

# **Lean Philosophy and Balanced Scorecard: what's new?**

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## **Abstract**

The evolution of the general economic system through an increasingly frenetic pace, has certainly affected the relational dynamic and dialectic systems that involve firms and the environment: they can be identified as a contrast between the environmental turbulence and the viscosity related to the operating and organizational structures of the firm.

In this scenario, the economic globalization and the financial crisis represent the new fundamental challenges that companies must face in order to success within markets made up by more and more particular consumers, that usually need of customized satisfaction coming from customized products.

Management solutions inclined towards lean thinking try to solve these kind of defies by focusing on a virtuous corporate functioning, thanks to a shared philosophy that relies entirely on the minimization of any kind of waste. Their main target is to achieve business goals in a way that is absolutely flexible and can be shared at any strategy level within the firm. Furthermore, the role played by the management accounting science is strictly related, also, on how managers can measure performance according to their strategic actions.

Often, companies use the Balanced Scorecard (BSC) to control the effectiveness of strategies within firm structures, whereas is not enough to refer only to financial measures, in order to fully understand the firm functioning. The measuring process of firm success represents, nowadays, an issue that managers and researchers need to investigate continuously.

Going towards new management accounting paradigms, might the use of the BSC enhance information processing, useful for spreading lean thinking all over the firm and for testing its effects? Moreover, thanks to lean thinking, might we suppose improvements related to the BSC functioning, by streamlining that information processing?

According to the literature, little is known about how to answer these questions. By answering them, however, the study

tries to find innovative solutions especially needed in turbulent times like these.

**Keywords:** Lean Thinking, Balanced Scorecard, Qualitative Research: case study design.

## **1. Introduction and research methods**

The current environment is characterized by a strong international competition; it depends on the achievement of high levels of customer satisfaction, by producing what customers need at the time, price and quality they want: it means that companies should have a higher degree of flexibility, in order to respond to the multiple changing of customer needs.

So, there are significant transfers from the mass production attitude - in which companies produce a large amount of uniform products - to advanced manufacturing attitudes that focus on customer demands for a larger variety of high quality products, without a corresponding increase in prices.

The concept of lean thinking was introduced, for the first time in the industrial world, by Toyota production system (Womack & Jones, 1996). The principles and demonstrated benefits of *lean* evolve from three important theoretical backgrounds about the following organizational theories: *Just-in-Time* (JIT) and *Kaizen Costing*, *Total Quality Management* (TQM) and *Total Productive Maintenance* (TPM) (Davies, 2003). The evolution of technological paradigms has made the innovation the leading driver on how to survive, within more and more competitive markets: it has become more difficult to distinguish services from products and vice versa (Rullani, 1996), because of an increasing degree of complexity in terms of output produced. So, for the contemporary firm, the need to shape its structures and its own processes in kaleidoscopic markets made by a significantly differentiated demand reveals how the lean philosophy may help firm operations in these contexts.

On the other hand the Balanced Scorecard (BSC), considered to be one of the most significant innovations in the management accounting science (Tayler, 2010), ensures a comprehensive measure of firm happenings. The study may recognize its main potential linked to its information processing, by considering the role of counterbalancing different perspectives (and different measures) of firm performance. It seems true, especially within very dynamic markets and environments that usually cause changes in organizational and operational structures – competitive, relational and product systems.

Given that, the research question attempted is:

- *How might be modeled the influence of Lean Thinking on the use of the BSC, in regard of innovative and integrated performance measurement systems?*

To this end, a qualitative research method is used (Kuhn 1962; Eisenhardt 1989; Partington 2002; Popper 2002; Yin 2008). Firstly the study analyzes a selected literature that, over time, developed significant and fundamental theoretical paths in both the concepts mentioned before. It should be noted that, by searching through the main international academic business sources – even using many inclusion/exclusion criteria, chosen by trials with Boolean operators and strings – the study finds nothing strictly related to our research question and nothing clearly referring to any bridge between lean philosophy and BSC. Then, it highlights how our BSC model might work according to lean thinking principles. To this end, we showed our theoretical proposal by using our own elaboration models and by specifying our supposed impact of lean thinking on the BSC, in respect of what literature said over time on these subjects.

