Building Balanced Scorecard on the House of Quality

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ABSTRACT

The Balanced Scorecard has achieved wider acceptance among various business entities as an effective strategic management tool in an era of rapid, uncertain, and turbulent changes. A structured approach to develop and implement a Scorecard is needed. A customer-focused approach in the planning and development stage of introducing a Scorecard is crucial to subsequent implementation. Quality Function Deployment (QFD or House of Quality), first introduced in the 1970's is demonstrated to be a useful instrument in strategic planning. The "Whats" and the "Hows" in QFD can be translated into the four perspectives (viz. Financial, Customer, Process, and Learning) under the Balanced Scorecard model. Combining the QFD and Balanced Scorecard would help employees in the organization better appreciate how they can contribute to corporate success. When the efforts of all employees are aligned towards achieving the business goals, the aggregate corporate performance will be greatly enhanced.

Introduction

In a dynamic and turbulent environment, strategy development is a vital key to business success. Organizations, in both public and private sectors, are increasingly being forced to adjust dynamically to respond to the requirements of the environment by constantly changing their strategies and strategic capabilities if they want to stay in business! In today's competitive business environment, no single strategy process or single strategic capability will lead to a sustainable advantage [Feurer et al., 1995b].

On the issue of dynamic strategy formulation and implementation, Feurer et al. [1995a] say that:

> "…. With the accelerating dynamics of competition, the key to competitiveness lies no longer in employing strategies that have been successful in the past,…. real competitive advantages results from a constant process of developing and implementing new strategies that will differentiate the organization from the rest of the industry in which it operates"

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As the business environment can be viewed from different dimensions, there are different definitions of "strategy". The following are some common definitions:

- Strategy is the skill in managing or planning [Webster's New World Dictionary, 1992].
- Strategy is the primary means of reaching the focal objective. It is meaningless to talk about strategy without having an objective in mind [Thorelli, 1977].
- Strategy is the direction and scope of an organization over the long term. It matches its resources to its changing environment, and in particular its markets, customers or clients so as to meet stakeholder expectation [Johnson, et al. 1993].
- Strategy translates the corporate vision into a profile of what they want the organization to become. This profile is the target for all corporate decisions and plans [Handley, 1995].
- Strategy is a concept that encompasses an active management process that includes such things as focusing an organization on winning, encouraging innovation and change, lengthening executive attention span, motivating employees to accomplish goals and objectives, and having a long-range perspective of the business [Chan et al., 1991].
- Strategy is about where you are going and how are you going to get there [Giffi, et al., 1990]

Strategy, as a process, is more holistically defined as the determination of the basic goals and the objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals [Feurer et al., 1995b].

Balanced Scorecard (BSC) and Strategic Planning and Implementation

Fawcett et al. [1997] prescribe that strategy identifies an organization's core objectives and thus its current and future direction. Strategy, therefore, guides the process by which the resources are developed and organized to achieve the set objectives. Through strategic planning, the competitive priorities pursued in each of the key functional areas are defined. A Balanced Scorecard, a strategic management tool developed by Kaplan and Norton [1992], can achieve all the foregoing objectives.

Koo [1997] advocates the use of the Balanced Scorecard as a pragmatic strategic management system in today's complex business environment. The scorecard focuses on measuring some selected key success factors along four distinct and yet interrelated perspectives (i.e. financial, customer, internal and

learning). The originators of the Balanced Scorecard, Kaplan and Norton [1996], claim that the process of building the scorecard clarifies the strategic objectives and identifies the critical drivers of the strategic objectives. Resting on the principle of "What you measure is what you get", the Balanced Scorecard helps align and translate vague corporate strategy into individual action.

Kaplan et al. [1996] describe a strategy as a set of hypotheses about cause and effect. The Scorecard makes the relationships (hypotheses) among objectives (measures) in the four perspectives explicit so that they can be managed and validated. A properly designed scorecard should outline the story of the business unit's strategy. It should portray the cause-and-effect relationships between outcome measures (i.e. in the financial perspective) and the performance drivers (i.e. in the customer, process, and learning perspectives). The means and end hierarchical concept is clear in the Balanced Scorecard. Ultimately, causal paths from all the measures on a scorecard should be linked to financial objectives.

