately. Namely, a business organization should pursue either a specific process feature or an explicit product characteristic. This recognition marks a simplification of real life cases and is mostly hypothetical in an attempt to clearly delineate the pragmatically blurred lines in real case studies. According to our perspective, this seemingly drawback could be viewed from two different angles. On one hand, it is an inherent ingredient of the theory building process itself since every distinct theory presents a simplification of the real world. Unavoidably weakness arise and boundary conditions come under threat. From this point of view, this seemingly irresolvable tension is not to be questioned concerning its appearance and has not gained prominence out of the blue. On the other hand, this treatment could be treated with high scepticism because even though it is conducive to academic literature and theoretical understandings, it falls short of embracing business phenomena with increased definition and demarcation. In this sense a pragmatic explanation is by definition compromised and therefore the preceding violation should not be ignored in our attempt of offering a practically attuned model of explanation.

However, irrespective of the aforementioned drawbacks of the typology in question, it provides a baseline for corporate managers to decipher lean initiatives and their potential for

competitive advantage through different environmental strategies. In these pages, we embark on this typology and further elaborate and redefine it by developing its dimensions in order to make it more practically relevant. Instead of separating processes and products against differentiation and low-cost strategies, we base our reasoning on the issues of value. This is necessary and from a practical perspective obligatory in order to match lean practices through environmental strategies with company strategic positioning. This presupposes breaking down the concept of strategic positioning into its constituent parts, namely whether value is purely justified in economic terms (i.e. monetary values) or if it is closer to the words attributed to Albert Einstein, that ‘‘not everything that counts can be counted and not everything that can be counted counts’’ meaning that value entails a normative element by itself. This distinction of value is clarified through the role that corporations are expected to assume nowadays, either as purely economic entities or as political actors. This explication is essential in order to build on Orsato’s (2006) framework and it turn inter-relate lean practices with competitive advantage through environmental strategies. Additionally, it is important to remind ourselves of the necessity of explicating the sometimes vague and often confusing notion of value into specific relations of strategic corporate advantage.



The building blocks of value creation that underline the continuum of sustainability strategies that companies implement, are concentrated on legitimacy conservation⁽¹⁾ and on tangible performance benefits through actual competitiveness enhancement⁽²⁾. These propositions are not a serendipitous inclination towards responsible business behavior. They elucidate the prescribed role of business itself. It varies from a strictly financial one, which is mainly illustrated and represented by phrases such as ‘‘the shareholder view’’ and ‘‘enlightened self-interest’’ which can be grouped into the expression used by Drucker (1973) ‘‘ make the resolution of a social problem into a business opportunity ‘‘, to a more political one due to the power it possesses within the social reality. Trying to visualize this fragile equilibrium between the qualitative nature of firm’s responsibilities we could say that what changes is an issue of prioritization. We can’t fully discern between economic and political roles and subsequently separate responsibilities into purely economic⁽¹⁾ or political and societal⁽²⁾ accordingly. What is important is that we should bear in mind is the fact that the prioritization issue comes to the fore.

A business organization constitutes an entity which performs a fiduciary economic function. This function has been at the frontline of the CSR development throughout the

years. At the same time though, the principle of public responsibility implies that business actions entail implications for society at large (Preston and Post, 1975). This derives from the fact that responsibility is interconnected with power and in order to attain power, legitimacy constitutes a prerequisite (Davis, 1973). Its significance is underscored by the need of gaining trust (Moon and Vogel 2008, Crouch 2006). Long term capitalism depends on public trust for its legitimacy and its very survival (Barton, 2011). Under this logic, the firm constitutes a political entity and corporate power and responsibility become a matter of public concern (Brammer et. al., 2012). Corporations become politicized by participating in cooperative problem solving actions with state actors and civil society actors and by resigning themselves to processes of control and legitimacy (Scherer and Palazzo, 2008, Levy and Kaplan 2008). Porter and Kramer (2011) embrace a more proactive view of enlightened self-interest and try in this way to bridge the gap and build a coherent understanding of the contemporary business case. Their underlying purpose is to make clear that nowadays, companies cannot be divided under an economic, political or societal role perspective, but must instead entail all these attributes under the integrative ‘umbrella’ of the shared value notion. Economic action in this manner is embedded in the prevailing social reality and unfolds within a normative context (Koos, 2012). The older view of corporations being concerned only about profits, irrespective of their impact on the wider part of general public is reflected by the usage of the term ‘Business and Society’. It derives from the notion of individualism and boils down to the treatment of every business as a separable and isolatable entity (Buchholz and Rosenthal, 1997). On the contrary, a more holistic approach has been developing. In this new treatment, companies along with their operational impact and influential factors for their survival, are seen as an interrelated web of different interests that should be balanced. This approach is labeled with the term ‘Business in Society’ and is reminiscent of expectations that have to be met on behalf of companies under a more societal framework (Wood, 1991). In the bottom line, the management of social (with the wider meaning) issues is a pure matter of public concern (Doane, 2005).

The summarizing conclusion concerning Lean and Sustainability strategies that companies adopt, is that competition materializes in both strictly market⁽¹⁾ and non-market⁽²⁾ terms and transactions. On the first case, emphasis is placed on the economic feature of the firm whereas on the second case we witness a predominance of its political dimension. This can be depicted in the following figure, where the overarching directions of a sustainability strategy can be further disentangled into four sub-categories, according to which corporations

adopt a financial loaded logic or a political stimulated reasoning in pursuit of achieving benefits from their transactions. Irrespective however of which of these two priorities comes first, Lean is an intrinsic part of the whole framework since it allows for approaching and achieving excellence in ongoing operations, hence it secures operational improvements and efficiencies. It is translated into specific efforts of how to incorporate peoples’ suggestions and the acknowledgement of their worthiness and both of these views constitute the ‘glue’ that permits the other organizational aspects to stick together (de Treville and Antonakis, 2006). It further allows for the organization-wide participation in improvements (Conti et. al., 2006) that in turn realize Sustainability initiatives. Additionally, Lean as a supporter of Sustainability practices creates a unique resource and knowledge base that secures short-term and longer term competitiveness. Lean implementations are hard to imitate and therefore extrapolation from one company to another is almost unachievable (Shah and Ward, 2007). As a concluding remark therefore, emanating from the critical review of the relevant literature and the results of our case study, we proceed with including the variety of the business benefits emanating from Lean and Sustainability in the following Figure:

