INNOVATION SCORECARD: A BALANCED SCORECARD FOR MEASURING THE VALUE ADDED BY INNOVATION

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In the last few years, organizations were forced to innovate just to stay competitive. However, the value added by that innovation is rarely measured. At the same time, the Balanced Scorecard (BSC) became popular as a tool to measure business performance. Unfortunately, the traditional BSC is not appropriate to measure the value added by innovation.
In this paper we propose an Innovation Scorecard based on innovation metrics and the traditional BSC in order to measure the value added by innovation and also guarantee the alignment with the organization strategic objectives. We are currently developing a pilot for a large industrial company that demonstrates how the proposal can be applied in practice.

1. INTRODUCTION

Organizations currently operate in markets characterized by globalization, geopolitical instability, strong competition, ever smaller market segments, emergent technologies, substitute products, shorter product life cycles, and the bargain of consumer's power. On the other hand, shareholders put an increasing pressure in reducing costs and optimizing the investments.

There are two well-known approaches to increase profits and create a sustainable competitive advantage: a short-term one via operational cost reduction and a longer-term one by differentiation being innovative. Usually, especially in periods of economic recession, organizations follow the cost reduction approach even though the results typically disappear after two or three years (Kubinski, 2002). That leaves innovation as the only source of sustainable competitive advantage.

Innovative organizations create more value to the shareholders in the long-term (Hamel, 1997). Without innovation, an organization's value proposition can be easily imitated, leading to competition based solely on price for its now commoditized products and services. In some industries (e.g. pharmaceutical and

semiconductors) the innovative capability is a prerequisite to even participate in the market.

Despite the value of innovation as a growth engine, most organizations don't measure the benefits created by their innovation projects. Many of them don't have internal structures to measure innovation, neither pay attention to the process of innovation management. Others fail to obtain senior management support, take too long to produce a tangible output, or even work in an organizational vacuum (Kaplan, 1998; Muller et al, 2005; Hamel, 2006).

Well managed innovation creates long-lasting advantages when that innovation is based on something novel or creates something new, in a systemic and systematic way, encompassing a range of processes and methods, ultimately bringing new products or services to market. Well managed innovation is an integral part of an organization's strategy and activities, and even creates new business strategies (Wong, 2001; Hamel, 2006; Kaplan, 2003; Milbergs & Vonortas, 2005).

Although the importance of innovation is recognized, innovation has been seen as a "black box" in which management tools cannot be applied. Sometimes the problem is not a lack of innovation, and even less of innovation spending, but in a lack of measured and managed innovation. However, innovation projects (like any other projects) can and should be aligned to the strategic objectives, create value to the organization, and support internal procedures (Kaplan, 2003; Taylor 2006).

In this paper we propose an Innovation Scorecard based on the traditional Balanced Scorecard (BSC) that not only measures the value created by innovation projects but also guarantees those projects are aligned with the organization strategy. Our proposal is based on innovation metrics defined before the project is evaluated (and then eventually approved) in order to help the project create the intended benefits. When the project is implemented, the chosen metrics are used to measure the value added by that innovation project to the organization's overall value.

That means the Innovation Scorecard can be used not only to measure the value added by innovation projects that are implemented but also, and perhaps even most importantly, as a general management tool that can be used to select which innovation projects should be implemented and later to put pressure on those projects to deliver the promised benefits.

We are currently developing a pilot based on the Innovation Scorecard for a large industrial company and this pilot, including the metrics and objectives used for implementing the BSC, will also be briefly presented in the paper.

2. BALANCED SCORECARD (BSC)

The BSC has been used by many organizations as a management tool to measure their business performance, especially when compared against the strategy. The BSC is also useful for integrating strategic management and communicating to employees the innovation expectations in measurable terms (Magalhães, 2004).

However, we claim that the traditional BSC cannot properly measure the value added by innovation. Innovation projects typically create much more intangible (e.g. an increase in the customer satisfaction level) than tangible value, and intangible value cannot be calculated using traditional financial methods. In addition, many

innovation projects are difficult to justify because the ROI depends on tangible value and, as a result, organizations waste lots of money in opportunity costs.

But innovation has been part of the BSC from the beginning, in particular as part of the "innovation and learning perspective" that addresses the organization ability to innovate, improve and learn (Kaplan, 1992). Later on, the BSC authors realized that innovation was a critical internal process (Kaplan & Norton, 1996) and innovation is currently treated in the traditional BSC as a strategic theme inside the "internal business processes perspective" (Kaplan & Norton, 2004).

