Measuring e-business performance:
Towards a revised balanced scorecard approach

Robert Plant[1], Leslie Willcocks[2], Nancy Olson[3]

[1] Department of Computer Information Systems, University of Miami,
Coral Gables, FL 33124, USA (e-mail: rplant@miami.edu)
[2] Warwick Business School, Warwick University, Coventry CV4 7AL,U.K.
(e-mail: willcockslp@aol.com)
[3] Swinburne University, Melbourne, Australia (e-mail: Nancyox20@aol.com)

Abstract. The balanced scorecard (BSC) is a management system that enables executives and managers to map their strategic objectives onto a set of performance measures in four inter-related areas, known as the financial, customer, learning and growth, and the internal process perspectives. Based on research into leading and lagging e-business companies and their measurement practices, this paper introduces an approach to modifying the balanced scorecard, applicable to the management of e-business units in which the customer perspective of the traditional balanced score card is supplemented by the incorporation of four additional perspectives (brand, service, market and technology) that have been found to be critical to the development and execution of e-business strategies. This approach facilitates a clearer understanding of the customer perspective, which consequently benefits the process of selecting the goals and measures associated with the other three perspectives, improving the quality of the overall decision-making and managerial processes as a whole.

Key words: Balanced Score Card, e-Commerce, e-Business

1 Introduction

The internet dot com hysteria that preceded the collapse of the stock markets in March 2000 led many internet entrepreneurs and executives to execute 'esoteric' theories that were clearly unsustainable in the long term, such as selling below cost and shipping for free in order to build market share (Kuo 2001). However, not all companies have failed in their Internet initiatives. For example, Plant (2000), Saloner and Spence (2002), Weill and Vitale (2001) and Willcocks and Sauer (2000), found companies such as Office Depot, HP, Charles Schwab, Cisco Systems, Tesco, BMW, Dell, Merit-Nordbanken, E-Bay, Lonely Planet and Sony understanding the medium and executing successful strategies.

Reviewing these sources, one of the key common factors underlying such case study successes was their adoption of a management style that considered and integrated together the many different aspects of the e-business environment prior to making strategic and operational decisions. Our own research found that frequently the successful companies we studied utilized some form of broad scorecarding mechanism to support and enhance this management style and its processes. From our analysis of leading organizations, their strategies and their measurement practices, we here develop an approach to measuring e-business performance based on a modified balanced scorecard approach as popularized by Kaplan and Norton (1992).

2 Methodology

This paper draws from a research study that examined the formulation of e-business measurement at 44 companies (see Appendix A). This study was carried out in the United States and Europe between 1998 and 2002, and was part of a larger study of e-business strategy formulation in 78 corporations (Willcocks and Plant 2002). Personal interviews with over 80 executives were utilized in the measurement research study. The interviews ranged between 40 minutes and two hours in length. Detailed internal and published documents were also collected and utilized in the study. The study group consisted deliberately of a wide spectrum of industries and organizational types including: automotive, banking, technology organizations, manufacturing organizations, information services organizations, entertainment and utility companies. The study group included organizations such as BMW, Office Depot, Sun Microsystems, Schlumberger, Edmunds, Alamo, Ryder and United Parcel Service. The primary organizational type was that of 'traditional' organizations who were successful prior to the Internet being deregulated and who then pursued a 'clicks and bricks' e-business strategy. However, the study group did include six 'pure play' dot.com organizations that commenced their business activities during this period with the sole purpose of transacting solely through the Internet. The interviews were semi-structured in nature and attempted to determine what were the critical factors that lay behind the organizations e-business success or failure. The interviews also considered the associated metrics, and measurement criteria that executives associated with the factors the interviewees deemed critical to their organizations e-business performance. The interviews also considered how these criteria and metrics were utilized in their organizations tactical and strategic planning initiatives. Finally the interviews considered how the organizations combined together the criteria, metrics and success factors in managing their e-business strategy and whether they utilized any form of scorecarding framework.

The subject case organizations did in some cases provide access to quantitative data but often we relied upon subjective judgments by respondents. The sample was opportunistic and deliberately spread across what was prejudged as differently performing organizations, with a deliberate overrepresentation of companies that can be considered industry leaders. This methodology and case study group has successfully acted as the

basis of other published research results outside the metrics area, on strategies and implementation approaches (Willcocks et al. 2002; Willcocks and Plant 2002; Plant 2000).

We should stress that while the sample provided many insights, no single company exhibited all of the characteristics and practices outlined in this paper. However, the research did offer an opportunity to identify a variety of effective measurement practices, and one major contribution of this paper is the synthesizing of these practices into a coherent methodological framework that can be practically utilized.