Finally, by considering own elaboration models, this paper also provides instructions about how to deal with the implementation of a suggested research strategy, recognized in the exploratory case study, that could allow research activities in validating our BSC model. It also tries to define possible future developments of our theoretical construct in the business field.

The paper is structured as follows:

- Section number two refers to the literature review;
- Section number three shows our proposed model of BSC, consistent with our research question. Moreover, it highlights how might be tested - on the field - our theoretical construct, even presuming the dynamic implications of the model coming from the use of a case study;
- Section number four refers to final remarks and considerations for future researches.

## **2. Literature Review**

### **2.1 *The Balanced Scorecard (BSC)***

According to Kaplan and Norton (1992) “ (...) *the balanced scorecard includes financial measures that tell the results of actions already taken (...) and it complements the financial measures with operational measures on customer satisfaction, internal processes, organization innovation and improvement activities(...) operational measures that are the drivers of future financial performance*”.

In recent times, BSC proponents have moved emphasis from balance to strategy, using scorecards for defining strategic purposes, identifying creativities to accomplish those purposes and evaluating whether those purposes have been achieved, by

identifying specific *key performance areas* and related *key performance indicators* (Kaplan & Norton, 2000, 2001, 2004a, 2004b, 2006; Niven, 2002; Davies, 2003). Most recent writings about the BSC have concentrated on how to link measures together into a causal chain of performance, using them as a guide for implementing strategies or for measuring the strategy success itself (Kaplan & Norton, 2001; Tayler, 2010).

Furthermore, some other researchers have recognized that business units, having some of the most innovative characteristics of contemporary firms, are encouraged to design customized scorecards to better fit their organizational strategies, such as: growth, cost leadership, product innovation, etc. (Libby et al. 2004). The definition of strategically linked measures underlines the growing concentration on non-financial and forward-looking performance measures, even using value drivers in the performance measurement activities (Banker et al., 2004). The Balanced Scorecard should help managers in understanding and in evaluating cross functional relationships between the four perspectives. Those relationships should lead to improve problem solving activities and to make the right decisions thanks to an integration of all the four perspectives (Banker et al., 2004).

The implementation of a BSC contains – from a narrow view – the selection of measures, the collection of scorecard-related data, the formatting of scorecard reports and the dissemination of scorecard information (Kaplan & Norton, 2006; Tayler, 2010).

However, when the BSC is used as a tool for defining and measuring strategies, its implementation usually contains the allocation of decision rights and plans for achieving strategic purposes (Tayler, 2010). Employees' understanding of strategy is the main vehicle to achieve success in any organization; that understanding also helps them to consider performance measures such as a guide for their decisions and actions (Kaplan & Norton, 2000). On the other hand, however, Krumwiede et al. (2000) stated that managers also depend on non-financial measures, which are connected to a specific business strategy. Kaplan and Norton (2000) tied the BSC to strategies by using a *strategy map* (also known as a *value driver map*). The strategy map usually translates estimated results into testable hypotheses, in order to improve strategic learning.

Over time, since its first appearance in the world of industry, the BSC has been commonly used in a four-perspective approach, “(...) *they should be considered as a base, not like a straitjacket*” (Kaplan & Norton, 1996). Also, they come from the vision, the strategy and goals of the company (Kaplan & Norton, 1996a; Atkinson et al., 2004). Anyway, regarding to our research proposal, this paper tries to focus on the essence of the following four main perspectives, since we would like to

implement forthcoming research activities, starting from a classic use of the BSC:

*1) Financial perspective:*

This perspective belongs to the long and short term financial performance goals (from the shareholders' point of view) and it is concerned with the global financial consequences of the other three perspectives (Hansen, Mowen, & Guan, 2007). This perspective helps to evaluate performance in terms of growth, profitability and risk from the shareholders' point of view.

Return on investment (ROI) and return on sales (ROS) and also Capital Turnover ratios are mostly used as proxies for financial measures, in order to explain whether the implementation of strategies firm is contributing to improvements in the bottom line (Banker et al., 2004).

