Category: Concepts, Trends, and Challenges

E-Business Planning and Analysis Framework

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INTRODUCTION

This article reports on a framework that has been successfully used to analyze the e-business capabilities of an organization with a view to developing their e-capability maturity levels. This should be the first stage of any systems development project. The framework has been used widely within start-up companies and well-established companies both large and small; it has been deployed in the service and manufacturing sectors. It has been applied by practitioners and consultants to help improve e-business capability levels, and by academics for teaching and research purposes at graduate and undergraduate levels.

This article will provide an account of the unique e-business planning and analysis framework (E-PAF) and demonstrate how it works via an abridged version of a case study (selected from hundreds that have been produced). This will include a brief account of the three techniques that are integrated to form the analysis framework: quality function deployment (QFD) (Akao, 1972), the balanced scorecard (BSC) (Kaplan & Norton, 1992), and value chain analysis (VCA) (Porter, 1985). The case study extract is based on an online community and dating agency service identified as VirtualCom which has been produced through a consulting assignment with the founding directors of that company and has not been published previously. It has been chosen because it gives a concise, comprehensive example from an industry that is relatively easy to relate to.

BACKGROUND

Kalakota and Robinson (2001) argued that organizations must bear in mind not to focus too much on the 'e' component, but also on the business requirements. The greatest threat to an organization is either failing to deploy the Internet, or failing to deploy it strategically and therefore without efficacy (Porter, 2000). Organizations should deploy an e-service only if it is concordant with its strategic needs. Not all e-business mechanisms are right for every organization (Lord, 2000). The correct application must be chosen or developed with both the process it supports and the strategic objectives of the company in mind. A deadly assumption would be to believe that technology is the answer to all process and strategic weaknesses; in response to this concern, this e-business planning and analysis framework was developed.

There are many types of analysis frameworks available (Ballantyne & Brignall, 1992). According to Wu (1992), good frameworks should be able to guide managers towards a method or solution uniquely suitable to a particular situation in question. On the whole, frameworks should not be too complex to use, and information interaction within the framework should be clear and concise to avoid information overload. Lee and Ko (2000) proposed a framework for strategic business analysis, by integrating SWOT (strengths, weaknesses, opportunities, and threats), balanced scorecard, quality function deployment, and "Sun Tzu's the art of business management strategies" techniques. In a similarly proposed framework, Lee, Lo, Leung, and Ko (2000) integrate the SWOT (de Witt & Meyer, 1998) BSC, QFD, and the Malcolm Baldrige National Quality Award's (MBNQA) education criteria, to formulate policy for vocational education in Hong Kong.

While many analytical techniques such as the SWOT, SLEPT (social, legal, economic, political, technical) (de Witt & Meyer, 1998), and the BSC analyses can be used to identify the strategic needs of an organization, none provide a direct mechanism to prioritize the needs and convert them into operational processes, or to then translate those processes into a specification that can be used to develop or acquire supportive software systems. In contrast, other analytical techniques such as Porter's (1985) value chain analysis (VCA) facilitates the analysis of processes within a company, but does not provide an easy mechanism to link these to high-level business objectives. One analytical tool that does provide the ability to convert high-level business objectives ("what" the business wants), into processes ("how" the business delivers those "whats") is QFD, which has had these benefits discussed widely by Akao (1972), Mazur (1992), and more recently by Ko and Lee (2000) and Lee et al. (2000). However, QFD has its own weaknesses; two of

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Table 1. The three techniques of the E-PAF

	Analysis Technique		
	Balanced Score Card (BSC)	**Value Chain Analysis (VCA)**	**Quality Function Deployment (QFD)**
Primary Purpose	Establishes strategic objectives	Establishes the high-level logic of the value-adding activities within customer facing business processes	Analyzes and manages the trade-off between business objectives ("whats") and business processes ("hows"), and *deploys* these to lower levels of definition for detailed systems design
Main Strength(s)	Sets high level business vision	Defines high-level, value-adding activities (primary and secondary)	Can deploy high-level objectives and processes (e.g., users requirements) into detailed tasks and systems requirements
Main Weakness(es)	Difficult to translate these into detailed processes or system requirements	Does not generate high-level vision; difficult to translate value-adding activities into system requirements	Difficult to generate initial business vision and high-level value chain

these lie in the initial generation of the "whats" and "hows". The analytical framework presented in this article deals with these weakness by marrying up QFD with two other complementary analytical techniques:

1. BSC to generate a set of high-level business objectives, targets, measures, and initiatives for finance, internal operations, learning and growth, and customer satisfaction. The outputs from this analysis (including the weightings) become the 'whats' in the initial QFD analysis.
2. VCA to generate detail about operational processes. The outputs from this analysis become the 'hows' in the initial QFD analysis.

The relationships between these are summarized in Table 1. Through the complementary use of the BSC, VCA, and QFD, a comprehensive yet easily understandable E-Business Planning and Analysis Framework has been developed.

THE E-BUSINESS PLANNING AND ANALYSIS FRAMEWORK

An eight-step approach is followed to apply the E-PAF as shown in Figure 1 (Tan & Tang, 2002; Tan, Tang, & Forrester, 2003, 2004). Note that more detail of Step 1 is shown in Table 2 and more detail of Step 2 in Figure 2. The eight steps are identified as:

- **Step 1:** Using BSC to develop "whats" for QFD Matrix I
- **Step 2:** Using VCA to develop "hows" in QFD Matrix I
- **Step 3:** Completing QFD Matrix I
- **Step 4:** Identifying critical business processes from QFD Matrix I
- **Step 5:** Inputting critical business processes to QFD Matrix II's 'what'
- **Step 6:** Listing e-service applications to QFD Matrix II's "how"
- **Step 7:** Completing QFD Matrix II
- **Step 8:** Identifying critical e-service applications from QFD Matrix II

The article outlines how the framework has been applied to VirtualCom, a recently established online start-up company specializing in providing community groups and dating services; it presently has relatively low e-capability maturity. It should be noted that E-PAF (Figure 1) should be applied within the initial analysis stage of a systems development lifecycle, the remaining stages being the logical design, the physical design, testing, implementation, and maintenance, which for reasons of conciseness are not discussed in this article.

Firstly, prior to applying the framework, the situational factors (e.g., political, economic, social, technological, environmental, and legal) behind the business strategy need to be established. In brief, it was observed that the majority of the environmental drivers are pro-online dating. However, despite the fact that online dating has been around since 1998 (e.g., match.com), there are still many new entrants coming in on a monthly basis, making the industry highly competitive. The nature of the competition is such that well-known, trusted online brands

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