3 Leaders and laggards in e-business strategy

The period of this study saw both the rapid growth of start-up Internet-based organizations followed by a subsequent high failure rate (Telecomworldwire, 2002) In addition many traditional 'incumbent' companies also contended with the difficulty of creating and execute a winning on-line strategy e.g., Toys R Us, K-Mart, and CompUSA. However there were also successes such as Wal-Mart.com, PublixDirect.com, Tesco.com, and OfficeDepot.com. Our research indicated that three critical success factors (CSFs) separated the leaders from the laggards (Plant 2000; Willcocks and Plant 2002):

- Firstly, the leaders had the ability to understand their own value proposition and put in place robust, relevant and timely measurement systems that enabled them to judge the 'real time' effectiveness of their strategy.
- Secondly, the leaders understood their value proposition from multiple perspectives; both internal to the organization (e.g., from a financial and/ or process perspective), and external to the organization (e.g., the customer perspective).
- Thirdly, the leading organizations continually monitor their position relative to their objective goal criteria, adjusting the criteria, metrics and strategy as necessary.

Interestingly, these results are compatible with other findings on what makes for effective measurement practices amongst successful organizations (see for example Collins 2000; Seddon et al. 2002). An example of an organization that demonstrates all three of these factors in maintaining their continued leadership in the e-business space is BMW. Firstly, they understood their own business to consumer (B2C) value proposition, which has always been to use the Internet channel solely as a mechanism to perform brand reinforcement, refraining from using it to directly sell new vehicles. This was achieved through the creation in 1998 of a site that reflected the branding message of 'The Ultimate Driving Machine' and the products superior technical status, providing their market segment with technical information and cutting edge interactive technologies. Through continual development of their online B2C strategy (and relative to the overall online environment), the company in November 2000 decided to create Nexolab in order to "bundle all its electronic commerce activities into a new consulting and services company which would cover all operations from purchasing to vehicle marketing" (Burt 2000). This marked a move by the company to integrate both the B2C eCommerce and the business-to-business (B2B) e-business

aspects of their organization under the umbrella of their Softlab subsidiary. Subsequently, in 2001 this unit launched an imaginative and unique online B2C experience, that of www.bmwfilms.com. The use of leading edge Internet technology and world-class film directors to make short action packed films, in which the vehicles were as much the star as the actors, was a first for the industry and a substantial milestone in advertising. This also came at a time when Internet advertising was declining in impact, and bmwfilms.com registered more than thirteen million film views. The project has also grown into a technology partnership with Microsoft Corporation through which the two organizations will collaborate in the creation of a series of full-length digital films (BMW 2002). For BMW, the use of the Internet as a communication technology platform clearly acts to reinforce the brand, both through the message and through the medium, which is itself strongly aligned to the BMW customer demographic base.

BMW also demonstrate the importance of the second and third of our critical success factors, that of understanding the companies value proposition from multiple perspectives, monitoring those factors and then acting to improve, based upon the new data. As was illustrated by the company, which after listening to the desires of their online customers for more information regarding the purchase of pre-owned BMW vehicles, they moved to provide a solution. However, rather than creating an online 'pre-owned' sales channel, they changed their site to include a dealer-vehicle search engine that provided the location, price and basic description vehicles in a given category. This approach both reinforced the brand online and reinforced the customer dealer channel relationship, a measurable success criterion.

BMW's United States consumer site is an example of a pure B2C entity that has no transactional commerce associated with it. However when transactional issues are present and the organization is connected through an Internet B2B supply chain then the complexity of the relationships duly increases. In order to manage the complexities of developing and maintaining a successful internet presence, BMW and the other leading organizations in our case study group frequently utilized some form of 'scorecarding' technique through which they can link their management criteria and metrics together, and thus manage the potential for conflict arising from the added complexity.

In the remainder of the paper we will present an approach for the creation of a modified scorecard that combines the best practice principles of the original Balanced Score Card (Kaplan 1992), builds upon earlier research in this area (Hasan et al. 2000; Jackson et al. 2000; Willcocks and Graeser 2001) and extends the Internet Effectiveness Scorecard (Plant 2000) based upon the detailed findings of the study group.

4 Monitoring and developing BSC metrics

The Balanced Score Card (BSC) originally proposed by Robert Kaplan and David Norton (Kaplan 1992) is a popular and effective tool that allows managers through financial and non-financial measures an informed and comprehensive view of how the organization is performing relative to the organizations overall strategic objectives.

The four different perspectives through which the scorecard is viewed: the financial perspective, the customer perspective, the internal process perspective and the perspective of learning and growth are linked together through common strategic objectives. However, an important pre-requisite for a successful implementation and operation of any BSC framework is to ensure that it that the objective criteria are managed based upon valid and sound metrics in each of the perspectives.

Initial attempts at deriving and utilizing e-business metrics related primarily to the human-computer interaction component of the customer perspective. Utilizing internet specific metrics such as the number of page 'hits' and 'views' (Misic et al. 1999) was also initially popular. However, it soon became clear that these indirect metrics (Fenton 1991) were unreliable due to the fact that, as Plant (2000) found, they were dependent upon one or more other attributes e.g., page 'hits' are unreliable as a metrics for determining the number of customer page views as pages may be cached at the internet service provider (ISP) and retrieved by the viewer from ISP's server memory rather than the originating server. As Fenton (1991) points out, the utilization of 'direct' metrics that are not dependent upon the measurement of any other attribute for their calculation is more appropriate, i.e., the number of authenticated user sessions, the most used platform, user browser configurations etc. (Plant 2000). Unfortunately, these Internet metrics frequently were confused as proxies for the goal-measurement metrics required for sound management (White et al 1998).

