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The Balanced Scorecard to Measure Information Technology Performance

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THE BALANCED SCORECARD TO MEASURE INFORMATION TECHNOLOGY PERFORMANCE: WORK IN PROGRESS

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Abstract

The Balanced Scorecard (BS) is a powerful framework to assess Information Technology (IT) performance. The BS is useful because it uses multiple perspectives and distinguishes between outcomes (effects) and drivers (causes). This study is divided into two stages. The first stage uses a case study methodology to explore the use of the BS within different organizations. The second stage uses a quantitative approach to test the relationship between drivers and outcomes. This study will contribute to the understanding of assessing the performance of the IT function. Results will suggest different drivers depending on the strategic role of the IT function within an organization.

Keywords: Balanced Scorecard, Information Technology Performance, Information technology strategic role.

Introduction

Information Technology (IT) supports activities along a firm's value chain. IT might improve these activities or it might completely transform them. In this sense, the value of IT is inevitably linked to the outcomes produced by the activities it supports. IT per se produces intangible benefits hard to quantify. However, for managerial purposes, IT performance must be assessed. Several approaches from other disciplines have been adapted to assess the IT function (Mayor, 2000). The present research investigates the use of the Balanced Scorecard (BS) in assessing the IT function. The structure of this paper is as follows. First, literature on the BS and its uses on IT are reviewed. Then, the research methodology is presented.

Literature Review

The BS was developed by Kaplan and Norton in 1992 (Kaplan & Norton, 1992). The rationale underlying the BS is that business performance should not be assessed using a single financial indicator. The BS is a framework that includes several indicators grouped into four perspectives: customer perspective, internal perspective, innovation and learning perspective, and financial perspective. When decision makers have at a glance the four perspectives the risk of making suboptimal decisions is diminished. The four perspectives show that improvements in one area may affect other areas.

However, the BS is more than a set of eclectic measures. The purpose of the BS is to establish a link between performance measures and a company's strategic vision. Even though the BS is not focused exclusively on financial measures, it assumes that eventually all indicators in the three remaining perspectives will affect financial performance. Dealing with four perspectives should not imply an excessive number of indicators. Only the most critical indicators that will ultimately cause an increase in profits should be reported. Indicators in the financial perspective show current performance. The remainder three perspectives communicate future performance.

Implementing the BS will not automatically yield profits to a company. In fact, improvements obtained in different areas will create capacity in excess (Kaplan & Norton, 1993). Companies expecting to realize these financial benefits must eliminate the excess of capacity by either downsizing or increasing volume. The need to manage the exceeding capacity is critical when assessing IT performance. IT might improve business processes, but capitalizing on this improvement is out of control of the

IT function. IT investments typically have a third-order financial effect (Mayor, 2000). That is to say, IT benefits will be reflected in intermediate processes that will eventually affect financial results.

Indicators included in a BS can be either lagging or leading indicators. Outcomes are lagging indicators that show what has been accomplished. Usually, outcome indicators are generic measures, meaning that indicators are common for most companies. Leading indicators are the drivers of performance, which are unique for a particular firm. The driver is the cause and the outcome is the effect. All but the financial perspective perspectives in the BS should include outcomes and drivers. The financial perspective only includes outcome indicators. "*Ultimately, causal paths form all the measures on a Scorecard should be linked to financial objective*" (emphasis in the original, Kaplan & Norton, 1996a).

Once a company has implemented a BS, it is important to test whether the strategy implemented is working or not. Leading drivers hypothesize a cause-and-effect relationship. The llink between outcomes and drivers can be statistically tested. However, statistics may not be viable in the short run, because it requires the accumulation of data. In the short run managers should rely on their personal judgments (Kaplan & Norton, 1992).

Since its appearance, the BS has been linked to IT in two different ways. First, IT has been pointed out as a support tool for the BS reporting process (Kaplan & Norton, 1992, 1993, 1996a, 1996b). Second IT performance can be assessing through the BS (Martinsons, Davison, & Tse, 1999; Mayor, 2000). Empirical research on BS is scarce. Most of the empirical research in BS studies the human factor. Research on BS and IT performance is even scarcer. We found only two articles published in academic journals.

Martinsons and colleagues (1999) develop a general BS framework that can be used either at the departmental level or at the application level. Martinsons and colleagues (1999) redefine the BS perspectives into user orientation, business value, internal processes, and future readiness. Each perspective present several indicators. Wright et al. (1999) use the BS to understand the IT stratetgy of Compaq Computer Corporation. Their research used the BS as a causal model from an outsider perspective to assess Compaq's use of IT. Using the BS framework, the authors explain Compaq's enormous success during 1997 and its subsequent difficulties during 1998. This article demonstrates that BS is suitable to be used in assessing IT performance.

Research Method

To investigate the use of the BS in assessing IT performance a two-stage research approach is proposed. The first stage uses a case study methodology to explore how the BS has been used in different organizations. The protocol is a holistic multiple case study to allow replication of the findings (Yin, 1994). The unit of analysis is the BS of the IT function. Four different organizations using the BS to assess the IT functions will be studied. The organizations will differ on the strategic role of the IT function according to the strategic grid (factory, support, turnaround, strategic)(Applegate, McFarlan, & McKenney, 1996). It is expected that the outcomes and drivers chosen for the BS will differ depending on the role that the IT function plays within an organization. In this sense, a multiple case protocol will allow to observe different result based on theoretical reasons (Yin, 1994). Data will be collected through open-ended interviews to the Chief Information Officers. A pilot case study will be conducted to refine the data collection plans. The main research questions of stage one are: What are the outcomes and drivers used to assess IT performance? Do the outcomes and drivers differ depending on the role played by the IT function?

The second stage of the study will use a quantitative approach to assess the relationship between drivers and outcomes. The BS assumes causality between drivers and outcomes. Therefore, statistical causal models could be used to test cause-and-effect relationships (Kaplan & Norton, 1992). This type of statistic analysis requires an appropriate data set. For this reason, data will be collected from an organization that has used the BS for several years. The unit of analysis is, as in the first stage, the BS of the IT function.

The BS assumes there is a lag between implementing a strategy and yielding results (Kaplan & Norton, 1992). In IT, it is commonly acknowledge the existence of a time lag between the investment and the results (Brynjolfsson, 1993). Therefore, when assessing IT application projects, not only the drivers should be identified but also when they are going to yield benefits. Data analysis of this stage should take into account this lag.

In addition, IT investments may or may not lead to financial improvement. Brynjolfsson and Hitt (1995) suggest IT may improve productivity but not profitability. They explain that due to market pressures improvements in business processes are transferred to consumers. Also, Kaplan and Norton indicate that improvement in processes may not lead to an increase in profits (Kaplan & Norton, 1992). Kaplan and Norton (1992) state improvements in processes will not increase financial measures if the excess capacity created (due to the process improvement) is not downsized or the volume is increased.

IT is intended to support other business processes. If business processes are more efficient but a firm does not capitalize on this improvement, financial measures will not show better numbers. On the contrary, it will look as if the IT investment does not yield benefits. This analysis will allow determining whether the IT function is improving business processes (drivers) and whether these improvements are linked to financial improvements (outcomes). Data collected on this stage will be analyzed through regression.

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