

Breakthroughs in the Management Accounting Science: Imaging a Balanced Scorecard Thought by Lean Philosophy Rationales

Bassam Baroma · Andrea Bellisario ·
Antonio Chirico · Andrea Appolloni

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Abstract This paper aims at providing a proposal for a new way of conducting the balanced scorecard (BSC), assuming a model that fulfils the leading features of lean philosophy and designing a research strategy that could explain how to act for arguing a “Lean–Balanced Scorecard”. Management solutions inclined towards lean thinking try to solve contemporary worldwide market challenges 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. In the transition 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, we may find innovative solutions towards a better measuring process of firm success—especially from the perspectives of integrated management reporting activities in turbulent times.

B. Baroma
Faculty of Commerce, Tanta University, Tanta, Egypt
e-mail: bassambaroma2@hotmail.com

A. Bellisario · A. Chirico · A. Appolloni (✉)
Department of Business Government Philosophy Studies,
Tor Vergata University, Rome, Italy
e-mail: andrea.appolloni@uniroma2.it

A. Bellisario
e-mail: bellisario@economia.uniroma2.it

A. Chirico
e-mail: chirico@economia.uniroma2.it

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Introduction

The concept of lean thinking was introduced, for the first time in the industrial world, by Toyota production system (Womack and Jones 1996). The principles and demonstrated benefits of lean evolve from three important theoretical backgrounds about the following organizational theories: just-in-time and Kaizen costing, total quality management and total productive maintenance (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 kinds of environment.

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. We 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?* In order to bridge, from a theoretical standpoint, between the lean philosophy and the BSC's logics, a qualitative research method is used (Kuhn 1962; Eisenhardt 1989; Partington 2002; Popper 2002; Yin 2008) and this work will be structured as follows:

- we will analyze a selected literature that, over time, has developed significant theoretical paths in both the concepts mentioned before. Searching through the main international academic business sources (i.e. EBSCO; ProQuest), we found nothing strictly related to our research question and nothing clearly referring to any bridge between lean philosophy and BSC;
- we will highlight how our BSC model may work according to lean thinking principles: we will show our theoretical proposal by using our own elaboration models, specifying the impact of lean thinking on the BSC structure and its rationales.
- By considering own elaboration models, we will also provide instructions about how to deal with the implementation of a suggested research strategy, recognized in the exploratory case study, that could allow research activities

for validating our models. Finally, we will try to define possible future developments of our theoretical construct in the business field.

Selected Literature Review

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 and Norton 2000, 2001, 2004a, b, 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 and 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 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 and 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 for achieving success in any organization; that understanding also helps them to consider performance measures, such as a guide for their decisions and actions (Kaplan and Norton 2000). On the other hand, however, Krumweide et al. (2000) state that managers also depend on non-financial measures which are connected to a specific business strategy. Kaplan and Norton (2000) tie 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-perspectives approach, but “(...) they should be

considered as a base, not like a straitjacket” (Kaplan and Norton 1996). Anyway, regarding to our research proposal, we are interested in focusing 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:

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 et al. 2007).

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 and Norton 2000). Firms provide quality products and services, and effective product delivery to customers, providing them with satisfaction (Amaratunga et al. 2001).

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).

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 (Olive et al. 1999). It refers to learning and growth measures, which focus on factors that ease continuous improvement (Banker et al. 2004; Price 2004) and it 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).

Lean Thinking and Lean Philosophy

The term lean means shedding and losing excess or waste (Johnson 2006), from the design to the production of goods economically, at lower volumes and with fewer errors (Womack 2002): this will help to decrease the timing of the overall production cycle, as a primary aim (Bhasin 2010).

Lean thinking offers a way to do more and more with less and less: less equipment, less time, less human effort and less space, by the elimination of waste from each production process; more especially it tries to provide customers with

exactly what they want, even maximizing the value introduced to them (Womack and Jones 2003; Cunningham et al. 2003; Kocakulah et al. 2008). Applying lean thinking to every aspect of a productive organization means creating what is usually named lean enterprise or lean company, which follows rationales properly related to the paradigm of lean production. It depends on three leading concepts: creating value to customer, eliminating waste and improving continuously every production process. Here are some better specifications:

- Value, is defined definitively by the customer and meets customer needs at a specific price, quality and time (Womack and Jones 2003).
- Waste, is defined as any use of resources that does not produce value to customers. There are many types of waste (Ōno 1988; Bicheno 2004; Emiliani et al. 2007) such as: overproduction, waiting, unnecessary transportation, over processing, unnecessary movement, defects, excess inventory, and products and services which do not meet customers' needs.
- Continuous improvement means that employees, within the company, make positive changes to the productive process in order to raise customer value; basically, employees assure that increased and improved productivity will depend on their work.