*2) Customer perspective:*

According to the literature, there are three strategies that help companies to achieve the customer value proposal: operational excellence, customer intimacy and product leadership (Kaplan & Norton, 2000). Firms provide quality products and services, and effective product delivery to customers, also providing them with satisfaction (Amaratunga, Baldry, & Sarshar, 2001). Customer satisfaction and customer retention are used as a proxy for customer measures, which are intended to measure the firm's performance from the customer perspective (Banker et al., 2004). The customer value proposal, in fact, is the primary strategy for any company. It labels the customer relations and the characteristics of the unique mix of product and service. The customer value proposal is vital for firms, because it helps the company to improve outcomes in order to achieve and increase the satisfaction to customers.

*3) Internal processes perspective:*

Accomplishing high levels of performance on processes or on operational measures, leads to achieving high levels of quality for products and services: it also achieves satisfaction for customers and long term survival for companies (Brown, 1996). In this way, the organization should introduce new products and new processes to achieve success and excellence (Banker et al., 2004).

In fact, the control on internal processes is very relevant for any company, in order to produce trustworthy and consistent products and services. The company performs the right processes with the right quality for reliable levels of product and service quality. Time to process customer returns in retail stores, throughput time, defect rate, machine breakdown and on-time delivery are used as a proxy for internal process measures. The latter are employed to determine core capabilities, to identify strong and weak points and, finally, to make improvements.

#### 4) *Learning and growth perspective:*

This perspective should sustain the necessary efficiency and productivity of the processes which create value for the customer and should maintain and develop the know-how to satisfy customers' needs (Olve, Roy, & Wetter, 1999). It refers to learning and growth measures, which focus on factors that ease continuous improvement (Banker et al., 2004).

Price (2004) stated that “*innovation and leaning develop new processes and technologies that decrease costs and increase efficiencies in the internal business perspective, which in turn provides more value to the customer and therefore satisfies them, and will finally reap improved financial results*”.

Moreover, this perspective contains measures that support innovativeness and growth such as: innovation rate, time to market for a new product, revenue from new products, and research and development costs (Sandanayake, 2009).

### **2.2 *Lean Thinking and Lean Philosophy rationales***

Lean philosophy is usually defined as a way of thinking that can be applied to any and all processes characterized by wasteful work, starting from a new product design up to manufacturing, sales, marketing, finance and accounting activities. Lean thinking offers a way to do more and more with less and less: less equipment, less time, less human efforts and less space, thanks to the elimination of waste from every production process. It also tries to provide customers with exactly what they want, having a maximized value (J. P. Womack & Jones, 2003) : it means that companies should introduce products free of defects, at the exact time that customers want and with minimal waste in all the processes of production (Kocakulah et. al., 2008).

The term *lean* means “*shedding*” and “*losing*” excess or waste, from the design to the production of goods economically, at lower volumes and with fewer errors (J. Womack, 2002; Cunningham, Fiume, & Truit, 2003; Johnson, 2006). The strategic goal of *lean* is to satisfy customers thanks to an on time delivery and high quality products, by eliminating waste.

Applying the lean thinking does not stop on the production processes, but it implies to implement this organizational way of being and of behaving at every aspect of an organization: in other words, it means to build up what is called a *lean company*. So, lean thinking depends on three concepts: *creating value to customer*, *eliminate waste*, and *continuous improvement*. Here is a better specification:

- *Value* is considered a basic point in lean thinking; it is defined definitively by the customer and meets the customer's needs at a specific price, quality and time (J. P. Womack & Jones, 2003).

- *Waste* is defined as any use of resources that does not make value for the customer (Kennedy, Maskell, Brewer, & Cunningham, 2006).

In literature, over time, the academia recognized many types of waste related to the production, such as (Ōno, 1988; Bicheno, 2004; Emiliani, Stec, Grasso, Stodder, & C.f.L.B. Management, 2007):

- *Overproduction* (producing items not required);
- *waiting* (waiting to prepare machine for production);
- *Unnecessary transportation* (useless transfer materials between different departments);
- *Over processing* (adding not required functions and features);
- *Unnecessary movement* (employees overloading to reach an item);
- *Defects* (products that do not meet technical requirements);
- *Excess inventory* (purchasing more materials than needed for production).

- *Continuous improvement* means that employees in the entire company make positive changes to the operation in order to raise customer value. In lean companies everyone in the firm is involved in the process of improvement and waste reduction, so employees assure that increased and improved productivity will depend on their work (Kennedy et al., 2006).