The limitations of the Internet-metrics were quickly recognized by the leaders in our research group who based the development of their successful e-business scorecards upon more traditional goal-metrics based criteria. The scorecarding process amongst the leaders typically commenced with a mapping from the overall corporate strategic goals a set of financial goals specific to the business unit, from which a set of metrics reflecting those goals are derived.

5 Developing the e-business BSC: The financial perspective

The development of a tailored BSC for any type of organization starts with the development of the financial objectives and metrics. Unfortunately for many of the 'dot com' era companies founded and run in the late 1990's, this perspective was neglected and the consequences were frequently fatal (Porter 2001; Willcocks et al. 2002). However, successful leaders in the on-line space, such as our study brokerage firm Charles Schwab & Company, always work to align their strategic objectives with their financial objectives. David Pottruck, the Co-CEO of Schwab recognized that the on-line channel had to not only add value to the customer, but also to add monetary value to the company's bottom-line. Having identified the objective he also defined two key financial metrics he considers vital in measuring and monitoring the outcome of the initiative: Revenue per employee and Total client assets under management, in addition he considered their trends over time especially important, in particular the rate of growth of assets under management (McFarlan and Dailey 1999).

The executives at Schwab clearly understand the need to create and utilize a management system that is capable of adjusting to constant change, yet aligned to the overall corporate financial goals, of which these are two examples.

A second example of the financial perspective can be seen in a case study organization within the travel industry, whose strategic objectives for the e-business unit were temporally motivated, and whose three objective criteria were 'Short Term Success,' 'Medium Term Development,' and 'Long Term Growth.' These were equated to the following financial metrics: 'direct commission-based sales revenues,' which equates to those revenues generated through online bookings (Units: Average revenue per sale), 'license generated revenues,' which equates to sales made through package tour operators (Units: Sales growth per operator), and 'alliance-partner generated revenues,' which equates to those recurring revenues generated through other companies, such as online reservation companies and alliance partners (Units: Total revenue per partner per quarter). The use of these metrics, as was the case with Charles Schwab, enabled the organization to have a clearer understanding of its strategic executed as viewed through key financial metrics.

Having developed a financial perspective organizations can then utilize this to drive their other three traditional BSC perspectives, each of which can be tuned to the e-business environment that the organization is attempting to create and the special nature of the on-line channel. In the remainder of the paper we will focus upon the customer perspective and how it can be modified to facilitate the management of an e-business.

6 Developing the e-business BSC: The customer perspective

Our detailed study of 78 corporations moving to the Web identified that special attention should be paid to four additional factors that have been found to effectively position corporate on-line strategy (Plant 2000; Willcocks and Plant 2002) namely: Brand, Service, Market and Technology. These perspectives provide major additional channel-specific clarification when utilized in conjunction with the existing BSC framework. These factors are most useful when considered in conjunction with the customer perspective of the traditional BSC enhancing it to the specific needs of the e-business channel, as illustrated in Figure 1. These four areas generate their own goal and measurement criteria and require careful integration to generate a fine-grained picture of the customer experience.

7 Brand equity and the customer perspective

The ability to measure and manage the first of these perspectives – that of Branding for the on-line channel and its customer perspective – is a complex function. Branding has been defined as "a mixture of tangible and intangible attributes, symbolized in a trademark, which, if properly managed, creates influence and generates value" (Clifton et al. 2000), clearly fits the philosophy behind the BSC ethos. The challenge is to use it effectively.
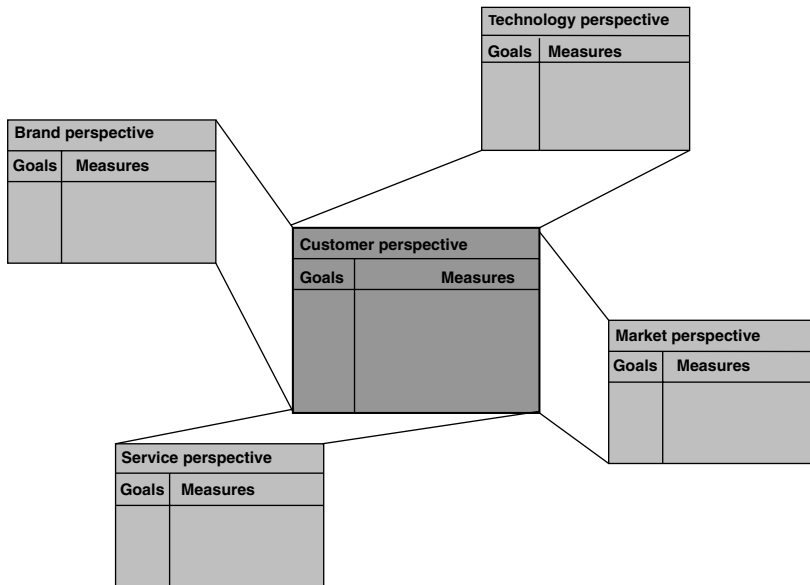
Fig. 1. Value criteria for the customer perspective