We believe that innovation is much more than a strategic theme. Innovation is a strategic objective, a way to create a sustainable competitive advantage in which the goal cannot be only to increase the profit level.

Although the focus of each perspective is different, there is a common thread of causality that provides a universal linkage between the four perspectives of the BSC. If an organization invests in learning and growth to improve employee skills and know-how, then those results will be translated into improved internal business processes by leveraging best practices and change management programs such as Six Sigma, Just-in-Time and TQM. These activities will then result in superior quality products and services for the customer, which in turn will drive increased sales and finally an improved profit. However, if an organization innovates in their business model, the impact will be seen in all perspectives. That means innovation must be treated in all perspectives, not only in one perspective.

In the BSC, innovation is perceived as new products or services. But innovation may also allow changes in management, business model, marketing, organizational structure, processes, products, services, supply chain or strategic objectives (Hamel, 2006). Also, performance measurement is usually operationally driven and based on hard numbers, not strategic or intangible.

The BSC translates the organization mission and strategic objectives into operational measures that everyone in the organizations should follow in order to align customer relationships with market segments and increase the financial results.

We align innovation initiatives with strategic objectives by using innovation metrics thus unifying strategic planning and operational innovation processes. Our proposal uses a BSC to integrate innovation with strategy by integrating innovation metrics with projects implemented throughout the organization.

3. INNOVATION METRICS

We start by citing an author that says "the life expectancy of competitive strategies based on customer and business process indicators has become so short that future-oriented indicators (i.e. development and innovation) are rapidly becoming the most important in terms of management control" (Magalhães, 2004) a statement aligned with "disruptive innovation" (Christensen, 1997).

Innovation is a multidimensional and complex activity that cannot be measured by only one metric. In addition, a list of metrics to measure the various aspects of innovation is also insufficient because the evaluation methodologies are based only in financial parameters, i.e. tangible values. However, there are a few examples of metrics used in organizations that allow informed decisions and benchmark with competitors (Picoito & Caetano, 2006; Milbergs & Vonortas, 2005).

Metrics for innovation are important for at least three reasons. Firstly, such metrics demonstrate the value of innovation and can be used to justify investments in this type of fundamental, long-run, but very risky projects, supporting better investment decisions based on hard data. Secondly, good innovation metrics enable organizations to evaluate employees, objectives, programs and projects in order to allocate resources more effectively. Thirdly, metrics affect human behavior and support a common language resulting in better communication throughout the organization.

However, wrong metrics may lead to narrow, short-term, and risk-avoiding decisions and actions (Muller et al, 2005; Hauser & Zettelmeyer, 1996; NetQoS, 2005). Thus, selecting the right metrics for each innovation project is fundamental. Organizations cannot obtain the highest value from each project, nor get the correct alignment between strategic objectives and innovation projects, if the same metrics are applied to all innovation projects in the entire organization. Bad metrics may lead to incorrect diagnoses that create non-intended orientations with unpredictable consequences (Milbergs & Vonortas, 2005; Hauser & Zettelmeyer, 1996).

As a result, innovation metrics must be chosen by each organization depending on their strategic objectives. However, many generic metrics will be similar within a given industry; for instance, most retailers will use the same (or at least similar) innovation metrics, such as increase in sales by square foot.

Traditionally, innovation metrics measure "outcomes" such as increased sales, satisfaction levels, or incremental profit. For example, one popular innovation metric is the profit generated by new products divided by the amount spent on innovation. When used alone, these metrics increase profits in the short-term but sacrifice the future (Hauser & Zettelmeyer, 1996).

Risk aversion and short-term preferences – such as those evident in the metric exemplified above – lead to something called "false rejection" because short-term projects with tangible results are always favored when compared to projects that create much higher value to the firm in the long-term (Hauser & Zettelmeyer, 1996). The only way to avoid this "false rejection" is to place a lower weight on financial metrics relative to other intangible metrics that must be used as well.

Despite the problems in using financial based innovation metrics, they cannot be rejected entirely because they are critical to ensure good results for the organization in the short term. Moreover, employees feel safe and secure when grounded in financial metrics and objectives they always used (Rae, 2006).

