

8-15-1997

# Competitive Advantage from the World Wide Web

Gerald C. Gonsalves

*University of Kentucky*, gcgons1@pop.uky.edu

Albert L. Lederer

*University of Kentucky*, lederer@ukcc.uky.edu

Robert C. Mahaney

*University of Kentucky*, rcmaha00@pop.uky.edu

Henry E. Newkirk

*University of Kentucky*, henewk0@ukcc.uky.edu

Follow this and additional works at: <http://aisel.aisnet.org/amcis1997>

## Recommended Citation

Gonsalves, Gerald C.; Lederer, Albert L.; Mahaney, Robert C.; and Newkirk, Henry E., "Competitive Advantage from the World Wide Web" (1997). *AMCIS 1997 Proceedings*. 79.

<http://aisel.aisnet.org/amcis1997/79>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 1997 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# Competitive Advantage from the World Wide Web

[Gerald C. Gonsalves](mailto:ggons1@pop.uky.edu), University of Kentucky, Lexington, KY 40506-0034,  
ggons1@pop.uky.edu, 606-223-1755

[Albert L. Lederer](mailto:lederer@ukcc.uky.edu), University of Kentucky, Lexington, KY 40506-0034,  
lederer@ukcc.uky.edu, 606-257-2536

[Robert C. Mahaney](mailto:rcmaha00@pop.uky.edu), University of Kentucky, Lexington, KY 40506-0034,  
rcmaha00@pop.uky.edu, 606-269-9630

[Henry E. Newkirk](mailto:henewk0@ukcc.uky.edu), University of Kentucky, Lexington, KY 40506-0034,  
henewk0@ukcc.uky.edu, 606-243-0310

## Abstract

Research has suggested that organizations implement World Wide Web sites in order to gain competitive advantage. This research-in-progress uses CAPITA, an instrument for measuring competitive advantage, to determine how organizations seek to use the Web for competitive advantage and how well they succeed.

## Introduction

Businesses are rushing to implement electronic commerce. The list of corporations doing so grows daily (Hayashi, 1996). In fact, experts predict there could be more than a billion Internet and World Wide Web users by the end of the decade (Studt, 1995). This is testimony that organizations are moving rapidly to investing this powerful new medium in which to conduct business. The new electronic marketplace attracts companies from the simplest to the most complex. It has caused change in almost every walk of life from grade school students to corporate CEOs (Kantor and Neubarth, 1996).

So, why do organizations invest to establish a presence on the Web? Observers have suggested that it is an inexpensive way to reach millions of clients, customers, and prospects (Holly and Hunton, 1996). Moreover, it allows customers to make product inquiries and place orders through their Internet connected computers (Maglitta, 1995). In the future, success will come to those companies, large and small, that can meet global standards and tap into global networks (Kanter, 1995). Companies that find effective ways to apply new technology stand a better chance of achieving competitive advantage (Freedman, 1995).

Many companies have already enjoyed the benefits of creating an electronic presence on the Web. CompuCom Systems Inc. has created a Web site to allow customers to browse its data warehouse, which contains information on the PC products the company resells (Smith and Marshall, 1996). Company officials believe the Web site can help win \$250 million in new business the first year alone. Other benefits from the Web site include fewer customer service calls, instantaneous customer service, and an enhanced image as a technology leader (Smith and Marshall, 1996).

In 1996, Twentieth Century Mutual Funds began allowing customers to buy shares of its funds through its Web site (Weisul, 1996a). Daiwa Securities America Inc. has also begun using the Web for financial transactions. It has moved its electronic trading system (the Odd-Lot Machine) to the Web allowing institutions to trade Treasuries over the Internet (Weisul, 1996b). In addition to the efforts of these companies to use the Web competitively, other evidence suggests the Web's importance. Specifically, one research project found that the primary reason for companies to create a Web site was to gain competitive advantage (Lederer, Mirchandani, and Sims, 1996). Many measures have been proposed to evaluate the benefits of information technology (IT) investments such as competitive advantage (King and Epstein, 1983; Bailey and Pearson, 1983; Ives et al., 1983; Srinivasan, 1985; Sethi and King, 1994). For example, Sethi and King (1994) stressed the need for a method to assess the strategic role of IT and the impact of IT on competitive advantage. They asserted that the measurement of competitive advantage is necessary for choosing between candidate IT applications during the information systems planning process, for assessing the long-term impact of IT applications, and for justifying the value of IT to top management. In order to measure the extent to which IT provides competitive advantage, they operationalized the construct,

## **Competitive Advantage Provided by an Information Technology Application (CAPITA).**

Because of the suggested importance of strategic advantage in Web site investment, this research-in-progress uses the CAPITA measure to attempt to answer two key questions about companies decisions to invest in Web sites. First, how do organizations attempt to gain competitive advantage by using the World Wide Web? Second, how well do they succeed in gaining competitive advantage from the Web? Theory

Sethi and King s (1994) study used a modified version of Churchill s (1979) planned methodological research guidelines for developing measures with desirable reliability and validity properties. The definition and operationalization of the CAPITA construct was based on several different concepts used by previous researchers. Sethi and King categorized previous research into two fundamental approaches for the measurement of competitive advantage.

Their first approach, labeled the Outcome Approach, suggests assessing competitive advantage using outcomes as the dominant criterion. Such concepts as business value and productivity reflect this approach. Since outcome measures are at the enterprise level, they are aggregate and thus insensitive to the effects of a single IT application. Due to this and other drawbacks, the outcome approach was not used.