Development of A Balanced Scorecard

As an appendix to their book "The Balanced Scorecard: translating strategy into action", Kaplan and Norton [1996] outline the process to build a Balanced Scorecard. The process entails the following tasks:

1. Select the appropriate organizational unit
2. Identify Strategic Business Units (SBU)/corporate linkage
3. Conduct interviews with senior managers to solicit their input on corporate strategic objectives and tentative BSC measures
4. Synthesis Session to develop a list of objectives in the four perspectives
5. First Executive Workshop to discuss and identify the "key" strategic objectives for each BSC perspective
6. Four BSC Subgroups to be formed to:
    - Refine the wording of the strategic objectives;
    - Identify measures that best capture and communicate the intention of the objective;
    - Identify the sources of information needed for each proposed measure; and
    - Identify the key causal linkages among the BSC measures
7. Second Executive Workshop involving more managers in the organization to communicate the BSC intentions and contents and to encourage participants to formulate stretch objectives for each objectives

8. Develop the Implementation Plan through BSC Implementation Teams, to link BSC measures to information systems and to communicate BSC throughout the organization
9. Third Executive Workshop to validate the stretch targets proposed by the Implementation Teams and agree to integrate the BSC into a management philosophy
10. Finalize the Implementation Plan

Apart from the flaw in using correlation analysis to establish an a posteriori hypothesis of causal linkages, as pointed out by Koo [1997], there are in fact a priori difficulties in hypothesizing the causal linkages in the development stage of a Balanced Scorecard. Most people tend to use their common sense and past experience in assuming the linkages among the BSC measures. There is no systematic and structural approach to quantify the strengths of association among the various BSC measures. Quality Function Deployment (QFD) can help overcome this shortcoming and complement the Balanced Scorecard in quantifying and prioritizing the relationships among the BSC measures in financial, customer, process, and learning perspectives.

Quality Function Deployment (QFD or The House of Quality)

Quality Function Deployment originated in 1972 at Misubishi's Kobe shipyard. It provides a means for interfunctional planning and communication by focusing on the language of the customer [Hauser et al., 1988; Hauser, 1993]. Quality Function Deployment is defined as "a system for translating consumer requirements into appropriate company requirements at every stage, from research, through product design and development, to manufacture, distribution, installation and marketing, sales and services." [ASI, 1987].