On the other hand, many organizations only use innovation metrics based on traditional R&D and product development, such as number of registered patents and investment on R&D as a percentage of sales (Muller et al, 2005). Even leading edge organizations use innovation metrics based on traditional costing systems and financial variance reporting (Kaplan, 1998). Besides their importance, these innovation metrics can only offer a limited view of the value created by innovation, with an excessive emphasis in technological development when compared to other types of innovation, such as changes to business processes.

Many innovation metrics are based on sales percentages and thus assume that innovation is basically a fixed cost (Koch, 2006). This assumption is particularly dangerous during a recession when the opportunities created by innovation are typically even more important than usual. Investments in information systems

projects, most of them genuine process innovations, are typically measured as a percentage of sales.

Finally, using innovation metrics by itself can also be considered an organizational and management innovation because these metrics help allocate internal resources inside organizations and reflect a reorientation in the governance model (Picoito & Caetano, 2006).

We can manage innovation only if we can measure innovation – this is why good innovation metrics are important. Without metrics, innovation management can only be based on common sense, personal feelings and/or political interests. Thus innovation metrics should be combined with a BSC not only to measure the value added by innovation but also to align innovation projects with strategic objectives.

Note: we have already collected a large list of innovation metrics that are omitted here for reasons of space. Please contact the authors if you are interested on them.

4. INNOVATION SCORECARD

We propose that organizations should use the BSC together with innovation metrics to measure and manage innovation as well as to provide the alignment between innovation projects and strategic objectives. In order to facilitate, we call Innovation Scorecard to this proposal.

In order for investments in innovation to actually deliver results, we must have a systematic approach to managing innovation with a cause and effect relationship and a broad and clear definition of innovation for the entire organization. Otherwise, investments on innovation may be wasted and the organization does not even know. The Innovation Scorecard supports both the definition and the relationship.

Furthermore, innovation can be divided into two perspectives: as part of the organization strategy or as complement to the organization strategy (Henderson & Venkatraman, 1999; Wong, 2001). The traditional BSC does not support the simultaneous focus, but the Innovation Scorecard also supports these two perspectives because different metrics can be used for each perspective.

The Innovation Scorecard forces organizations to identify and define a coherent portfolio of innovation metrics directly associated to their strategy, such as number of ideas generated, time consumed in innovation, growth of market share, ROI of new products, and so on. The specific metrics chosen by each organization depend on how senior management intend to use innovation in that organization, for example, to increase results from innovation, to align innovation to strategy, as part or complement to strategy, and so on.

As the Innovation Scorecard is based on the traditional BSC, strategic objectives can be linked in a cause-effect relationship to innovation projects throughout the entire organization, going all the way down to individual quantitative and qualitative indicators that can be used to evaluate employees and departments as far as innovation is concerned. Just this pressure to become more innovative is probably enough to justify the Innovation Scorecard in most organizations!

Senior managers typically take decisions based on the past (e.g. using financial records), the present (e.g. using customer and process indicators) and the future (e.g. using development and innovation indicators). The Innovation Scorecard can also

support the decision process at the top level because the BSC already uses both lagging indicators and leading indicators.

In summary, based on the proven traditional BSC and innovation metrics, we propose that the Innovation Scorecard can be used by organizations to:

- Communicate the organization strategy, as well as the benefits expected by innovation projects, to everybody in the organization;
- Evaluate the potential value that will be created by innovation projects;
- Align innovation projects to the strategic objectives of the organization;
- Map a cause-effect relationship to identify the sources of intangible benefits;
- Measure the value created by innovation projects after implementation;
- Provide a framework to manage innovation projects;
- Identify the most innovative employees and departments;
- Put pressure on employees to become more innovative.

In the following section we describe how the Innovation Scorecard has been used to manage innovation in a real case study.

5. CASE STUDY

We are currently developing an Innovation Scorecard for Grupo Portucel Soporcel, a large paper company with a vision to become a global supplier of uncoated wood-free paper and leader in two segments: office paper and offset paper for the printing industry (Grupo Portucel Soporcel, 2005). Their mission is to have available products with distinctive quality made from eucalyptus fiber produced with high environmental concerns and the best available technology, increasing the perceived value to the customers and the value for shareholders.

The strategic goals (needed to identify the innovation metrics) are reduce the costs, increase the productivity, focus on quality, differentiate the products, consolidate the international markets, reinforce the competitive position, and strengthen vertical integration over the entire value chain.