Moreover, Bhasin (2010) and Ransom (2008) describe the benefits of applying lean production 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. In the end, it means that organizations should not depend only on one view of lean thinking, just as a cost reduction tool, but should consider at least two main institutional targets: customer value and business value (Bhasin 2010).

“A Different View About the Same Perspectives”. A Proposal

Undoubtedly, the real benefits of lean are quite difficult to quantify: how can we measure a faster set-up, shorter cycle time, improvements related to a better overall firm vision for the management, etc.? 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:

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 after a certain period of its implementation; 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.

Customer Perspective

The benefits of this perspective may be related to the concept of “creating value” for customers. It implies an increase 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.

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 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 1982a, b)—further improved by a strong tool coming from the firm's culture and scattered all over its organization. It is lean thinking.

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 labour productivity. Thanks to the direct improvement of labour productivity, the firm may benefit from a decreasing production throughput time and then, of increasing production volumes, with the aim of 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 et al. (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 (Fig. 1).

Research Strategy: Designing a Case Study

In order to test the aforementioned model, we do believe 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

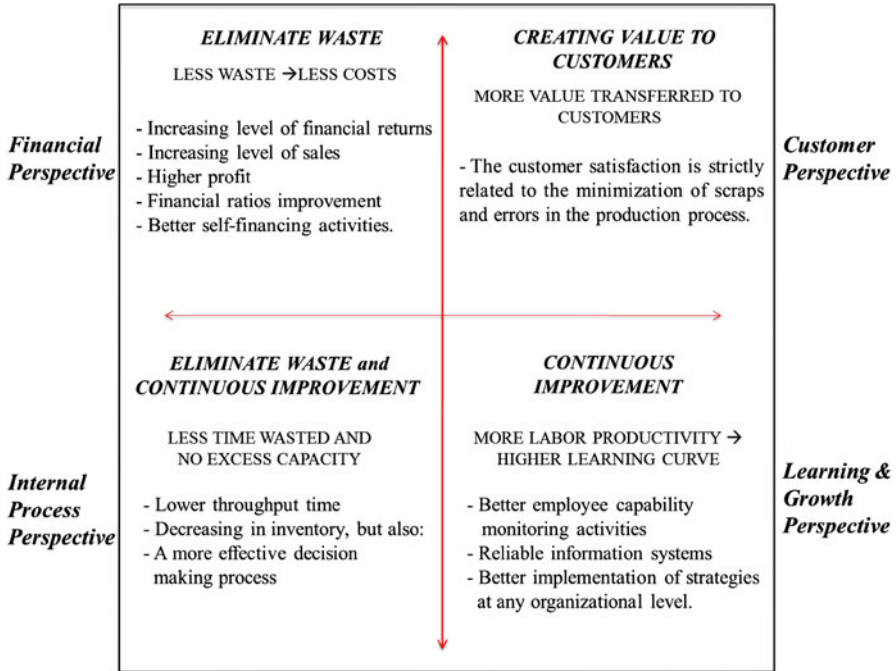


Fig. 1 “A different view about the same perspectives”. A proposal. Source: own elaboration

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, we are 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, we should refer 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 essence, with specific hypotheses 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). Here we are 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 business intelligence 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, we use 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 (Cavaliere 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 and Porter 1991).

What should be noticed is 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 we consider strategies as the main connection between strategic orientation and the entrepreneurial formula, we should consider lean thinking as the leading driver in spreading strategies all over the firm.
- If we consider the role played by the BSC in connecting strategies with the entrepreneurial formula, we should recognize interactions led by lean thinking.
- If we consider interactions between the BSC and the strategy map, we can even recognize a specific “language” spoken by these tools: we are still referring to lean thinking (Fig. 2).

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 represented by 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