 Responsibility Continuum Perceived Role for Business	Political	Protecting existing legitimacy (mainly based on reputation) <i>imagizing</i>	Actively shaping/obtaining legitimacy (through self-regulation and soft- rule interventions) <i>institutionalizing</i>
	Economic	Targeted CSR activities (investments executed under a cost-benefit logic) <i>economizing</i>	Forming or anticipating market needs (new products and services) <i>sustaining</i>
		Compliance	Proactive
Type of Sustainability Strategy (Lean is present in each quadrant in terms of operational efficiencies supporting the overall strategy)			
 Sustainability Continuum (Lean contributes to every aspect)			

5.6.3.8 Developing the Theoretical Framework

In continuation of this line of reasoning, we further develop our last propositions pertaining to the initial conceptual framework and directly related to the above outlined typology referring to strategic positioning, hence delineating the dimensions of competitive advantage. In more specific, we aim at connecting the Lean initiatives and the resulted company benefits through environmentally advantageous actions. The quest to reach the performance frontier through competitive advantage could be substantiated either through a risk management perspective or through a more proactive treatment. The crucial factor determining which of the two approaches prevails rests upon the pitch of initiating the respective actions. For example, if a company sees Lean practices as a means of just reducing the associated waste without proceeding with any significant changes in its business model, then it gives weight to reduced material usage, improved efficiency and effective operational outputs, thus embraces a low cost strategy through the related environmental initiatives that derive from Lean practices. On the contrary, if the company adopts a more proactively oriented business stance, it comprehends more the longer term oriented benefits that could be captured by the instigation of environmental activities through Lean practices. For example, innovation potential and new product offerings are inextricably tied to product-service and process innovation and this is an inherent ingredient of a business model alteration that in turn is directed towards creating new value.

Against this background and considering the relevant theoretical tenets and the typologies presented, our developed conceptual framework and the potential theoretical framework as well, need to both include the strategic positioning perspective and simultaneously explicate the respective aspects. When Lean practices are the baseline for a risk management approach concerning environmental initiatives, then efficiency is the main target. Subsequently, reduced material usage, energy savings and operational efficiency are the means that realize environmental initiatives and in turn lead to a low cost competitive advantage. When Lean practices are the instigators of proactive environmental management, process and product innovations prevail and environmental performance is treated as a means of differentiating the company from the rest of competition in terms of product differentiation. In conclusion, Lean and Sustainability strategies (the environmental dimension) are associated both with a risk management approach and a proactive treatment. However, when they are seen through the lens of a risk management approach, cost savings are the defining factor and

low cost competitive advantage is pursued. When they are seen through a developmental lens where a degree of business model alteration comes as a pre-requisite, then the competitive advantage sought after is positioned through new product offerings and the establishment of new processes.

In an effort to provide the highest possible clarity of our reasoning and the most transparent coupling of the developed conceptual framework, the proposed typology, the academic underpinnings and the empirical results in order to build our theoretical framework, we explicate the competitiveness dimension according to the competitive positioning aspects and the respective relationship of the empirical case study. In order to do so, we connect the subsectors of the empirical results referring to competitiveness with the respective aspects of reactive or proactive environmental treatment through Lean practices and the ensuing nature of the aspired competitive advantage. Against this background, 5.6.3.1 (Environmental Savings), 5.6.3.2 (Reduced Operational Costs and Increased Profits), 5.6.3.3 (Enhanced Productivity and Process Efficiency) are subsumed under the heading of risk management treatment and targeted towards the realization of low cost differentiation strategies. On the other hand, 5.6.3.5 (Process and Product Innovation) emanates from a proactive orientation for generating new value through enhanced offerings and modified processes and this leads to a product and process differentiation strategy. We deem the aforementioned clarification necessary in pursuit of explicating our underlying reasoning, the accompanying levels of induction and deduction followed, the present roadmap of concretizing and unifying our research's building blocks, namely the theoretical precursors, the intermediary developed conceptual frameworks (Chapter 2 and 3), the pre-theory unifying conceptual framework (Chapter 4) and the respective advancement and multi-perspective justification (current chapter). Last but not least, the empirical analysis and justification of the sections 5.6.3.4 (Customer Loyalty and Reputation) and 5.6.3.6 (Skilled and Satisfied Workforce) is essential for the following two reasons. First, both these benefits are present in each strategic positioning dimension and act as mediating and moderating variables towards realizing a competitive advantage. So, instead of questioning the presence of these two results as a competitiveness dimension, the issue at stake in this case is whether they act as moderators or mediators. However, this is a vexed question and the academic literature has failed so far to provide a definite answer. Additionally, the explication of this relationship falls outside the current research's settings. Second, these two results could be treated as justification principals, meaning that they form the final evaluators against whom the competitive

advantage is defined and realized. As such, they form parts of both low cost strategies and product and process differentiation. As such, they could be viewed as a possible future extension of our proposed theoretical framework.

Under these premises, the finalizing propositions of our newly developed theoretical framework grounded in both previous literature and the empirical material will take place. To the best of our knowledge pertaining to the presented results and the existing academic work, we feel comfortable to maintain that:

P7: *Lean and Sustainability practices are positively associated with cost-focused competitive advantage strategies where operational collaboration is important*

P8: *Lean and Sustainability actions are supportive of differentiation competitive advantage strategies where strategic development is crucial*

P9a: *Lean and Sustainability practices are conducive to a risk management perspective*