We found a significant number of issues affecting the customers' perception of a company's brand value[1], which is defined as 'the dollar value of a brand at a point in time as an asset of its owner, assessed using techniques comparable to the valuation of physical assets' (www.Interbrand.com) and is driven by three main elements: financial forecasting, the role of branding and brand strength. From a financial forecasting perspective it is necessary to identify 'the dollar value of revenues or services that carry the brand and ensure that all relevant direct and indirect costs are charged as well as a deduction for tax. A further charge is made to reflect the opportunity cost or hidden cost of the tangible assets that are employed (the property, plant, inventory, working capital etc). By making a charge for these (based on the cost of debt) we strip out a base return on the tangible assets. This is similar to identifying the earnings that a commodity business would make. Only a return above this base return can be called value added (hence the term EVA or Economic Value Added). This can be regarded as earnings due to all the intangibles in the business (of which the brand is one). These earnings are forecast forward for a period of five years taking into account expected changes in market conditions, revenue growth, profitability, etc.' (www.Interbrand.com). The 'role of branding' refers to the allocation of the percentage of intangible earnings attributed to the brand. The brand strength is also assessed in order to turn through a discounted cash flow method 'the stream of brand earnings into a single value number' (www.Interbrand.com). The brand strength is assessed 'against a notional

---

[1]Jan Lindemann presents a full description of the valuation method in 'Brand Valuation'. Palgrave Macmillan; 2003

ideal' (www.Interbrand.com) against seven factors: Leadership, Stability, Market, International Scope, Trend, Support, and Protection (Birkin 1994). Based upon these seven criteria, the 'discount rate' of the brand is determined, the lower the risk associated with the brand the lower the rate.

Brand valuation can be used as a strong objective determinant of the customer perspective, and the dollar-based metric also relates well to the overall BSC finance perspective. The leading four organizations as determined by brand valuation were consistent in their positioning from 1999 through 2002 and are given in Table 1 together with their brand valuations. Table 2 shows the top primarily internet-based organizations:

For companies such as Amazon and yahoo! their brand valuation is for their whole organization, for traditional organizations they can determine the valuation of their online brand channel independent of the overall brand valuation of the organization. In order to do so the same methodology as applied to traditional organizations is used (described above) except this time the dollar values, the direct, indirect costs etc., associated with the financial forecasting, are considered for only the online aspect of the organization, similar considerations are made when determining the other two dimensions: the role of branding and brand strength.

8 Service and the customer perspective

The second of the four e-business positional factors we found to be critical to achieving an understanding of the online customer perspective was that of service provisioning. Industry leaders such as Office Depot and Charles Schwab quickly recognized the need to be responsive to consumers along the entire Internet service value chain (Plant 2000; Willcocks and Plant 2002) which includes: customer acquisition, customer support during purchase, customer liaison during fulfillment, as well as after sales support and relationship management (see Fig. 2).

Table 1. The top 4 organizations by brand valuation 1999–2002 (Interbrand.com)

Brand	Brand value 2002	Brand value 2001	Brand value 2000	Brand value 1999
1. Coca-Cola	$69.637B	$68.95B	$72.54B	$83.8B
2. Microsoft	$64.091B	$65.07B	$70.20B	$56.7B
3. IBM	$51.188B	$52.75B	$53.18B	$43.8B
4. GE	$41.311B	$42.40B	$38.13B	$33.5B

Table 2. The top internet-based organizations by brand valuation 1999–2002 (Interbrand.com)

Brand position, company, valuation 2002[a]	Brand position, company, valuation 2001	Brand position, company, valuation 2000[b]	Brand position, company, valuation 1999
63. AOL ($4.326B)	58. AOL ($4.5B)	47. AOL (4.5B)	35. AOL ($4.5B)
67. Yahoo! ($3.855B)	59. Yahoo! ($4.38B)	48. Amazon (4.5B)'	57. Amazon ($1.4B)
80. Amazon ($3.175B)	76. Amazon ($3.13B)		

[a] Interbrand Top 100 Brand valuations 2002 & 2001 www.interbrand.com
[b] Interbrand.com Top 75 brand valuations 2000 & 1999 www.interbrand.com
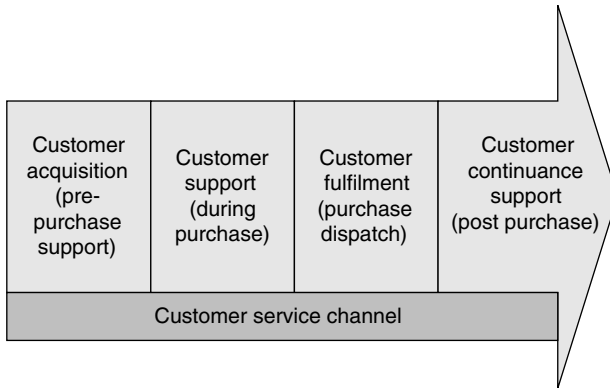
Fig. 2. Internet service value chain