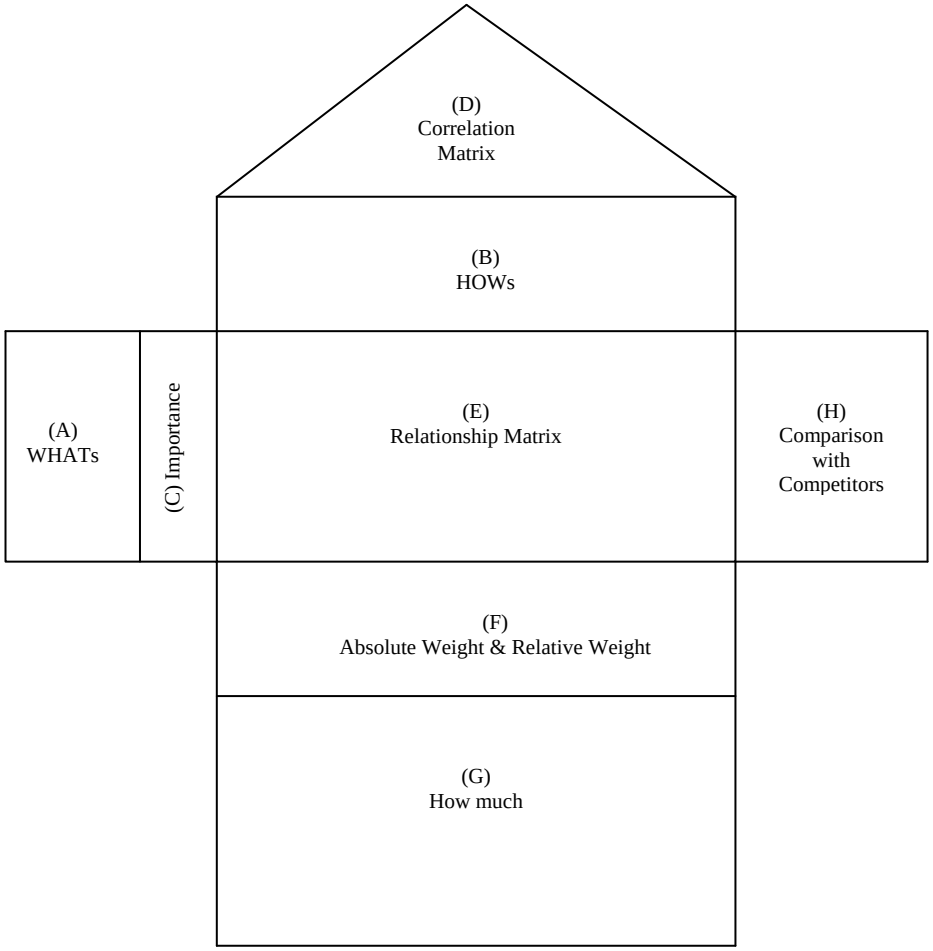
Burn [1994] hailed QFD as a holistic approach where the structure enables staff at all levels of the organization to contribute directly to the achievement of corporate objectives. It is a systematic tool to identify and record areas for priority action. Burn ibid. reminds that the House of Quality chart is not an end in itself: it is a means to the end of anticipating and satisfying the needs of the customers.

Despite its wide application and acceptance in product design and quality improvement, Crowe et al. [1996] advocate that QFD can also be a powerful tool for strategic planning. This view is echoed by Burn [1994] that QFD is equally applicable in non-product related areas. When used as a tool for strategic planning, the customers' requirements can be interpreted as a guide to

identify the corporate business focuses. The top management team members are internal customers who dictate the "Whats" for the strategic QFD exercise.

Building BSC on QFD

Figure 1: The Components of the House of Quality



(A) The "Whats" are the wants from the internal customers (i.e. top management of the organization). These can be collected either from interviewing all the key senior managers by the BSC architect or developed from a Strengths Weaknesses Opportunities and Threats (SWOT) Analysis. In the case of BSC, these "Whats" for the top level of QFD should be the measures in the Financial perspectives.

(B) The "Hows" are the means to achieve the end (i.e. the "Whats"). These "Hows" can be the key success factors in the Customer, Process, and Learning perspectives. The "Hows" are the drivers and the "Whats" are the desired business results.

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(C) The "Importance" is the ranking of the respective items in the "Whats" as perceived by the top management team. These can be on a scale of 1 (i.e. least important) to 10 (i.e. most important). This Importance scale will be used to estimate the Absolute Weight (see (F) below).

(D) The "Correlation Matrix" forms the roof of the House of Quality. Symbols are used to denote the extent of perceived correlation among the "Hows" items. The correlations can be neutral, positive or negative.

(E) The "Relationship Matrix" is used to measure the relationship between every what and every how. Relationship scores ranging, say, from 1 "Very weak", ……, to 5 "Very Strong" are used. These scores have to be agreed by the top management team. Combining these relationship scores and the "Importance scale", the Absolute Weight of each "How" item can be calculated and put in the box labeled (F).

(F) The Absolute Weight is the product of the relationship scores and the importance scale. These Absolute Weights can then be converted to Relative Weights by dividing each Absolute Weight by the largest Absolute Weight along the row and rounding the quotient to a whole number. The largest "quotient" is then equated with the maximum possible Importance scale of 10 and the other quotients are scaled accordingly. The Relative Weights signify the extent of importance of the Hows items when translated into the What items at the next (lower) level. Only those "How" items with Relative Weights equal or larger than a specified number (say, 9) and those other "How" items which are strongly correlated with them in the Correlation Matrix, should be used as the "Whats" of the next lower QFD level. The cascading down process of QFD enables the corporate strategy be translated to the functional level, department level and ultimately to individual level. This helps in communicating corporate strategy down to all employees in the organization and helps them to visualize how they can contribute to achieve the corporate objectives.