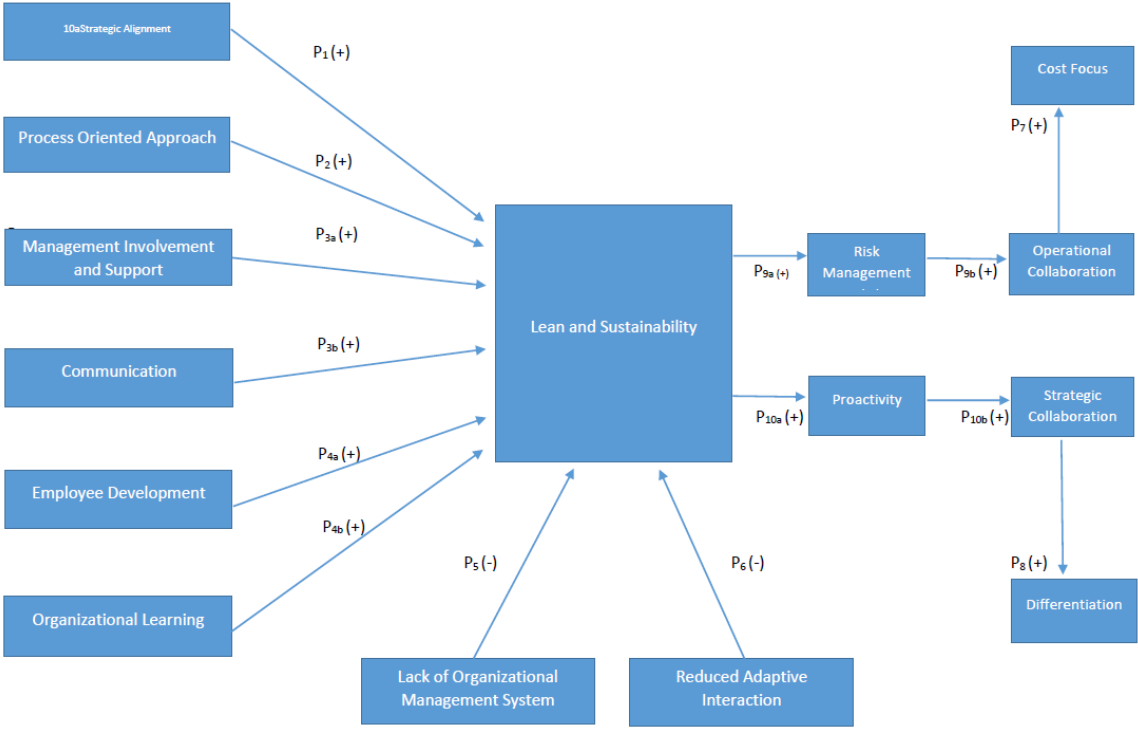
P9b: *A risk management perspective is positively associated with operational collaboration*

P10a: *Lean and Sustainability practices are contributive to proactive (developmental) practices*

P10b: *Proactive (developmental) practices are encouraging strategic collaboration*

After having developed our propositions and taking into account our initially formulated theoretical structure, we will now continue with the necessary alterations and the presentation of our theoretically grounded framework. This framework is the product of both theoretical and empirical abduction, hence it constitutes an important step toward theory building. The form of this framework could be regarded as a middle towards higher level theory effort and could be further elaborated in future research attempts by efforts of operationalizing the constructs in question and even investigating which dimensions offer increased fit and better representations of them. However, this aspect moves beyond the intended research objectives of the current work therefore we confine ourselves to the configuration of the following framework and the provision of a nuanced understanding

between Lean initiatives and sustainability practices, their respective outcomes and the necessary conditions fostering their implementation. The developed propositions resulted in the following theoretical framework:



5.7 Conclusions and Discussion of Results

An attempt has been made within the pages of the current work to integrate the two paradigms, those of Lean and Sustainability. In more specific, due to the limited time availability for the purposes of the current work, we included in the investigation of the sustainability concept the aspects of economic and environmental responsibility. In this view, we have tried to conduct an inquiry concerning the links between Lean and Sustainability based on previous academic literature that enabled us to construct an initial conceptual framework and a qualitative case study research approach that served as the instigator of refining and finalizing our framework. In the following discussion, we will attempt to highlight some important findings that shed light on the instances where Lean and Sustainability operate in a synergistic manner, thus providing useful insight into the circumstance where Lean and Sustainability are complementary and Lean can be treated under the premises of an operationalized sustainable strategy. Additionally, we will unveil a

few concerns of ours, pertaining to the issue of ‘‘a differentiated approach’’, meaning that there are some cases where Sustainability is not fully aligned with the philosophy and theoretical standings of Lean. In this sense, we aspire to substantiate the reasoning of Larson and Greenwood (2004) who consider them as ‘‘parallel universes’’ and demonstrate their convergent and divergent points of interest. As has already been mentioned within this work, the common denominator of both Lean and Sustainability is reflected on the waste minimization and reduction which leads to both economic and environmental benefits. These efforts are initiated intra-organizationally and their tangible benefits towards the relevant publics is realized as a natural consequence, a process that Francetti et. al. (2009) call a ‘‘natural stepping stone’’. This is not coincidental within the two sets of literature because it serves as a common point of departure for the delineation of these two concepts. In fact, sustainability literature and the literature of SSCM are mainly founded on these premises. For example we should mention the work carried out by Min and Galle (1997, 2001), King and Lenox (2001), Florida and Davidson (2001), van Hoek (2002), Kleindorfer et. al. (2005), Vachon and Klassen (2006), Linton et. al. (2007), Srivastava (2007), Ageron et. al. (2012) as well as Gimenez et. al. (2012), Green et. al. (2012) and Zhu et. al. (2013). From this perspective, targeted goals for achieving a Lean approach are indispensable with reaching sustainability objectives (Bergmiller and McCright, 2009). Translating sustainability thinking into current Lean practices boils down to a conscious attempt of answering the following question: ‘‘ How is it possible for Lean practices to contribute to sustainability and the aim of making operations and products greener?’’. Our case study approach provided us with valuable insight about the different possibilities of incorporating sustainability (in this study, green actions) practices into Lean operations

5.7.1 Theoretical Implications

The theoretical value of our work rests upon the effort of providing a synthesized picture concerning the concepts of Lean and Sustainability. In doing so, we have made a conscious effort to highlight in this thesis their distinguishing attributes and subsequently integrate them (whenever possible) under an overall perspective by increasing the awareness of their underlying common features. This is depicted in our presented and synthesizing typology where we discern four different postures namely: economizing₍₁₎, imagizing₍₂₎, sustaining₍₃₎ and institutionalizing₍₄₎. In the following lines, we will describe our beliefs about

the relevant areas that our work contributes to and will proceed in a comprehensive manner to the respective justification.