Building a metrics based system for the Internet service value chain became an important aspect of the service dimension of the leading organizations in our study. Office Depot, for example quickly developed an online customer service philosophy that intentionally provided an equivalent level of support at every point along their Internet customer service value chain to that provided in their physical stores.

Breaking the internet service value chain down into its components facilitates metrics to be created for each in alignment with the organizations overall objectives for their online channel.

8.1 Customer acquisition

The ability to define the cost associated with the acquisition of a customer is significant for any successful online organization, thus creating a clear set of metrics for use in this aspect of the value chain are vital. Some organizations such as www.shop.org determine their 'new customer' acquisition costs as the total amount spent on marketing dedicated to customer acquisition, and a set of three metrics has been proposed by Agrawal et al. of McKinsey & Company: Visitor base, Visitor acquisition cost and Visitor advertising revenue as indicators of customer attraction (Agrawal et al. 2001). However, these 'snap shot' approaches can be considered real time BSC type metrics and may be too short term in their perspective. Hence, other more complex metrics that span the entire internet value chain have been proposed, which rather than take into account only one metric, considers broader brand and service issues such as customer retention rates and customer satisfaction rates (Hamblen 2000).

8.2 Customer support during purchase

A series of metrics that identify the ten major reasons why customers abandon their online shopping carts before cementing their purchase has been identified by Odyssey consulting, subsets of which have been considered in the scorecards used by our study organizations:

- 72%   High shipping prices
- 61%   Comparisons shopping or browsing
- 56%   Changed mind
- 51%   Saved items for later purchase
- 43%   Total cost of items
- 41%   Checkout process is too long
- 35%   Checkout requires too much personal information
- 34%   Site requires registration before purchase
- 31%   Site is unstable or unreliable
- 27%   Checkout process is confusing

(Source: Odyssey Consulting)

A set of complementary metrics have also been proposed by Agrawal et al. (2001) from McKinsey & Company who consider the issue of 'conversion' through eleven metrics:

- Customer base
- Customer acquisition cost
- Customer conversion rate
- Number of transactions per customer
- Revenue per transaction
- Revenue per customer
- Customer gross income
- Customer maintenance cost
- Customer operating income
- Customer churn rate
- Customer operating income before marketing spending

Understanding these issues and performing the financial, process and marketing research to determine their relevance and impact to the organizations is vital, following which adjustments to the strategy can be made.

8.3 Customer fulfillment

A key customer service factor identified by the leaders in our research group was the fulfillment process. As dot.com failures such as www.eToys.com, www.webvan.com, and www.petopia.com attest, the cost of free shipping to customers can exceed profit margins. Thus, economically viable fulfillment models were prevalent from day one amongst the leaders in our research group, using sophisticated fulfillment strategies that offset much of the risk, including third party logistics support from companies such as www.submitorder.com who understand and further enable the relationship between brand and fulfillment.

Central to the provisioning of successful fulfillment for traditional bricks and mortar companies who created successful 'bricks and click' organizations was the ability to tie their on-line and traditional channels together. This was successfully demonstrated at Tesco, who understood the costs for the different options associated with fulfillment of a grocery order and decided upon their own internal store 'pick and pack' model. By taking the customer order on-line, picking the items from the shelves of their existing stores, and delivering the orders directly from those stores, which were already located in hinterlands of high population density. Understanding the

process supply chain costs allowed Tesco to have a simplified supply chain for their internet based channel and allowed them to overcoming many of the problems that plagued the new online grocers.

8.4 Customer continuance (retention)

The final aspect of the Internet service value chain is post purchase customer support. An aspect many organizations initially failed to consider, thinking that one sale would convince the customer to return for life. However as many customers only place a single order never to return this has made identifying, understanding and acting upon retention metrics a major issue for all online organizations. Agrawal et al. (2001) have identified some widely used metrics in this area:

- Repeat customer base
- Repeat customer acquisition cost
- Repeat customer conversion rate
- Number of transactions per repeat customer
- Revenue per transaction of repeat customer
- Revenue per repeat customer
- Repeat customer churn rate

Taken individually, the four areas are uniquely important but when combined into a connected set of value chain metrics as the basis of a customer satisfaction index they are even more powerful, enabling organizations the ability to identify and overcome their weaknesses and build upon their strengths in the customer service dimension. It should also be noted that the dimensions of the internet service value chain are major catalysts in the creation of brand equity as previously discussed.