(G) The "How much" represents the objectives of each of the "How" item in achieving the "What" item. These should be used in the BSC measures. These should be the stretch targets in the customer, process, and learning perspectives under the BSC model.

(H) Where possible, meaningful comparison of the "Whats" (the key success factors) with business rivals should be made. This establishes the position of the company in the market (i.e. Where the company is now). With this information, the company can decide where they want to be (i.e. to set the strategic corporate objectives). The "Hows" in the QFD constitute the business strategies to be adopted to achieve the targets.

Two Approaches to build BSC on the House of Quality

The Hierarchical Approach:
The Balanced Scorecard has four distinct hierarchical perspective levels. It is logical to adopt the cascading down approach accordingly as follows:

The top level QFD chart comprises the Financial perspective measures as the "Whats" items on the left of the House of Quality and Customer perspective measures as the "How" items on the top part. Those "Hows" items with Relative Weights larger than 9, and the other "How" items strongly correlated with them, will become the "What" item in the next lower level. The Relative Weights are the respective Importance Scale for the Whats.

The second level comprises the Customer perspective measures as the Whats and the Process perspective measures as the Hows. Similarly the Relative Weights are computed and the selected Process perspective measures can be cascaded down.

The third level of the QFD chart uses the selected Process perspective measures as the Whats and the Learning perspective measures as the Hows. The Correlation Matrix, Relationship Matrix, Absolute Weight and Relative Weight are similarly estimated and calculated.