The typology, the developed framework and our entire theoretical reasoning from the commencement of this study, treat a common consideration form both aspects of Sustainability and Lean thinking. Emanating from Hart's (1995) work we regard the physical dimension of the environment in both cases as a constraint but simultaneously as an opportunity with innovation potential for future commercialization. This is depicted in our framework when we talk about cost-focused and differentiation oriented competitive advantage when embracing sustainability thinking and operationalizing it through Lean practices. This assumed working hypothesis of ours and outcome of our literature review and empirical findings are contrasted to the work conducted by Francetti et. al. (2009) who discern a difference between Lean and sustainability thinking. The authors maintain that Lean treats the environment as a resource whereas Sustainability views it under a constrained perspective that poses limitations on the ways that products are designed. We find their argument extensively valid, however we posit that heading the calls for making organizational entities and supply chains more sustainable (e.g. Pagell and Shevchenko, 2014), both concepts coincide with the scarcity and limitations following the preservation of the natural environment. In this line of reasoning, we also contradict the work carried out by Rothenberg et. al. (2001) who also speak in favor of a discrepancy between Lean and sustainability practices. If we aspire to tackle with the philosophical issue of being truly sustainable, then this target is an unattained objective since resource consumption leads to some kind of environmental degradation, even minor, and consequently there is no true sustainable company. However, taking this argument down to earth and embracing a more pragmatic approach about "reducing harm", then we support the view that sustainability and Lean go hand-in-glove.

In continuation, our empirical research highlighted an important in our opinion aspect of contemporary sustainability approaches, namely that of carbon management. The case study applied, both through the semi-structured interviews and through company documents referring to sustainability reports and KPIs reviews, unveiled the criticality of reducing the CO₂ emissions inside the organization and achieving in this sense environmental savings that in turn are translated into operational efficiency and consequently to cost benefits. We embrace the skillfulness of the company's managers and workforce towards this direction but

at the same time would like to caution researchers when studying this aspect. The reason lies within the fact that not highly mature on Lean practices companies that are moving along the sustainability continuum might encounter difficulties into materializing the gains. The reason for this could be situated within an underlying contradiction between the concept of Sustainability and Lean. The concept of Lean fiercely supports a Just-in-Time (JIT) business model, which is prescribed by the implementation of a 'pull' system and small batches of inventory, if possible one single item per time. This however presupposes that, irrespective of a deterministic or stochastic demand that leads to the build-up of a certain level of inventory (either lower or increased), heightened replenishment frequencies should be achieved. This in turn could cause elevated CO₂ emissions, especially through transportation. This incident becomes even more crucial in case of wider supply chains where the scope often becomes either regional or international and emissions through transportation represent a major figure. This opposes to the concept of sustainability which speaks in favor of continuously reducing the environmental impacts of the company's responsiveness towards sustainability, hence aspects that are related to its supply chain as well. The importance of the wider context of the supply chain as a total entity is also implied by Karlsson and Åhlström (1996) and their equation (we use the notion of equation due to its depictive capacity even though it might not be fully appropriate in academic terms) of: Lean Management = Lean development + Lean procurement + Lean manufacturing + Lean distribution. Therefore Lean should disentangle itself from a mere intra-organizational concentration and instead embrace a wider picture. The case of the CO₂ eloquently describes this necessity and we will get back to this issue in the section of our proposed managerial implications under a more sustainable treatment of contemporary supply chains (SCs).

Furthermore, we would like to add to the currently available literature that there might be a contradiction or to use a milder expression, a conflict of 'nested aligned perspectives' on issues that relate to productivity. Being more productive means that you either do the same things with fewer resources or you do more things with fewer resources. Whichever might be the case, in both instances raw materials are used. This might be congruent with Lean thinking and action but in some cases becomes a rival against Sustainability, since the latter one supports the reduction of resource usage. But being Lean does not exclude a company from making more products, thus in the long run using more resources. To an extent this is in an apparent misfit between the two concepts. This in turn entails challenges that should be addressed by companies in the foreseeable future. We have entered the face running the risk

of hitting a productivity frontier, meaning that Lean is very welcomed and good as long as it is escorted by a simultaneous effort of reducing the overall consumption of materials. This last notion of “materials” should firstly be focused on the immediate raw materials used in the production process but should very quickly be accompanied by a wider notion of a product’s stages, namely through a Life Cycle Approach (LCA) and Eco Design principles. LCA constitutes an important tool in the wider multi-disciplinary science of sustainability that concretizes environmental (mainly) effects and costs whereas the Lean concept remains silent on that aspect. Throughout our case study we were fortunate to realize that our targeted company has made some initial and significant considerations towards this direction and we strongly support a further elaboration on this view. To elaborate on this comment, we would add that the company has already initiated the use of universal module products and this translates into fewer product-specific processes and fewer process-specific inventories that in turn means reduced waste in the whole production cycle. According to Simons and Mason (2003) this entails also the consideration of any remanufacturing possibilities that is also in line with a stream of sustainability research, in more specific that of closed loop SCs. Concluding with this part therefore, one could support that Lean and Sustainability are compatible when it touches on product design, both from a cost reduction and a differentiated competitive advantage position and could foster transdisciplinary research and further managerial improvisations.

In continuation of the aforementioned approaches dealing with the similarities or differences between Lean and Sustainability, both concepts share a common basis of maximizing the economic benefits of the company. In our developed framework this is depictively illustrated and in turn is elaborated in more detail through our typology revolving around the dimensions of the nature of responsibility₍₁₎ and sustainability strategies₍₂₎. Both concepts support the bottom line. Lean thinking does so through operational efficiencies and subsequent cost reductions whereas the concept of Sustainability entails a more proactive role as well when it comes to (new) value creation apart from value maintenance. There is always a question “Does it pay to be sustainable?” and this leads in different trade-offs that will pay off in a specific time horizon. In this sense there is an identical logic of justification for both Lean and Sustainability and under this perspective (that is also included in our typology and conceptual framework) Lean is subsumed under the operational translation of sustainability principles. At this point however we feel the need to make the following remark. Even though both concepts share the common notion of increased profits, Lean on one hand does so by

focusing entirely on monetary values through cost reductions whereas the Sustainability concept incorporates into the economic benefits a more qualitative nature of costs that are recognized through both economic and political actions of the organization. In this sense, another contribution of the present work is also related to the freedom of choice that a company possesses when it comes to applying Lean and Sustainability practices and in more specific, an alternative conceptualization of value. Whereas Lean lies on the discretion of the organization's management, sustainability is a qualifying business practice that comes closer to the public eye scrutiny and the customer/consumer. Therefore nowadays, even though Lean might allow a 'no' as an answer to the question of 'Should we become a Lean company?', sustainability gives room only to questions that seek for new ways of doing business i.e. on questions of 'How can we become more sustainable?'.