Kennedy et al (2006) defined some improvements to adjust the meaning of lean production – over the definition of waste – thanks to the consideration of concepts like: *value, value stream, flow and pull, empowerment and perfection* rationales. Moreover, Bhasin (2010) and Ransom (2008) showed the benefits of applying the lean thinking as follows: *shorter cycle time, shorter lead times, lower work-in-process, faster response time, lower cost, greater production flexibility, higher quality, better customer service, higher revenues, lower throughput time and higher profit.*

The Aberdeen Group (2006) showed by a survey that, the 66% of the firms analyzed in one of its main research on the subject, believed that cost reduction was the basic goal for a lean creativity. The remaining actions were operational, cultural and also related to the quality.

The following table specifies the findings of the research:

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Insert Table 1 about here  
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Notwithstanding, Bhasin (2010) wrote that organizations should not depend on one view of *lean*, considered only as a mere cost reduction tool. He argued that organizations should be inspired, at least, by two drivers about lean thinking: *customer value* and *business value*.

The following table shows the concept:

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Insert Table 2 about here  
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About the literature review on these two separate subjects, the most relevant remark concern the absence of any empirical evidence between BSC's logics and the lean thinking ones. The choice of separating in two paragraphs this section, in fact, is not random: it is aimed at showing the existing gap that inspired us to think about further boundaries on the topics treated in this paper. The proof is given by the use of strings, Boolean ("and", "or" and "not") and truncation operators that we used in searching through business databases (i.e.: EBSCO; ProQuest). Every time we tried to match strings like "balanced scorecard", "BSC" or "scorec\*" with strings like "lean", "lean thinking", "lean phil\*", "value str\*", "lean account\*" and also with "just in time", "total product\*" etc., some results were found. The only relevant fondness was related to "balanced scorecard" and "total qual\*" - regarding total quality management (TQM) - with related thesaurus terms referring to: industrial management, BSC, quality control, strategic planning and decision making. Nonetheless, even if total quality management is one of the main theoretical background by which lean thinking was born, we did not find - in the peer reviewed articles chosen - any tension properly highlighted between the two subjects (but – conversely - always closely related only to the BSC). Notwithstanding, some authors- in particular Bhasin (2012) - studied the relationship between lean philosophy and size of organizations that were still adopting a BSC: this study found a significant relationship between large organizations and lean philosophy without highlighting the association with BSC.

### **3. "A different view about the same perspectives". A proposal to answer the research question**

Undoubtedly, the real benefits of *lean* are quite difficult to quantify: how can we measure a faster set-up, shorter cycle time etc. and, above all, improvements related to a better overall firm vision for the management? We should notice, in fact, that a firm can be regarded as a systemic entity, characterized by multiple effects among its multiple structures and its multiple organizations.

The guiding logic of lean thinking shown before, can lead us to think that it could be very interesting to determine how managers can capture integrated information about performance measurement activities (i.e. BSC) in companies, by reasoning from a lean philosophy standpoint. So, let us try to thread a relationship between them:

1) *Financial Perspective*: the logical emphasis for this perspective may be related to the concept of "eliminate waste",



i.e., decreasing costs (waste is certainly synonymous of cost) – in particular variable costs – in all the processes of product manufacturing and also in their support activities. This means: a subsequent increasing of financial returns; if it is necessary, an increasing level of sales that should lead to higher profit; a decrease in inventory size; higher return on sales, higher capital turnover and higher return on investments. In order to consider investments from this perspective instead, eliminate waste also means that the amount of the capital required for implementing a lean production system should definitely be considered, together with self-financing activities led by the firm itself and coming from not shared or re-invested earnings within the whole firm's processes.

2) *Customer Perspective*: the benefits of this perspective may be related to the concept of “creating value” for customers. It implies an increasing in customer satisfaction by providing customers with exactly what they need: if errors and scraps in the production processes are minimized, a maximizing activity may be reached, referring to the value transferred to customers and directly coming from the output sold by the firm.

3) *Internal Process Perspective*: the benefits of this perspective may be related to both the concepts of “eliminate waste” and “continuous improvement”. By applying them, the production time for internal processes (throughput time) should be lowered by removing wasted time and the excess capacity in all the processes of production, even lowering inventories.