Their second approach, called the Trait Approach, suggests that competitive advantage is embodied by the degree to which an IT application possesses certain key attributes. Such concepts as competitive forces, strategic thrusts, and value activities reflect this approach. Sethi and King adopted this approach since it is an application of the systems resource model and would show competitive advantage components, subcomponents, and their interrelationships in detail.

### **Domain of CAPITA**

The first step in construct operationalization is to delineate its domain. A number of organizational levels experience the domain of the impact of IT. According to Bakos and Treacy (1986), this impact can be evaluated at three strategic levels: internal strategy (the effect on efficiency and effectiveness of organizational structures and processes), competitive strategy (the ability to overcome competitors in the firm s industry), and business portfolio strategy (selecting which industries the firm should compete in and positioning the firm within the selected industries). Sethi and King defined CAPITA at the level of competitive strategy. Thus, the traits of CAPITA pertain to the impact of an IT application on the competitive position of the firm in an industry.

### **Definition of CAPITA**

According to the authors, "CAPITA refers to benefits accruing to a firm, in terms of changes in the firm s competitive position, that are caused by a single IT application" (Sethi and King, 1994,p.1604). The "changes in the firm s competitive position" may be various effects that enable a firm to compete more effectively. The term "IT application" was defined as the support of business activities through the use of hardware and software that collects, transmits, processes, and disseminates information (King et al.,1986).

### **Key Dimensions of CAPITA**

The literature describes many benefits from an IT application. Based on an analysis of the uniqueness and similarities between these benefits, Sethi and King delineated five distinct benefits and conceptualized them as the five underlying dimensions of CAPITA. The hypothesized dimensions were: Efficiency - the extent to which an IT application enables a firm to improve its structure/processes, and hence offer products at a lower price relative to competing products. Functionality - the extent to which an IT application provides the generalization of concepts such as differentiation, customer service, and value added for customers. Threat - the extent to which an IT application enables a firm to exert bargaining

power over its customers and suppliers. Preemptiveness - the extent to which an IT application provides the firm an early and successful strike in the market.

Synergy - the extent to which an IT application leverages an intrinsic strength of the business through its integration with business goals, strategies, and the environment. This initial form of the CAPITA model encompassed the important and fundamental concepts related to competitive advantage in the literature.

A field survey was used to empirically evaluate the hypothesized CAPITA model. The instrument was initially pilot tested and then mailed to top information systems executives. It gathered data regarding IT applications and their impact on competitive advantage gained by the firm. The measurement properties of CAPITA were first assessed by testing the hypothesized model using confirmatory factor analysis. The model was then iteratively modified to improve its fit. In the first phase, each dimension was modified to meet key reliability and validity criteria until all parameter estimates and overall fit measures were judged to be statistically and substantively satisfactory. In the second phase, the revised full model was tested.

The revised full CAPITA model had 29 measures in seven dimensions. It surpassed the hypothesized model in all fit criteria, and the authors judged it to be tenable from a content and theoretical standpoint. The Threat, Preemptiveness, and Synergy dimensions remained as hypothesized but the Efficiency and Functionality dimensions each split into two separate dimensions. Efficiency consisted of two dimensions: Primary Activity Efficiency (related to primary value chain activities as defined by Porter, 1980) and Support Activity Efficiency (related to support value chain activities). Functionality also consisted of two dimensions: Resource Management Functionality (related to post-acquisition resource support management activities such as maintenance and service) and Resource Acquisition Functionality (related to acquisition support activities such as user ability to order a resource, acquire it, and verify its acceptance). The seven dimension model can form the basis of a multi-dimensional measure or index of competitive advantage. It can be useful to practitioners for elucidating or demonstrating the benefits of an IT application. Another use can be in research to evaluate IT applications.

## **Methodology**

This research-in-progress is using an adapted version of Sethi and King's (1994) instrument to measure the planned and actual impact of a single IT application on competitive advantage. That specific IT application is the organization's use of the World Wide Web.

The adaptation of the instrument requires additional pilot testing with companies whose customers are accessing their Websites. After the pilot, we will send the survey to managers responsible for the Web sites. We plan to send sufficient surveys in order to receive 200 usable responses. We will use confirmatory factor analysis and Cronbach's alpha to test the reliability of the instrument. We will then compute the means for the planned impact factors (i.e., the extent to which subjects expected to achieve each dimension of competitive advantage) and for the actual impact factors (i.e., the extent to which they did achieve each dimension). We will calculate differences between planned and actual values for each factor to identify where organizations do and do not meet their expectations of gaining competitive advantage from the Web. We will also test hypotheses related to the individual planned and actual factors using structural equation modeling.

## **Expected Findings**

These findings will answer two questions. First, how do organizations attempt to gain competitive advantage using the World Wide Web? We expect to identify those of the seven dimensions which organizations seek most from the Web. From a practitioner perspective, an understanding of these dimensions might help Website developers produce more useful sites. Moreover, an individual company might compare its Web goals to the means found in this research; doing so might help it to search for new opportunities for using the Web. From a research perspective, the findings might prompt further investigation to understand why organizations expect the particular factors to help them gain competitive

advantage. The second research question is how well do they succeed in gaining competitive advantage from the Web? From a practitioner perspective, the answer to this question might provide an understanding of where organizations fail to achieve their goals from the Web. It might thus help both these organizations and Web site providers take actions to improve returns from Web investments. From a research perspective, it might prompt further investigation to understand how organizations can increase those returns.

## **References**

(available upon request from authors)