5.7.2 Managerial Implications

In this section we develop the challenges that we believe emanate from this work and that could instigate increased managerial and business relevancy. We have consciously strived for embracing an 'engaged scholarship' posture (van de Ven, 2007) where the researcher is in close co-operation with the business practice side. We did so by deciding to concentrate on a highly esteemed company with a recorder track record on both Lean practices and Sustainability efforts. In this view, we targeted for creating an indispensable connection between research and practical implementation. The areas that deserve further consideration by managers and the steering committees of an organization are multiple, with different points of interest and various levels of application.

A possible avenue that departs from the current thesis and could serve as raising managerial attention towards Lean and Sustainability, tackles with the wider issue of the extended SC of a company. During our interviews, the issue of supplier handling came to the fore a few times but we consider it extremely important especially under the rubric of Sustainability. Additionally one of the cornerstones of sustainability and SSCM literature rests itself on the operational dimension of SCM and in this sense is inextricably connected to the Lean concept. Contemporary discussions pertaining to the diffusion of sustainability across SCs recognize the notion of interconnectedness and the recent burgeoning of environmental and social issues on the policy agenda worldwide has rendered almost

deferential that concerns about company responsibilities should include considerations of the involved suppliers. Braziotis et. al. (2013) outline the function of SCs as collective, wherein the value creation process is contingent on interlinked activities and processes among various companies. SSCM extends the scope of analysis from a single firm to multiple echelons of suppliers, manufacturers and retailers (Drake and Spinler, 2013). Within this setting, suppliers have been receiving a prominent position when their importance to the realization of the buying firm's Sustainability objectives comes to the fore. The critical question for today therefore is how to create SCs that are sustainable (Kleindorfer et. al., 2005). Consequently, there has been a constant attention towards the different initiatives that are developed within SCs between buying firms and their suppliers, in pursuit of a more sustainable outcome. The beneficial side of adopting sustainability practices in SCM was recently subject to research by Golicic and Smith (2013) and the results showed a positive relationship with market-, operational- and accounting-based performance for the buying firm. It becomes therefore apparent that sustainability and SCs become interrelated and this lends credence to what Krause et. al. (2009) have said that "a company is no more sustainable than its supply chain".

Against this background, Lean and Sustainability should be considered in a seamless and holistic manner. Our work raises concerns that are inter-organizationally focused and related to the respective suppliers. Managers could generate reflections from our thesis and engage themselves into fruitful problem solving and business thinking about the transmission of Sustainability into the company's suppliers. In this effort, Lean principles should be ever-present. Towards this direction, we strongly encourage the interested parties to develop common mechanisms of SC governance aligned with Lean and Sustainability thinking. Sustainability by itself imposed upon suppliers through the purchasing function (please see related literature e.g. Andersen and Skjoett-Larsen 2009, Hoejmose and Adrien-Kirby 2012, Abbasi and Nilsson 2012, Igarashi et. al. 2013) is necessary but not enough. It might signal conscious efforts of a focal company to extend responsibility to its partners through assessment, auditing, development and monitoring practices (Gimenez and Tachizawa, 2012) but speaks little about their operational integration and the Lean viewpoint that comes as an end-result. This integrative perspective is in line with the writings of Senge (2010) who maintains that in the era of sustainable business, people within companies should realize the wider implications posed by Sustainability and therefore embrace a larger system perspective wherein they should align their work across internal and external boundaries and achieve a proper governance function. Purely related to this "extended view" of the SC as a

fertile field of applying Sustainability initiatives and Lean practices, we also consider the issue of Closed Loop Supply Chains (CLSCs). Sustainability re-processing and re-recovery as well, reuse, retrieval and recycling to name a few, all aim at ensuring a conscious environmental management practice under the tenet of CLSCs. Managers could further elaborate on these implications since the notion of Sustainability is extended in a backward direction as well where the product's end of its life cycle could be evaluated and consequently bring about new handling procedures that aim at reducing the resource consumption through the notions of circular economy and would require an altered business model.

Additionally, the new GRI G4 reporting guidelines that have already started being adopted by some companies and will constitute a formal reality from year 2015 raise the question of Sustainability performance and the issue of "subject materiality". This means that companies should decide upon which issues they consider with the strongest impact on their sustainability operations and accordingly report them. Even though the GRI framework provides different important performance indicators that could be utilized in this logic, it somehow fails to capture the complexity and the entirety of SCs. This new tendency disentangles from the traditional SC performance measures that are usually evaluated on criteria such as cost, service level and lead times and brings into the picture Sustainability issues that are both quantitative and qualitative in nature. As has been commented on earlier pages a main tool used towards this direction is the LCA method. Irrespective of these advantages that this method entails, it also comes with a few restrictions and challenges. For example it is product-based along the entire life cycle stage of a product and many times it is either hardly feasible to develop adequate measuring capacity or in cases that this seems viable, issues of cost and time regain prominence to the detriment of the tool's extensive application. Additionally it includes some specific assumptions also known as "Product Category Rules (PCRs)" that "objectify" the issues of span and depth concerning the SC spectrum and furthermore it is not indicative of the end of use period of a product. Consequently, most efforts limit themselves to reporting emission levels as part of companies' eco-efficiency initiatives. From this angle of consideration, managers are strongly encouraged to start applying model-based optimization techniques that are suitable for everyday problems and pinpoint specific operational aspects. In this respect we entirely agree with Bouchery et al. (2012) about including sustainability criteria into applied inventory models and for example investigate the potential outcomes of applying new technologies under a carbon emissions reduction mandate. It is our strong belief that this business avenue entails untapped

potential for our case company and business practices as well. In this line of reasoning it could be very interesting to make a detailed estimation about the circumstances that could be served by concentrating on Lean and consequently improving Sustainability performance or the cases where a new, more environmentally friendly technology is more appropriate as an asset investment action. The inquiry into the conditions under which one option outperforms the other is quite important because it could assist managers to determine the cases of maximizing their SC's environmental performance by minimizing the allocated CO₂ emissions and understand when buyer and supplier co-ordination, that is one of the flagship precepts in Sustainability and SSCM literature, is more environmentally friendly.