Moreover, according to the internal process perspective, the application of the BSC in a lean company may highlight internal processes that should be enhanced for satisfying not only customers, but also shareholders and the whole stakeholder audience according to the strategic decisions stated by the governance. The previous benefits also imply that the company must sustain a continuous improvement for internal processes - which is related to the paradigm of the Deming Cycle (*plan, do, check, act*) (Deming, 1982) - further improved by a strong tool coming from the firm's culture and scattered all over its organization. It is lean thinking.

4) *Learning and Growth Perspective*: the benefits of this perspective may be related to the concept of “continuous improvement”. It may increase the learning curve for all employees, increasing also an overall labor productivity.

Thanks to the direct improvement of labor productivity, the firm may benefit from a decreasing production throughput time and then, of increasing production volumes, with the aim at satisfying possible increases in demand for goods, in general.

Furthermore, the firm will be able to determine employee capabilities and the reliability of information systems, which will help in improving internal processes and in implementing strategies at any organizational level; relationships may be strengthened with customers and, in general, with stakeholders.

Amaratunga, Baldry, and Sarshar (2000) suggest that the BSC can be used as a management system that focuses the efforts of people within the firm towards achieving strategic goals. It also changes the vision of the firm and its strategy into a comprehensive set of performance and action measures, that usually provide the basis for strategic measurement activities and, then, for a better management system (Bhasin, 2010). In a forward vision, we might think about improvements of performance measurement activities: they will continue to improve by learning from the previous results. In this way, lean thinking may provide information that helps to enhance BSC's performance indicators and key performance areas in all four perspectives. This will help us to think in a different way: *imaging a BSC thought by the lean philosophy rationales*.

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Insert Figure 1 about here

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### **3.1 Research strategy and dynamic implications: presuming the implementation of the model**

In order to test the aforementioned model, the study believes that it is necessary to refer to an exploratory case study as a research strategy that may produce tensions about the supposed changes in the BSC performance measurement activity – moving from theory and hypothesis to practice.

The previous statements in fact, must be justified by matching the model with practical highlights: we should follow a well-defined path that allows us to strive for empirical results according to the assumptions made and, finally, to the theory outlined before. We should not forget that theory, in similar cases, is the main vehicle for generalizing new findings (Yin, 2008).

For dealing with any problems closely related to the implementation of the case study, this paper is going to outline the design that, in our opinion, should define the functioning of an interpretive case study that aims at underlining how a BSC model may be influenced by lean thinking.

First of all, it is necessary to understand what the unit of analysis will be and therefore, what case will be chosen; following the previous hypothesis, this study refers to manufacturing firms in order to ensure a necessary chain of evidence with the theory and propositions about the model shown above. What we are trying to investigate is something related to strategies and performance in their fundamental essence, since it has not been found in theory any reference belonging to the specific hypothesis of a BSC, properly conducted by lean thinking rationales.

However, a further specification of the model can be accepted only once we have determined how to demonstrate the

thesis proposed in this paper, with regard to a specific experiment (case study). The paper is only interested in demonstrating the information potential of a general (and not customized) BSC, applied to a lean company. So, before continuing, it is very important to understand the role played by a BSC within an organization guided by lean thinking. We should recognize interactions and links that mostly, according to the theory, animate organizational and operational structures; finally we should trace those links, underlining where (inside the organization) and how they interact.

The BSC, as a management accounting tool for ensuring the implementation and subsequent control of strategies, is usually set between the organization and its strategic activities. For planning the architecture of a BSC, there is a need to refer to a clear strategy map that explains, practically, the impact of strategies on key performance areas. Lean thinking, on the other hand, unfolds its effects all over the firm, it is borne in the mind of every participant and shared everywhere in the organization; it also presides over strategic planning activities. In order to outline a template that starts to consider the previous features, this work uses the paradigms of *Strategic Orientation* (Coda, 1988) and *Entrepreneurial (or business) Formula* (Coda, 1984).