Grupo Portucel Soporcel is committed to innovation and received in 2005 a high-recognition prize "Best of European Business" awarded by Roland Berger Strategy Consultants in partnership with the Financial Times (Roland Berger, 2005).

In 2006, Grupo Portucel Soporcel created an internal area dedicated to innovation management and wants to further improve the management of innovation projects, in particular evaluating better which projects must be approved first and keeping the alignment with strategic objectives. The Innovation Scorecard is being developed at Grupo Portucel Soporcel as part of this commitment to innovation.

Figure 1 presents the strategic objectives for the Innovation Scorecard. Although these objectives are based on the 2005 annual report and many other sources, they do not represent any official strategy of the Grupo Portucel Soporcel and should be considered examples for illustration purposes only.

For example, the objective "Processes improvement" is connected (in a cause-effect relationship) to/from other objectives. This objective is calculated from two indicators "Business process time" and "Process quality" that are themselves calculated from two innovation metrics "Customer processes average time" and

"Amount of waste" with targets (a percentage that should be decreased this year) of 5% and 10% respectively.

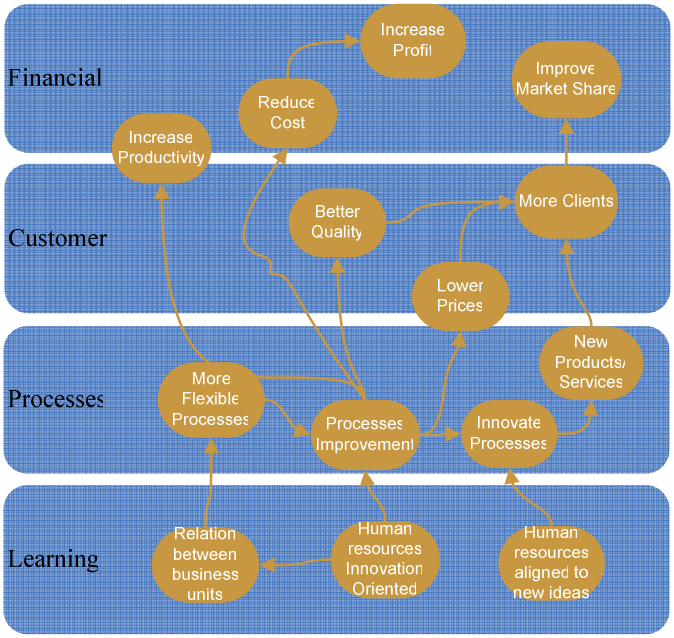

Figure 1 – Proposed objectives for Grupo Portucel Soporcel

Furthermore, the same objectives, indicators and innovation metrics should be used when analyzing proposals for innovation projects in order to decide whether they should be implemented. In order to achieve this goal, a software prototype we are also developing helps to assign a set of innovation metrics (and their targets) to proposals in order to demonstrate how much that innovation project will contribute to the organization strategic objectives.

6. CONCLUSION

The Innovation Scorecard proposed in this paper combines the traditional BSC with innovation metrics not only to measure the value added by innovation but also to align innovation projects with strategic objectives.

Management depends on metrics. Without metrics, investment decisions are based on intuition, nobody knows the value created by innovation, employees cannot be recognized, and top management never know why their excellent strategies are not being implemented in practice.

The Innovation Scorecard can be used to communicate the strategy, evaluate investment proposals, align projects to strategy, understand the sources of value,

measure the value created by projects, and identify the most innovative employees. As a result, the Innovation Scorecard is much more than a simple decision support system for managers; the Innovation Scorecard is a comprehensive management tool for measuring and managing many different aspects of innovation.

Our experience developing the proposal in the context of a real-world case study shows that the Innovation Scorecard can be implemented easily provided the innovation metrics are identified. (Interestingly enough, an organization can only align innovation projects with strategic objectives if those objectives are clearly defined.) Furthermore, the case study demonstrated that the Innovation Scorecard can be used to measure all types of innovation, not only innovation based on new products and services.

In the future we plan to conclude the development of the Innovation Scorecard for Grupo Portucel Soporcel, in particular to finish a software application (already started) to analyze project proposals based on innovation metrics and another application to measure the value created by projects after implementation. We also plan to adapt the Innovation Scorecard to Information Systems projects that are typically very innovative and suffer from the same difficulties.

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