Quite related to this above mentioned issue but with an additional connection to the viability of SMEs is the issue of Supply Chain Finance (SCF). The main and overarching pillar of sustainability is the economic benefit based on which assumptions about environmental and social issues are outlined in order to build the business case. This financial aspect is also the predominant consideration of Lean practices that are situated on an operational level to support a specific sustainability strategy. SCF and in more specific working capital management poses restrictions to the cash availability that a company is able to possess. A company usually facilitates its working capital by trying to increase the days of accounts payable to the suppliers, especially in the cases where the focal company is the most powerful player within the supply chain, as is mainly the issue on the available literature. This in turn means that being more financially efficient for one company, might entail dangers of financial insolvency for one or more suppliers. To take this argument a step further, an interesting challenge for managers under such a scenario would be to balance the two edges and investigate under these circumstances how sustainability is affected by a respective modification or alteration of Lean practices. Additionally, this poses challenges of extending sustainability to suppliers and if not paid due consideration and respect, problems that occur might prove unsurmountable, endangering the SC in whole. The benefits of incorporating the issue of SCF are definitely positive for managers since it can mark the shift from a problem-focused mode of interactions to a solution-oriented transaction that will unfold a transformational agenda with highly applicable practicality. Although the financial component transcends the very essence of the SC concept in general, it has received a limited attention in the SCM literature and within SSCM it has been treated as a "black box" taken for granted. Its significance is intensified by the fact that it spans over the entire chain. In that sense it covers the whole continuum of relationships within supply chain management and it

adopts an opposite direction compared to the flow of the physical goods (Hofmann and Belin, 2011). Consequently, an effective SCM governance mode presupposes the concern of the upstream flow of money along with the downstream flow of goods (Gupta and Dutta, 2011) and this renders it inevitable for managers to shift their attention towards the interrelation of managing the financial flows and the influence this exerts on Sustainability principles and Lean practices.

The heightened contribution that SCF can deliver in value creation along contemporary supply chains can be further elucidated by the following two reasons. First, buyer-supplier relationships within the current SSCM literature address issues of compliance, monitoring and development in pursuit of long-term sustainability. However, SMEs face more urgent and short-termed challenges, which are often incompatible with the aspirations of leveraging supply chain sustainability from the buying firm's side. SMEs as part of global supply chains undergo a regulation of their CSR practices from large MNCs which sometimes is contrary to their own interests but a necessary constraint to be dealt with for their own survival (Morsing and Perrini, 2009) since otherwise they run the danger of exclusion from supply chains as suppliers (Roberts et. al., 2006). SMEs are deficit in financial resources in order to apply environmental and in general sustainability initiatives (Pedersen, 2009). When coupled with the management's perception(s) of environmental practices as a financial burden (Revell and Blackburn, 2007) and as a barrier to staying profitable (Jenkins, 2004), it is made obvious that research and business practice should be directed towards finding ways of overcoming the financial constraints of suppliers within the SSCM context. The second reason appearing as an extended consequence of the first one, pertains to the turbulent international economic environment. The financial downturn of 2008-2009 led to an unprecedented credit crisis which in turn dried up available liquidity (Ellingsen and Vlachos, 2009). This generated a two-folded repercussion. On one hand, big companies adopted a postponement stance wherein they pushed back the payments of their relative suppliers in order to free-up cash. On the other hand, SMEs already in a vulnerable condition of accessing capital, not only had to deal with limited access but even in cases where this was possible, the payback period and the interest rates were high due to supply shortages and overpricing (Chauffour and Farole, 2009).

In the concluding section of managerial implications that the current work poses, we specifically highlight two more aspects. The first one pertains to change management

initiatives that should be implemented in a proper manner in order to unlock the full potential of Sustainability thinking and Lean practices. It was constantly mentioned throughout our interviews that change is the essence of making things work. Both of the present authors (we) possess real life experience in business environments of this issue and we fully and strongly support this view. The key in this line of thought is the involvement of middle managers and front line employees, who both work in a co-ordinated and meaningful way with the upper level management. Change initiatives about Lean and Sustainability are not merely confined to glamorous presentations and excruciatingly dull meetings where a superficial commitment is achieved in pursuit of reaching a first-order consensus. Change in the context of Lean and Sustainability is about responsibility, engagement, trust and self-efficacy. Instead of a check-box mentality, true motivation and tangible process oriented approaches should be adopted. A shifting mindset is crucial towards increasing the company's Sustainability level and advancing Lean. Sustainability by its initial conception until today represents a constant mode of change where organizational developments are required to integrate Sustainability principles (e.g. Maon et. al. 2010, Mirvis and Googins 2006, Dunphy et. al. 2007). This calls for attention on behalf of managers to be alert on the change dimension and the necessary steps they need to follow in achieving a successful implementation of sustainable and Lean initiatives. We could summarize these steps into: accentuating the discrepancy of current performance⁽¹⁾ and explaining the appropriateness of the proposed change initiative⁽²⁾, fostering efficacy of achieving the set objective⁽³⁾ and offering the necessary principal support⁽⁴⁾, highlighting the personal benefit (=valence='what is it in for me')⁽⁵⁾ and the institutionalization and the continuous monitoring of the intermediary and end-results⁽⁶⁾. This stage model of change resembles to an increased extent the writings of Armenakis et. al. (2007) and includes the essence of the different models of planned and emergent change (e.g. Burnes 2004, Lewin 1947), however we have added the dimension of institutionalization, which we consider important since it can serve as instigator of employee development programs and provides the necessary link between planning and achievement.