The former explains the set of *guiding beliefs, values and attitudes* that closely animate the overall functioning of the firm; the latter explains how the firm sits within its operational and organizational structures but considering dialectical and evolutionary relationships with the environment. Strategic activities come from strategic orientation. Strategies will ensure compatibility between internal business and external environmental variables, in the future (Cavalieri, 1995; 2008). In addition, in some north-American studies, strategy is also seen as “*the unifying idea that linked together the functional areas of business, and its activities to the external environment*” (Montgomery & Porter, 1991).

It should be noticed that strategies guide firms within their general and/or task environment; usually there is more than one model for strategies (Mintzberg, 1994), but the role played by the BSC inside firms does not change and, furthermore, does not change the role played by lean thinking in shaping any kind of strategy. In fact, what really matters is how the firm gives birth to and how it breeds strategies: we are assuming that everything depends on lean thinking.

The following representation will show these concepts, by highlighting the presence of lean thinking in the firm. In our opinion, everything that stands between the strategic orientation and the entrepreneurial formula is influenced by lean thinking:

- If strategies are considered as the main connection between strategic orientation and the entrepreneurial formula, then it

should be considered lean thinking as the leading driver in spreading strategies all over the firm;

- If the role played by the BSC in connecting strategies with the entrepreneurial formula is considered, then it should be recognized interactions led by lean thinking;
- If interactions between the BSC and the strategy map are considered, then it should be recognized a specific “language” spoken by these tools: we are still referring to lean thinking.

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Insert Figure 2 about here  
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Once the logic outlined above is clear, we can understand how to continue with the case study.

The choice of the unit (or units) of analysis should respect the aim of this paper and the inquiry should include the comparison of two different units of analysis: one representing a manufacturing firm that works on the basis of lean thinking and one that has never used this approach. We do appreciate that it is almost impossible to compare firms in an objective way, but the choice of units of analysis should be based as much as possible on common determinant elements in order to minimize any dangerous subjectivism. The choice is up to the researcher, duly substantiated in accordance with the model and with its positioning in the organization chosen. In our opinion, a good start could be one beginning from the same business sector, just for making this analysis or its forthcoming research activities accessible to those who wish to gain advantages from useful practical applications in industry.

Another idea, starting from the same business sector, can be regarding a comparison between two direct competitors, since it is more likely to find common operational profiles that are easily referable to the same standards of judgment (especially in terms of performance). It should be noted that empirical evidence from any meeting between a BSC and the lean philosophy could emerge in at least two ways: considering a lean company that has adopted a BSC afterwards (or that is going to adopt it); considering a BSC used by a firm that has later become a lean company.

According to the assumptions that this paper argues, the latter way is equivalent to a double case study, in which the two distinct units actually represent the same firm, but before and after its transition to lean thinking. Then, the desired comparison could involve only one firm, properly observed and studied in two distinct phases of its life (finally these phases will represent the cases to be compared). The two ways shown suggest to us how to approach understanding the more comfortable and suitable solution, in order to build up a case study consistent with the aim of this work. A better

representation of the previous concepts is explained by the following figure, in which we underline differences between the two units of analysis, according to the comparisons that should be made in our proposal.

What might also be interesting is testing the possible superiority of lean philosophy, which may act as a carrier of information for a smooth functioning of the BSC, in order to outline strategies that allow firms to become more competitive in markets. Before being put into circulation, the information should stem from operations already ruled by a thought and shared all over the firm. Now it is easy to understand that the role played by a BSC, in scenarios such as these, is to act as a connection for a multitude of information inputs, suitably declinable to the main business policy needs.

Once the study testes the possible primacy of the multilateral role played by lean philosophy over a BSC, it might think of its possible seamless integration into the *lean company*, even imagining the establishment of an edifying and perfect relationship for feedback and feed forward activities.

Furthermore, assuming a first time approach of the idea shown in this paper, one has to consider the pre-eminence of the lean philosophy in the analysis that we want to lead; in fact, starting directly from a joint consideration of both the variables of study (lean thinking and BSC) inside the same unit of analysis, it may confuse the evidence useful for highlighting the eventual positive impact of lean thinking on BSC: in that case, a primary role would be played by the strategy map, as the fundamental source of all the strategic decisions taken by firms.