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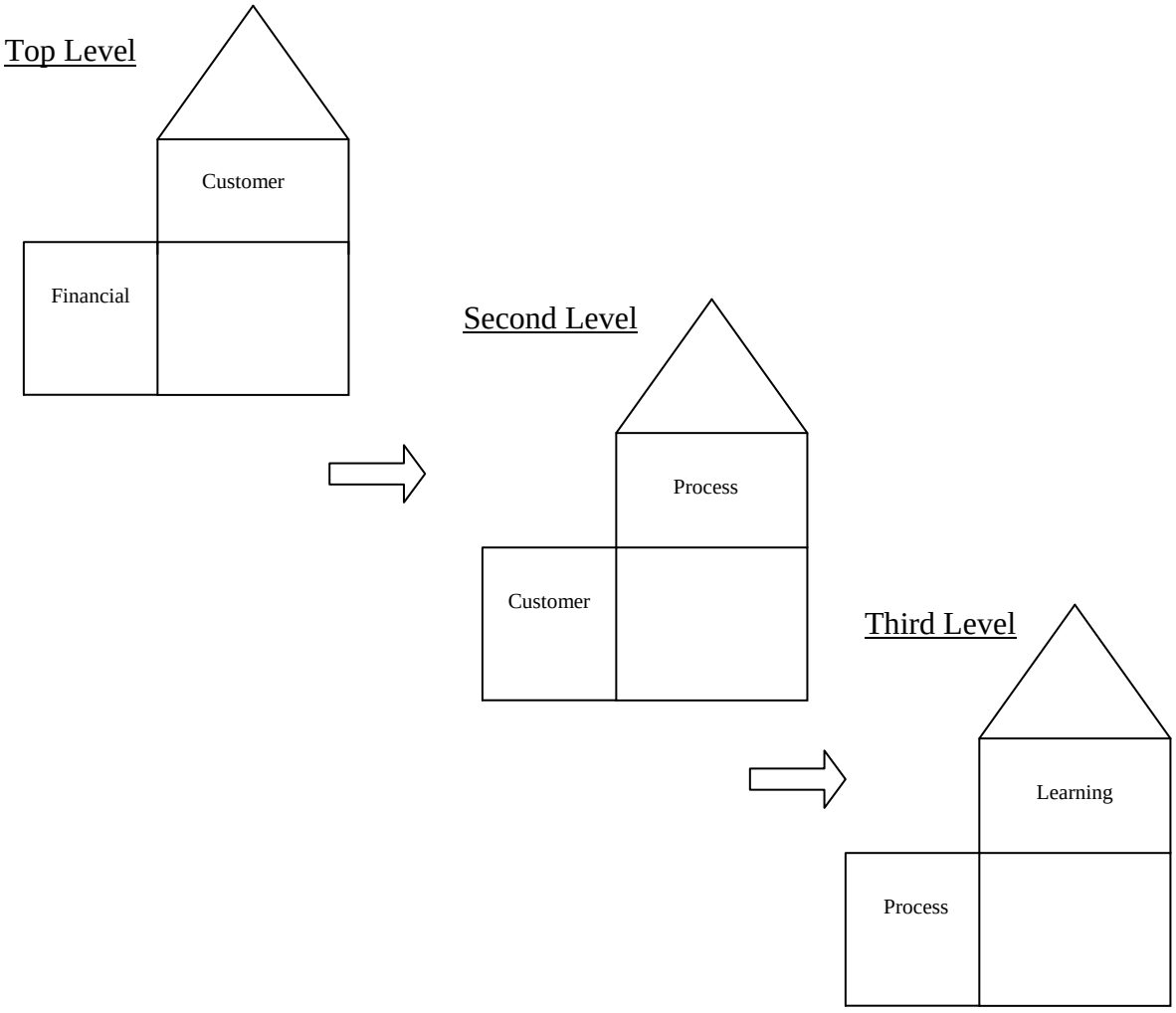
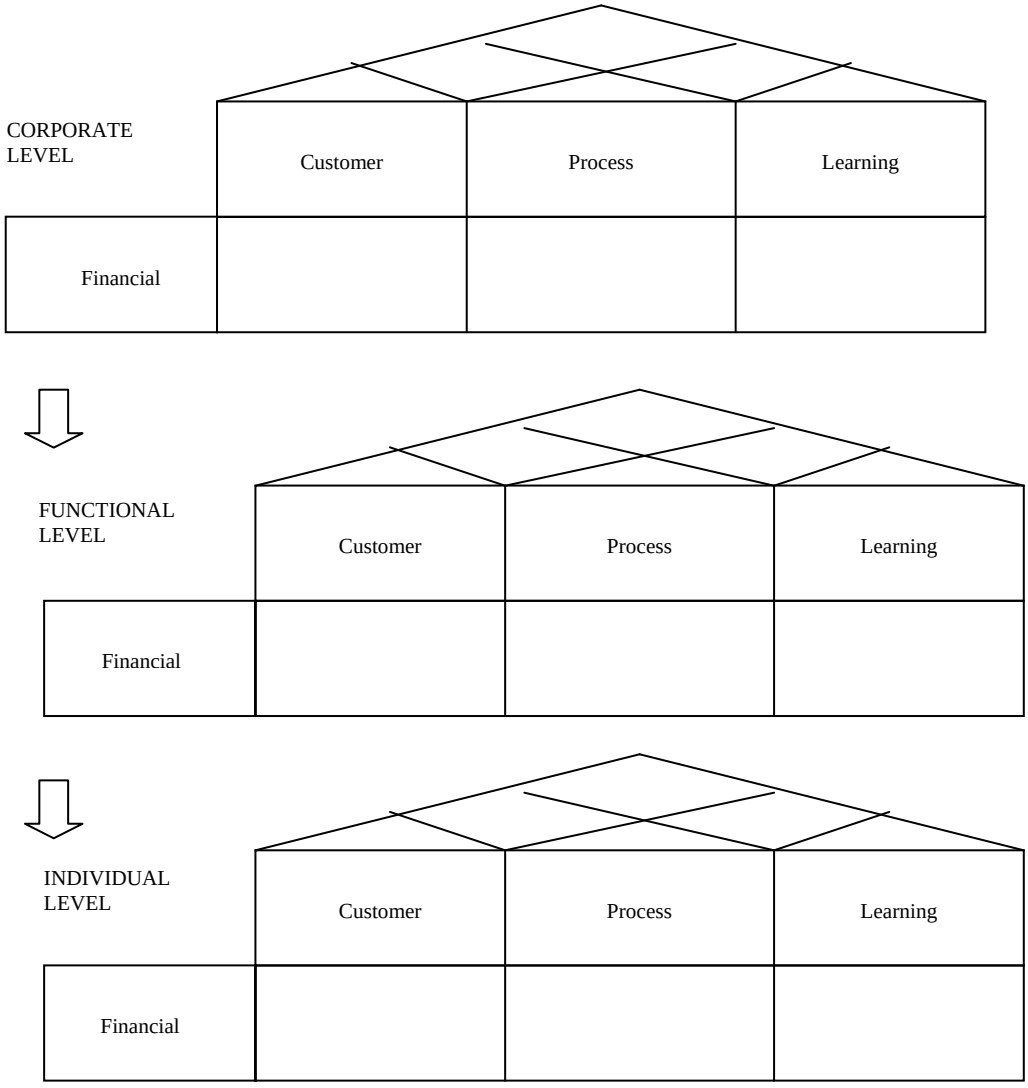
Figure 2: The Hierarchical Approach to build BSC on QFD