9 Market positioning and the customer perspective

The third of the of four e-business positional factors we found to be critical to understanding the customer perspective was the organization's ability to do three tasks: define its market, segment that market, and then provide quality product or service to the customers in those segments.

In every business sector, we found leaders and laggards separated by the ability of corporate executives to firstly, effectively visualize their company's position in the market space; secondly, to understand the dynamics of that market; and thirdly to understand how those dynamics can best be influenced and played to the advantage of their company.

Financial Services is an example of an industry that underwent one of the most tumultuous changes during the period of our study. The retail securities brokerage sector, in particular, required outstanding corporate leadership in order to survive and prosper in a significantly changed marketplace. Within this market the executives at Charles Schwab & Company represent a great example of an organization's leadership that anticipated, understood, and creatively managed the complexities of its changing market space. David Pottruck Co-CEO of Charles Schwab has stated: "*We think about our company in terms of a culture of change, building a culture of change allows us*

to keep changing, this is crucial to our success, we have keep innovating. . . . . For many years we operated under a pretty constant set of rules, they evolved may be, but now they are morphing, and that presents a situation where you are trying to figure out are these new rules real or are they temporary?" (McFarlan and Dailey 1999).

One of the key factors behind Schwab's success was their understanding of these 'morphing' market spaces. As such Pottruck and Schwab considered the market segmentation in several ways: First, the demographic break down of the market, by the Mature, Baby Boomer, and Generation X market segments, within each of which they attempt to create a brand that is really different from their competitors. A second market segmentation approach they considered was that of "psychographics" in which the market dynamics are divided into three categories: self-directed investors, delegators and validators. Pottruck acknowledges the futility of trying to be all things to all people, in which they provide low cost trades to compete against the likes of e*Trade as well as simultaneously attempting to provide investment banking services to compete against the likes of Merrill Lynch. He notes that being in the market and being known as having: "*kind of high quality service, and be kind of cheap in price, that's death. That is the middle and that is not saying anything. Our service has to come from being the best in the world at this thing we call the new model of full service brokerage, providing something that nobody else provides the way we provide it. The best combination of people and technology to make investing outcomes for you as a special client, that for us is a challenging place to go.*" (McFarlan and Dailey 1999).

Clearly, the role of market research cannot be underestimated in its importance, and at Schwab their ability to understand their market, the changes that the Internet technology would bring to that market in terms of competition and customer demand was clearly key to their survival and prosper. Thus a key to the successful development of a market perspective for the BSC is one that incorporates a segmentation strategy based upon a well-founded set of criteria and their associated metrics.

Urban (2000) has identified two classes of factors that are useful starting points for establishing criteria and metrics, the Class I factors are based upon consumer background characteristics: Geographic, (e.g., region mobility, cultural), Demographic (e.g., age, sex, household income, educational level, life cycle), Psychographic (e.g., personality traits, perceptual styles, reference groups) and General Life-style (e.g., the correlation of demographic and psychographic variables). Class II factors are based upon the consumers' market history: Product usage (e.g., Frequency, brand loyalty and attitudes towards the product), Product benefit (e.g., expectation of product performance, satisfaction measures) and Decision-Process (e.g., shopping patterns, Media-use patterns, Sensitivities such as price, distribution outlet and promotional offers) (see Urban 2000). These can be combined with the metrics that pertain specifically to internet-based consumers, for example the consulting organization Media Metrix has identified six type of online user: Simplifiers, Surfers, bargainers, Connectors, Routiners, and Sportsters. These can then be considered in association with the Class I & II factors just described, facilitating a determination of the inter-relationships between the organization, its customers and the issues associated with the online channel.

10 Technology and the customer perspective

The fourth of the e-business positional factors we found to be critical to understanding the customer perspective was the organization's ability to utilize and employ technology effectively. As was discussed earlier, David Pottruck recognized the need to have an effective technology focus to facilitate Schwab's e-business strategy and other leaders such as Office Depot, Sony and BMW have achieved success in this aspect of the customer perspective by having a clear understanding of their companies' relationships with their customers, their customers' needs and the way that technology can be used to meet those needs through the on-line channel. Pottruck is emphatic in his approach to change, technology and the customer: "*we are a technology company that happens to be in the brokerage business, so everything that we think about, how we run our business has technology at the center of it. Trying always to engineer costs down, service up*" (McFarlan and Dailey, 1999). He recognizes that 85% of their trades are done over the Internet and require little human intervention on the part of the company – trades are regarded as a commodity. Thus technology is better deployed in driving up customer service and building relationships, with the espoused aim to '*focus on the customer better than anyone in our business and to understand what drives their choices'.* (Tempest and McFarlan 2000).