Finally, a few more words should be written about the role of the strategy map. We can, in general, assume it to be the blueprint from which will emerge the whole architecture of a BSC. Thanks to the strategy map, the emerging characteristics of the lean philosophy may be transferred within each perspective considered; this could simplify management activities in order to understand what kind of strategic actions the company will take for giving a *lean* imprint to its business, and how it will infuse the control of those actions within the BSC itself.

In our opinion, in approaching our *lean* unit of analysis, we should consider the strategic map as a basic guide for the whole understanding process of the possible central ideas between BSC and lean thinking. Moreover, nowadays, we do know that accounting practices related to “lean accounting” are mostly based on the *value stream map*, a technique used to analyze and design how value flows through a production system. By scanning –from a value standpoint – the productive operation within the firm, lean accounting aims at providing managers with timely and exact information that gives a clear insight into the firm’s performance.

Tensions among this kind of information and the strategic volitions pictured inside the strategy map might meet each other, in order to draw and to test the *primitive source of information*, by which everything unfolds within the firm. In our opinion, *operational* decision-making process activities should be related to *strategic* decision-making process activities, with the aim at understanding the contribution given by the value stream map as one of the possible source of information of a strategy map.

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Insert Figure 3 about here

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Basically, the start of forthcoming research activities about this subject should start from a deep and comprehensive study of the strategy map of the firm. Nevertheless, considerations about the strategy map should be regarded even when comparing the two different units of analysis, also referring to the one that has not adopted a lean philosophy in its organization. This approach may well avoid any misunderstanding that could jeopardize the research activity on the subject.

#### **4. Conclusion**

In conclusion, once we have considered the research proposal and how to act on the corresponding case study research, we may ask ourselves about any limitations related to this topic. We do believe that knowing limitations helps this research activity to better test the reliability and validity of the whole model described.

According to our research proposal – by coming from our research question - we noticed two main practical limitations:

- The first refers to the adoption of a standard BSC: the study does not consider a hypothesis related to specific business needs, for instance to a customized BSC adopted by more than one division or business sector in the same firm;
- The second is related to time; assuming a first time adoption of a BSC, how long does its implementation take in order to measure success in a lean company?

Nevertheless, we might also find in our BSC model one more task: a criterion to evaluate the goodness of fit of lean thinking in the company, by thinking about the structure of key performance areas that include parameters of judgment (*lean key indicators*) for testing levels of implementation and the evolution of the lean philosophy.

Finally, we can imagine future research activities being:

- The study of *lean* customized BSCs (with four or more perspectives) inside the same company, by observing how they interact and if they behave as catalysts for a multitude of

information processing, towards shared strategies within the same organization;

- The use of a *lean* balanced scorecard as a meter to test levels of lean thinking sharing in the firm;
- An activity of joint research of these previous hypotheses.

The scope of new researches belonging to this topic, in fact, may enhance studies on the lean accounting field where, nowadays, the most noted tools do not consider, with a narrow view, a “balanced” measurement of lean thinking effects on the firm. Looking for any possible bridge between the “hearts” of both the subjects treated in this paper, theory on lean accounting may be extended. What really happens if we merge a BSC’s strategy map with a value stream map used in a lean company? In other words, we should think about new performance measurement paradigms that could allow us to answer this question, in order to reach - in depth - significant new findings about performance measurement systems. A significant breakthrough, in our opinion, might be related to new ways of being of managers and, in general, of people who animate a company from the inside, when they properly take part in such systems.

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**Annex I: tables**

*Table 1: abstracted from “The Lean Benchmark Report. Closing the Reality Gap”*

<b>Action</b>
Reduce non-value added manufacturing and supply chain costs 66%
Implement continuous improvement culture and methods 52%
Improve manufacturing and supply chain flexibility 38%
Customer demand driven manufacturing 29%
Focus on customer value-adding activities 27%
Reduce inventory and assets required to produce and deliver product 27%
Improve product quality 20%

Source: Aberdeen Group, March 2006.