The Drivers-Integrated Approach:

Kaplan et al. [1996] emphasize that Financial perspective measures in BSC should be the ultimate goals. The measures at other levels (viz.: Customer, Process, and Learning) serve as drivers for the measures for the Financial perspective. Apart from the causal link with the Financial perspective, these drivers may be interrelated among themselves. These driver measures can be integrated as the "Hows" for the House of Quality. Their extent of association among themselves is reflected in the Correlation Matrix in the roof top. The House of Quality can then be cascaded from Corporate Level to Functional Level and subsequently down to Individual Level. The relationship can be depicted as below.

Figure 3: The Drivers-Integrated Approach to build BSC on QFD



Examples of both the Hierarchical Approach and the Drivers-Integrated Approach using the Balanced Scorecard for the Federal Procurement System (extract from Kaplan and Norton's "The balanced scorecard: translating strategy into action" page 182), are annexed.

Summary and Recommendation

Both the Hierarchical Approach and the Drivers-Integrated Approach provide a systematic and structured way in developing the interrelationships among the BSC measures. The interrelationships, or the causal linkages, are quantified and logically derived. This becomes a transparent strategic map for shareholders, management, and employees in the organization to visualize how their individual targets and actions are derived from the corporate strategy. Similarly,

cooperation across different functional units can be enhanced. The efforts of all resources in the organization can be aligned to generate synergy benefits. As in any other model of strategic planning, the business strategies should remain dynamic and meet the changing pace of the environment.

Of the two approaches, the Driver-Integrated Approach should be the preferred choice simply because there are possible interrelationships among the measures in the BSC performance drivers (i.e. Customer, Process, and Learning perspectives). The correlations among the various measures of the driver perspectives provide a vivid picture of the integration of how the business strives to achieve its business goals. While the Hierarchical Approach resembles more the BSC model of four distinct perspective levels (i.e. financial, customer, process, and learning), it neglects the possibility that there exists interrelationship among the drivers perspectives (i.e. customer, process, and learning).

When this QFD chart is further cascaded down within the organization, the picture becomes holistic. Individual employee can easily relate his or her contribution to the overall business strategy. This alignment of individual efforts can yield enormous synergy benefits.

The QFD is a tool to build the BSC more effectively and to communicate the philosophy of strategy development to all employees in the organization more clearly. With a clear business focus across the entire organization and an appropriate performance management tool (i.e. the BSC measures) in place, the overall performance will improve basing on the principle of "What you measure is what you get".

The a priori approach of assuming the various strengths of association (i.e. figures in the Relationship Matrix, and correlations assumed in the Correlation Matrix) should be validated by more vigorous methods such as Structural Equation Modeling (SEM) [Koo, 1997]. The causal linkage relationship is the cornerstone of the Balanced Scorecard. A failure to convert improved driver performance should trigger the need to rethink the company's strategy or its implementation plan [Kaplan et al., 1996].

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