Chapter 8

Defining Meaningful Measures of IT Productivity With the Balanced Scorecard

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The accurate and timely measurement of an organisation's information technology (IT) productivity is a critical tool to control the strategic and operational aspects of any firm. This chapter describes the validation and integration of productivity measures through the application of the Balanced Scorecard. Developing measures of IT productivity that are not skewed by methodological or data collection anomalies, shifting usage of communication and work-flow channels, negated utility of knowledge management, quality versus quantity trade-offs, and differences in individual skill levels and performance is difficult yet essential. The Balanced Scorecard as a strategic measurement framework is applied to assist in determining the appropriate matching of what we intend to measure and to what we assign numerical values.

INTRODUCTION

Measuring productivity has been a central preoccupation of industry and government. Historically, a production census was conducted on a global scale and determined the economic standing of nations based on their ability to produce goods and services with added value beyond the sum of the cost of the raw materials. The twentieth century has seen a meteoric rise in the investment of computers and telecommunications technologies with the intent of dramatically improving productivity and retaining competitive advantage. The technology sector fueled this investment with promises of productivity gains that would result

from either requiring fewer workers or by allowing the replacement of highly specialized labor with semiskilled labour. The resulting productivity as measured for industries or economic sectors did not live up to the promised benefits. This has surrounded IT investment by controversy. The standard measures used for economic utility and productivity were unable to capture the shifting paradigm of the information economy.

The fundamental complexity of measuring productivity in information sector organizations is typically underestimated. The pitfalls that frequently skew measures of IT productivity include methodological or data collection anomalies, shifting usage of communication and work-flow channels, negated utility of knowledge management, quality versus quantity trade-offs, and differences in individual skill levels and performance. We address each one of these issues, as it would apply to a single firm or from the enterprise perspective. Government data on industry sectors is not discussed, as it is not under the power of the firm to change or control this view. We introduce the common pitfalls of measurement of IT productivity as described by Attewell (1992) and then present how to apply the Balanced Scorecard to overcome them.

Methodological or Data Collection Anomalies

Productivity measurement may be impeded by methodological or data collection anomalies that arise from various sources. Methodological or data collection anomalies refer to the corruption of the integrity of the data. A common productivity measurement pitfall occurs when firms scrutinise personnel productivity. When people feel they are being monitored and measured they naturally become suspicious and may supply poor-quality data, thus subverting the accuracy of measurements. A more subtle issue is that productivity must be measured in context. This is due to the interdependency of entities' productivity with how they conduct their work and the type of work product being produced. We are unable to measure the productivity of labour (personnel) without engaging indirect measurement of the specific work process (designing, coding, testing, and reviewing) and the work product produced (intermediate or final products). At the enterprise level, productivity is measured as an aggregate of personnel effort, resource utilisation, and the final work products. This aggregation often conflates the issues by combining offsetting increases and decreases in productivity across subprocesses of the overall work flow.

Shifting Communication and Work-Flow Channels

Productivity measurement may be hindered by a resultant shift in usage of communication and work-flow channels when technology is introduced into the work process. A textbook example of this phenomenon occurred with the intro-

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