The development of a technology perspective for the customer is most usefully deployed in conjunction with a set of technology-customer metrics that are industry and company specific. Three fundamental dimensions around which these metrics can be established are: content, access and format. Where the ability of the customer to download 'content' is driven by the 'access' mechanism employed and the 'format' of the content being delivered. The wider the access bandwidth the higher the opportunity to deliver richer format types and richer content. Fundamental technology metrics that monitor the customers internet connection, identifying such parameters as:

- User name for customers who log in to their accounts
- The browser type (user agent) and version used by the user
- The users IP address or host name as determined through a reverse domain name service lookup function
- The referrer or URL from where the request was sent
- The time stamp at when a request was initiated and responded to
- The initiating site type
- The server IP address
- File access or URL information, identifying what data was sent to the user, the size of the data idem sent to the user,
- Cookie information.

Through careful assessment of these metrics organizations can develop their products value propositions and offerings to the users requirements and technology constraints rather than just the former. For example, in commodity transactions such as equity trades, Charles Schwab & Company utilizes these metrics to ensure that the speed and security of its trading platform matches user needs while drive down transaction costs, but rather than being seen as 'just another trading platform' by customers,

they can offer independent research for free, transforming the commodity product into one with considerable added value. For more sophisticated users who expect for example a Level II trading platform the content and format of the information will be richer as real time bid/ask prices are displayed, demanding a higher degree of accessibility. This market segment based upon technology criteria can then be managed as a specialist function.

A clear understanding of the role of technology in relation to the changing content possibilities, formats and access mechanisms has been central to Schwab's strategic positing since its founding in 1975. The company introduced one of the first back office software systems in 1979, followed by a system known as Equalizer in 1985, the first electronic brokerage system for individual investors; this was followed by Telebroker in 1989 which was an automated telephone-based brokerage system, through which 13% of Schwab's trades took place (average of 5.7 million calls a month) by 1997. In 1993 Schwab introduced StreetSmart, a trading platform for Microsoft Windows which was superceded by e.Schwab in 1995 which initially was used via a dial up modem and a diskette but which transitioned again to an internet-based web platform in 1996.

It can be seen therefore that the role of technology within the customer perspective is not just to act as an enabler. When carefully considered, technology acts as an enhancer of competitive performance, and even more so when used in conjunction with the other perspectives of the balanced score card approach.

11 Summary: The customer perspective

This section has attempted to show that, through a careful consideration of the four positional factors (brand, service, market and technology), a more complete understanding of their impact upon the BSC customer perspective can be achieved.

Frequently, the analysis of these factors requires significant iterative refinement, as well as effort in the development of their individual criteria and measures before customer perspectives can be fully understood. In the BSC, Kaplan recommends that approximately sixteen strategic objectives be considered in total for all four perspectives, but, as Willcocks and Graeser (2001) found for both IT and e-business scorecards these do need to be decomposed into actionable objectives and metrics. The use of the four positional criteria detailed above furthers the aim of detailing and managing customer perspectives on the on-line channel in a more effective manner.

12 Conclusion

This paper has described a methodology for a modified BSC that can be utilized within the context of developing and managing e-business initiatives. The methodology requires that the user also leverages and incorporates into the BSC other measures and goals that related to the specific nature of the e-business environment and four perspectives were proposed and discussed in relation to the customer perspective. Clearly the analysis of the modified

customer perspective will need to be carefully fed into both the internal process, and learning and growth perspectives in order to create a complete e–Business BSC environment.

The research found that seasoned executives viewed the development and management of an e-business unit as being based upon a successful understanding of these perspectives and that, with careful selection of appropriate goals and measures, an e-business unit can be run as successfully as their traditional counterparts.

The development and enhancement of an e-business BSC remains an open research question and issues such as the incorporation of ownership levels into the development and management of the scorecard require considering further.

In summary however, our study made it apparent that those organizations adopting and utilizing forms of scorecarding were able to translate their e-business strategy more effectively throughout the organization as well as manage it effectively throughout execution. The approach presented here consolidates on those case findings and builds a more comprehensive framework with the aim of guiding future research and practice alike.

Appendix A

	Company	Industry categories[a]
1	IBM	Comps. Hard
2	Citigroup	Banks-M.C.
3	UPS	Transptn. Services
4	American Express	Fin'l Div
5	Nortel	Comm. Equip
6	Swiss RE	Insurance Carriers
7	Entergy	Elec.Cos
8	Sun Microsystems	Comps. Hard
9	UTC (Pratt & Whitney)	Transport. Equip.
10	Office Depot	Retail-Spec
11	GE Medical Systems	Medical
12	Motorola	Telecommunications
13	FPL	Elec.Cos
14	Ryder	Truckers
15	Dow Jones	Publishing
16	Royal Caribbean	Lodging-Hotels
17	Lennar	Homebuilding
18	ABIG	Insurance-M Line
19	W.R. Grace	Chem.-Spec
20	CSR Rinker	Nonmetallic Minerals
21	Genentec	Biotech
22	Millipore	Manf. Specialized
23	SONY	Entertainment
24	Priceline.com	Online Retail