In a related line of reasoning, the second aspect that we aspire to highlight relates itself to the notion of dynamic capabilities as an extension of the resource based view of the firm. We approach this dimension with due consideration and regard it as very important for managerial behavior and decisions. Both Sustainability and Lean are inextricably connected with the organizational strategy that was also highlighted by our case study company. This means that companies employ specific capabilities to reach a competitive advantage and these

capabilities are process-oriented. Processual treatment of both Sustainability and Lean practices has already been highlighted as a pre-requisite. These capabilities are responsible for securing the strategic orientation under both a proactive and risk oriented strategy, where collaboration and overall SC continuity are both indispensable (Beske et. al., 2014). As Helfat et. al. (2007) have stated, they represent the organization's capacity to purposefully create, extend or modify its resource base. In this sense, dynamic capabilities exhibit a path dependency (e.g. Dierickx and Cool, 1989) since they are contingent on the decisions that have characterized the trajectory and pose implications on their future development (Eisenhardt and Martin 2000, Teece et. al. 1997). A necessary though prerequisite for a capability to qualify as dynamic is, except for the embeddedness that we aforementioned, to be repeatable (Helfat and Peteraf, 2003). In this sense, dynamic capabilities can be regarded a means to an end and an end by themselves. In order therefore to establish collective approaches in the realization of Sustainability through Lean initiatives both intra- and inter-organizationally, managers could be eased in their job responsibilities by turning their attention towards both operational and developmental actions that they in turn could translate into Sustainability initiatives and Lean practices. In this procedure we deem it promising for managers to embrace a system-wide view of their organization's boundaries in both internal and external terms. An interesting finding from our empirical research rests upon the efforts of our case company to collaborate with external stakeholders and by attempting to acquire knowledge from different bodies of expertise it then continues on advocating new practices internally on a limited scale before mainstreaming these new practices into actually established processes.

The challenges for Sustainability and Lean are quite interesting since this signals a managerial discretion and competence of handling loosely-coupled business units that should achieve a fine-tuned balance between exploitation and exploration efforts (e.g. March, 1991). In essence, a delicate equilibrium between experimentation (e.g. learning initiatives in partnership forms, laboratory applications), discovery (e.g. tangible proof of mutual benefits) and innovation (e.g. new products, more eco-efficient engines, environmentally improved materials) on one hand and refinement (e.g. process adjustments, performance attunements), efficiency (e.g. reduction in CO₂ emissions and reduced environmental impact and footprint) and execution (e.g. respective translation into procurement directives, alternative handling of materials and extended supply chain practices) on the other hand. In our case study company, this could be translated into multiple initiatives and concentrated points of further and future

actions. In this direction, efforts could be strengthened towards cross-development projects pertaining to the transportation part of the company's logistics. Either through network optimization and restructuring techniques or through the development of new products based on alternative fuels and the spread of these into market segments that promise sustainable profits and enhanced sustainability performance for the company. Furthermore, lean practices could be the guiding initiatives through which efficiency and productivity are both facilitated in a holistic manner in pursuit of a sustainable competitive advantage, under the rubric of job design-employee-work task. This systems' approach is helpful since it accentuates the necessity of building bridges between the different functions of the company and highlights that exploration and exploitation are not incompatible but on the contrary could be mutually reinforcing. In this view, sustainability and lean initiatives should be complemented by a strong intra-departmental alignment with marketing as well, in order to generate the distinctive company characteristics that define its value propositions and postures. This could be achieved by using our developed Value Typology. Sustainability issues with regards to production, distribution and consumption of goods increasingly challenge the legitimacy of corporations and companies on their behalf are expected to articulate the appropriate response strategies for dealing with sustainability related challenges (Scherer et. al., 2013). Legitimacy constitutes an inextricable component and precondition of achieving a continuous flow of resources and for achieving a widespread support for a company's constituencies (Pfeffer and Salancik, 1978). Form this point of view, Suchman (1995) becomes very opportune since she distinguishes among pragmatic⁽¹⁾, cognitive⁽²⁾ and moral⁽³⁾ legitimacy. Applying our developed Typology of Value, we could place all legitimacy constituents within the four quadrants of our classification framework. The critical discerning factor in all cases is whether a company places primacy on the purely economic rationalization that includes financial benefits from adopting sustainable practices or whether a more morally attuned thinking is prevalent which of course is based upon the assumption that acting in a moral manner and embracing sustainability will in the medium-term and long run pay off for the company itself. In summarizing terms, the typology illustrates the different process and product based sustainability initiatives that could induce a sustained competitive advantage either through eco-branding and eco-efficiency or through cost-leadership and more proactive sustainability posture. In this course of action, Lean appears to be the most promising and effective approach to substantiate corporate decision making and action. However, a widespread intra-organizational stance on first hand (and wider SC on second hand) is needed.

Additionally managers should aim at ensuring for cross-functional integration, which is requisite for Sustainability and Lean practices. Last but not least, no business entity by itself is an isolated island, on the contrary it participates in a ‘networked’ chain (SC). This entails issues and challenges for respective managers of utilizing a process improvement approach through necessary coordinating activities, not only intra-organizationally but to the wider SC as well. We feel confident that managers will find meaning in these writings since they highlight the necessity of possessing or acquiring the desired capacity to act and create new solutions through Sustainability and Lean practices in (quite often) ambiguous and dynamic environments. To conclude with this section, a specific reference to the human dimension itself is considered appropriate. Following the roots of the systems design school and the writings of Fayol (1923) and Taylor (1903), the peaceful interaction between designed working positions and employees is deemed necessary. An interesting finding revealed through our research, situates itself within the additive effects of ergonomics. A proper adaptation of the job tasks and the surrounding environment promises an increased likelihood of workers concentrating on their core tasks, hence enhancing productivity and profits (here we make the assumption that operational costs and working capital remain in stable patterns and therefore we achieve a profit margin) through ergonomically designed workstations.

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Chapter 6 Limitations and Future Research Implications

The objective of the current Master thesis has been to thoroughly investigate the available literature on both Lean and Sustainability and to develop a conceptual framework in the form of pre-theory development and further elaborate it through a theoretical framework and a related typology. In order to increase the validity of our proposed framework we then turned towards conducting a qualitative case study in a specific company. Apart from the benefits of applying such a research approach that have already been extensively discussed in the methodology section, we would like to highlight its practical advantage; refining and finalizing our conceptual framework. However, the current work entails a few more advances, which revolve around the following two main facets: the typology of different sustainability strategies and Lean practices compared to the business role and its relation to the value generation approach⁽¹⁾ and the elaborate outline of the points of agreement and disagreement respectively between Sustainability and Lean⁽²⁾. The latter one is highly practical relevant. In congruence with this line of reasoning, we would also add the subsequent theoretical and managerial implications of the results emanating from the literature review and our empirical findings.