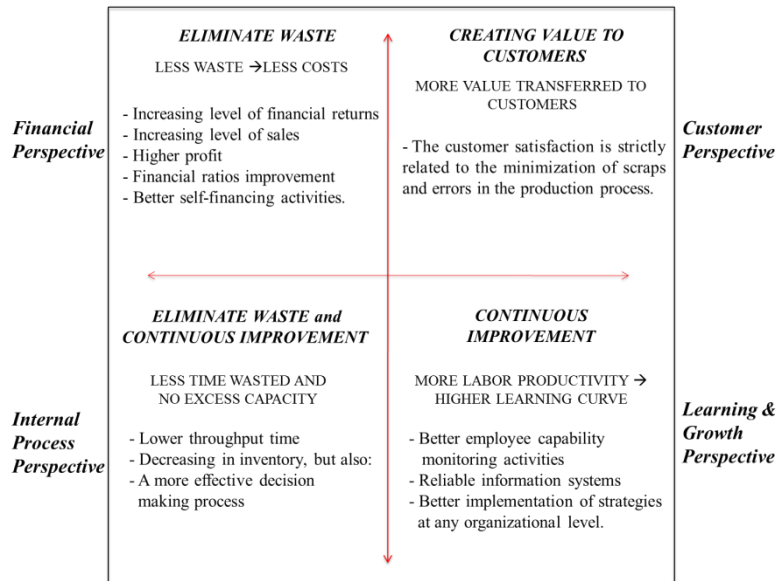
*Table 2: abstracted from “A study of the impact of lean on UK manufacturing organizations that view it as a philosophy”*

<b>Customer value value</b>	<b>Business</b>
- Reduction of a cost per unit	Assist the aggressive sales Strategies
- Decreased cost per product customization	Perform better than the prevailing competition at Comparable price points
- Faster product development	Produce “on demand” as a Competitive advantage
- Reduction in time to market of new products from concept to release	Establish a market stronghold for expectations
- Higher productivity and reduce the cost per unit	Higher revenues with existing resources

Source: Bhasin, 2010

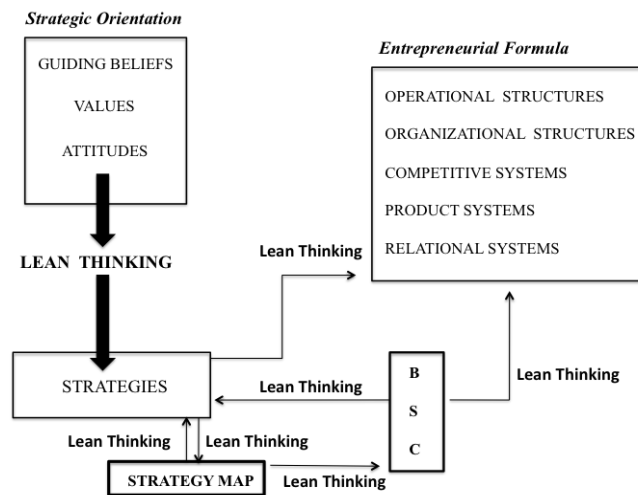
**Annex II: figures**

*Figure 1: “A different view about the same perspectives”.  
A proposal.*



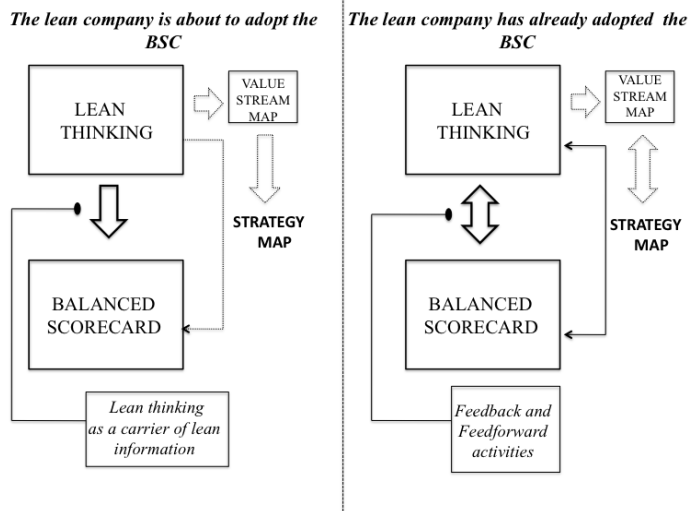
*Source: our own elaboration.*

*Figure 2: The BSC and lean thinking in the lean company.  
An interpretation.*



*Source: our own elaboration.*

Figure 3: How to manage the unit of analysis.



Source: our own elaboration.