[a] Categorization: (S&P)/SIC

Interview case organizations public and private

	Company	Industry categories[a]
25	Rover Group	*Automobiles*
26	BMW	*Automobiles*
27	Alamo	*Svcs.Comm*
28	Burger King	*Restaurants*
29	Holberg (Ameriserve)	*Logistics*
30	VisualCom.Com	*Internet Services*
31	Far & Wide.Com	*Travel*
32	Manage.MD	*Healthcare Services*
33	LightPoint.Com	*Finance*

[a] Categorization: (S&P)/SIC

Case organizations from ~ Public data & Case study information sources

	Company	Industry Category
34	Charles Schwab	*Finance*
35	Schlumberger	*Oil*
36	Lockheed	*Defense*
37	Edmunds	*Automotive & Publishing*
38	Internet Securities Inc	*Finance*
39	Ford	*Automotive*
40	America on line	*Internet Service Provider*
41	Virtual Vineyards	*Wine/Retail*
42	Co-op Bookshop	*Publishing & Distribution*
43	GM	*Automotive*
44	Tesco	*Retail*

References

Agrawal V, Arjona LD, Lemmens R (2001) E-Performance: The Path to Rational Exuberance. *The McKinsey Quarterly* 25(1): 31–43

Birkin M (1994) Assessing Brand Value, In: Paul Stobart (ed) *Brand Power*. New York University Press, New York, pp. 209–222

BMW (2002) Press Release. *BMW and Microsoft Corp*. Hollywood, CA, September 4

Burt T (2002) *Financial Times* 14th November, p. 16

Clifton R, Maughan E (2000) *The Future of Brands*. McMillan Press, London

Collins J (2000) *Good To Great*. Harper Collins, New York

Fenton N (1991) *Software Metrics: A Rigorous Approach*. Chapman & Hall, London

Hamblen M (2000) Customer Acquisition Costs, *ComputerWorld*, August 21, p. 23

Hasan H, Tibbits H (2000) Measurement and the Internet. *Internet Research,: Electronic Networking Applications and Policy*, 10(5): 439–450

Jackson T, Baskey J (2000) How to Use Balanced Scorecards to Implement eStrategy. *Action Working Group Report,* Harvard Business School Press, Boston. Article Reprint Number B0011F

Kaplan RS, Norton DP (1992) The Balanced Scorecard – Measures that Drive Performance. *Harvard Business Review*, January – February, pp. 71–79

Kaplan R, Norton DP (1996) *The Balanced Scorecard: Translating Strategy Into Action*. Harvard Business School Press, Boston

Kuo JD (2001) *Dot Bomb*, Little, Brown & Company, London

McFarlan FW, Dailey M (1999) The Charles Schwab Corporation: A Presentation By David Pottruck, Co-CEO. *Harvard Case Study (Video) 300–507*. Harvard University, Boston

Misic MM, Johnson KL (1999) Benchmarking: A Tool for Web Site Evaluation And Improvement. *Internet Research: Electronic Networking Applications and Policy*, 9(5): 383–392

Plant RT (2000) *ECommerce: Formulation of Strategy*. Prentice Hall, New York

Porter ME (2001) Strategy and the Internet. *Harvard Business Review*, March 2001, pp. 63–78

Saloner G, Spence M (2002) *Creating And Capturing Value: Perspectives and Cases on Electronic Commerce*, Wiley, New York

Seddon P, Willcocks L, Graeser V (2002) Measuring Organizational IS Effectiveness: An Overview and Update of Senior Management Perspectives. *Database*, Spring, 15(1): 33–45

Telecomworldwire (2002) Failure of Dot-coms Decreases, *Telecomworldwire*. Coventry; Jul 8, p. 12

Tempest N, McFarlan FW (2000) Charles Schwab Corporation (A) & (B) *Harvard Business School Case: 9-300-024 and 9-300-025* Harvard Business School, Boston

Urban GL, Sultan F, Qualls WJ (2000) Placing Trust at the Center of your Internet Strategy, *Sloan Management Review*, 42(1): 39–49

Weill P, Vitale M (2001) *Place To Space: Migrating To E-Business Models*. Harvard Business School Press, Boston

White GK, Manning BJ (1998) Commercial WWW Site Appeal: How Does It Affect Online Food and Drink Consumers' Purchasing Behavior? *Internet Research: Electronic Networking Applications and Policy*, 8(1): 32–38

Willcocks L, Graeser V (2001) *Delivering IT and E-Business Value*. Butterworth, Oxford

Willcocks L, Plant RT (2001) Getting To 'Bricks and Clicks': B2C Leadership Strategies, *Sloan Management Review*, 42(3): 50–59

Willcocks L, Plant RT (2002) "Pathways to e-Business Leadership" In: Brynjolfsson E, Urban GL (eds) *MIT-Sloan Management Review: Strategies for e-Business Success*. (Reproduced from Sloan Management Review, 42(3): 50–59)

Willcocks L, Sauer C (eds) (2001) *Moving To E-Business*. Random House, London

Willcocks L, Petherbridge P, Olson N (2002) *Making IT Count: Strategy, Delivery, Infrastructure*. Butterworth, Oxford.