When it comes to our applied research methodology especially the second part of the thesis, namely the case study approach, we consider it a promising treatment in pursuit of gaining reach descriptive accounts of a phenomenon of interest that can provide useful insight and generate valuable knowledge about the details and specificities of our subject of interest. However, this approach by itself is not entirely enough in order to embrace our research with the benefits of generalizability. We have focused on a specific company within a certain industry sector. Widening the research focus and studying other companies within this sector, hence conducting a sectoral inquiry would widen the notion of generalizability. As a second step thereafter we could aim at bringing into the spotlight different companies from different industry sectors and embrace a cross-sectoral approach that would strongly support more generalizable and valid results referring to our formulated conceptual framework. However, we feel the need to pay the appropriate merits to the research conducted within these pages since our case company is an extreme case within its field and according to the mandates of Yin (2009) and Eisenhardt (1989) this secures representational breadth and descriptive depth of the different practices comprising both Sustainability and the concept of Lean. As such, it is not only a single step towards the right direction but could be accepted as an idiosyncratic

case with increased depictive capacity. In addition, we further encourage those researchers that are interested in this phenomena to extend our conceptual framework and elaborate on the proposed and developed concepts. This could be done by targeting for vertical specialization, namely for disentangling these concepts into more specific aspects/constructs that could be subsequently tested and validated through a survey questionnaire. In this effort we consider a few theories that could be applied in order to strengthen the justification process. The resource based theory of the firm along with dynamic capabilities and the relational theory would decisively contribute in this direction. Additionally the theory of social capital could unveil potential explanatory power especially describing the relationships dimension of Sustainability and Lean, not only on an intra-organizational level but in the wider context of the extended SC. Last but not least, the SC concept could be treated as an institutional setting by itself and following the writings of Hargrave and van de Ven (2006) about the nature of institutional arrangements, one could utilize social entrepreneurship theory aiming at describing the collective actions through which Sustainability and Lean principles diffuse across the SC. Linear optimization and more general operations' mathematical modelling techniques through a systems theory approach could prove beneficial for the integrative nature of the interface between operation and strategy.

Furthermore, we would like to comment on our developed typology. Crowson (1970) maintains that classifying things is probably the most fundamental attribute of the human mind and constitutes an underlying mechanism for all kinds of science. In this sense it represents an attempt to provide order to a cluttered conceptual landscape (Hambrick, 1984). In his view, Bacharach (1989) treats typologies as classification mechanisms, distinctive though from theory itself. However, these two processes are inter-related and highly complementary since classification through typologies acts as a sorting mechanism of differences, similarities and respective relationships and theory building itself connects different constructs through specific relationships. Our developed typology establishes four generic quadrants and therefore seemingly attains a static character especially since in reality we often come across an undeniable relationship that is developed simultaneously on two or more areas. The differentiating factor in this latter case is the level of prioritization that each dimension receives. However even though we consciously acknowledge this inherent liability of such a typology that is an underlying attribute of all kinds of typologies and taxonomies in general, we do believe in its practicality and its potential of serving as a roadmap for managers in order to provide insightful reflection for value generative actions. Managers in

general are increasingly expected to provide solid arguments about their sustainability and lean strategies and practices respectively. In this quest, an upsurge of various ‘‘tools’’, ‘‘methods’’ and ‘‘techniques’’ has proliferated and consequently raised the level of environmental, for example, awareness. However, managers still struggle on issues of prioritizing their actions and on embracing them with meaningful justification. In more general terms, managers need to bridge their potential investments in sustainability and Lean to the generic strategic positioning of their company. In this respect, our typology even though not perfect, gains respect and validity and can provide a useful method assisting in the definition of competition areas for every company and the subsequent configuration of Sustainability investments and concrete Lean practices. In conclusion, whereas a static notion is unveiled at a first glance on our typology, it actually provides for a certain degree of plasticity, hence represents a dialectic relationship between form and fluidity that is a prerequisite for connecting outcomes to processes by entailing the potentiality of responding in different ways under various contexts. In this respect, our typology discerning the postures of economizing⁽¹⁾, imagizing⁽²⁾, sustaining⁽³⁾ and institutionalizing⁽⁴⁾ might raise some stiff voices of concern about the strict scientific rigor, however it retains a highly applicable practical relevancy tied to the essentials of theory and could serve as a ‘‘value north’’ for managerial decisions.

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APPENDIX A – Research Proposal’ s Literature References

Research Proposal

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APPENDIX B – Interview Questionnaire

Note: In the following question, when referring to the term CSR, we deal with the notion of the "environmental responsibility"

Theme for Personal Information

- 1) What is your position?
- 2) How long have you been in this position?
- 3) What is your background?

Theme for Definitions

- 1) How do you define and conceptualize Lean and CSR (both individually and in common)?
- 2) What are the principles that underpin the implementation of these two concepts (both individually and in common)?
- 3) What definitions do you use on daily basis for the term "waste"?

Theme for Strategic Importance

- 1) Why have you embraced the concepts of Lean and CSR (both individually and in common)?
- 2) According to what performance indicators (metrics) do you assess Lean and the environmental dimension of CSR?

Theme for Organizational Implementation

- 1) How is Lean and CSR aligned with the overall strategy?
- 2) What are the motives of engagement with Lean and CSR?
- 3) Who are the change agents and the people that participate?
- 4) What is the motivation for the employees?

Theme for Impediments

- 1) What are the barriers that you have experienced so far in the implementation of Lean and CSR (both individually and in common)?
- 2) How did you manage to handle them and overcome the obstacles?
- 3) What factors could assist in the above treatment?

Theme for Institutionalization of Lean and CSR/Sustainability within the Company

- 1) Do you discern any complementarities between Lean and CSR? (If yes, please elaborate)
- 2) Have you experienced any competing interests-implications between Lean and CSR? (If yes, please elaborate)
- 3) Does your work concerning Lean and/or CSR entail the combination of other programmes? (If yes, please elaborate)

Theme for Closure

- 1) Do you want to add anything else concerning Lean or CSR or both of these concepts?