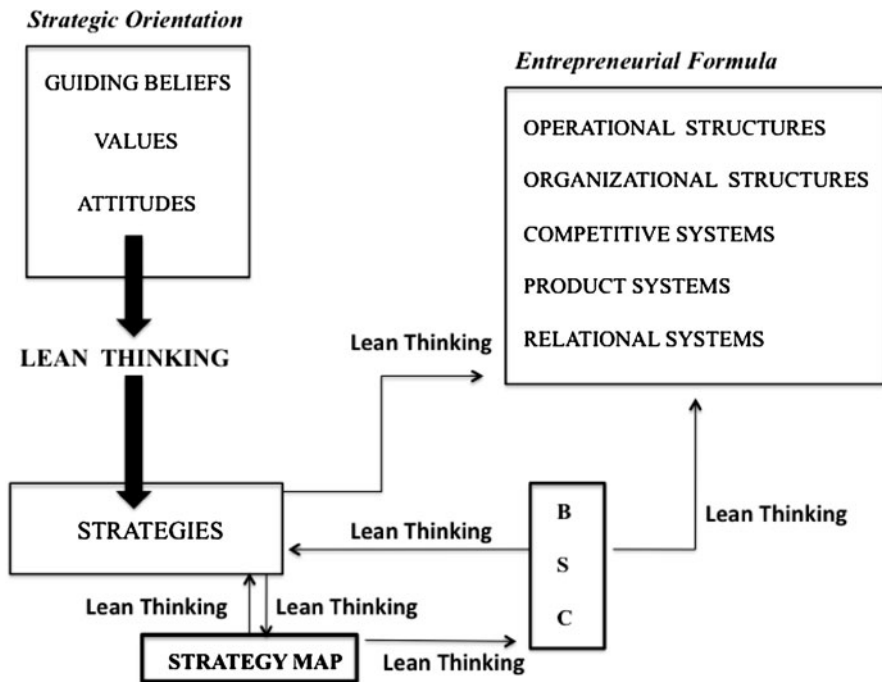


Fig. 2 The BSC and lean thinking within the lean company. An interpretation. Source: own elaboration

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 argued in this paper, 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.

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 we have tested the possible primacy of the multilateral role played by lean philosophy over a BSC, we 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. 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

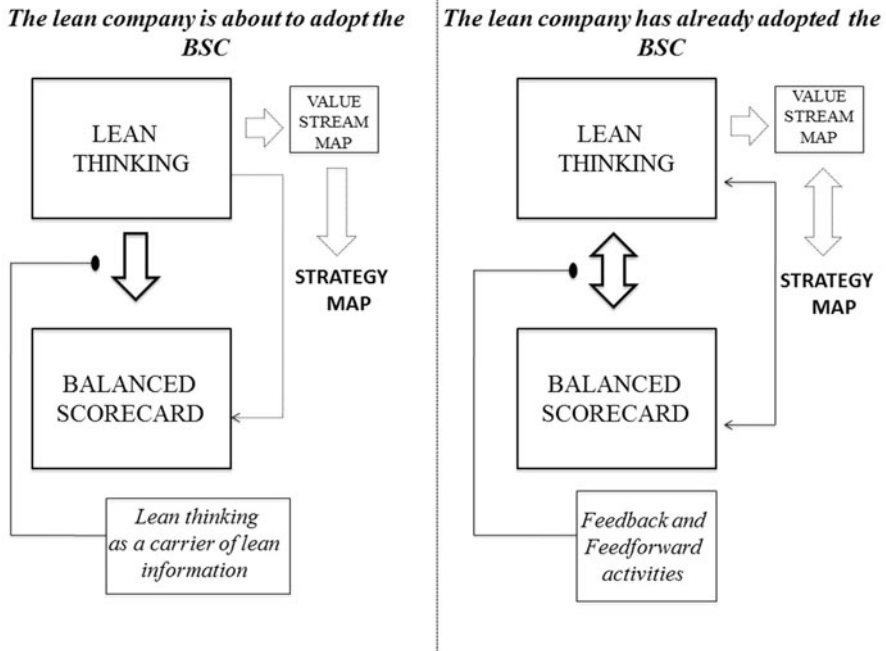


Fig. 3 How to manage the unit of analysis. Source: own elaboration

thinking. Moreover, we do know that accounting practices related to lean accounting are mostly based on the *value stream map*, a technique used to analyze and to design how value flows through a production system. By scanning the productive operations within the firm, lean accounting provides managers with timely and exact informations that gives a clear insight into the firm's performance. Tensions among these kinds of informations and the strategic volition pictured inside the strategy map might meet each other: in our opinion, operational decision-making processes should be related to strategic decision-making processes, with the aim to understand the contribution given by the value stream map as one of the most suitable sources of information of a BSC's strategy map (Fig. 3).

Eventually, 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 yet adopted a lean philosophy in its organization. This approach may well avoid any misunderstanding that could jeopardize the research activity on the subject.

Conclusions, limitations and future developments

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, we noticed two main practical limitations:

- the first one refers to the adoption of a standard BSC: we did not consider a hypothesis related to specific business needs, for instance to a customized BSC used by more than one division or business sector in the same firm.
- The second one 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 reasoning 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 study of these previous hypotheses.

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