Searching for Competitive Advantage in the Black Box

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This paper deals with the sources of potential competitive advantage. It builds upon previous work by Flamholtz (1995) to develop a model of the determinants of organizational success and failure as well as subsequent empirical studies of the link between the model and financial performance (Flamholtz and Aksehirli, 2000; Flamholtz and Hua, 2002). The paper discusses the extension of the model from a framework for organizational development to a framework or ‘lens’ for building competitive advantage. It also hypothesizes that an organization’s infrastructure (defined in terms of four of the model’s variables) are likely to be the true source of sustainable competitive advantage.

Data originally collected for the study reported in Flamholtz and Aksehirli to test the relation between the model and financial performance was utilized to test hypotheses concerning the model and competitive success and sources of competitive advantage. Some of the data derived from the prior study by Flamholtz and Aksehirli, which has not been previously analyzed or reported, was used to identify empirically the sources of competitive advantage, and, in turn, test the hypothesis about the role of infrastructure as the true source of sustainable competitive advantage.

Two different statistical methods were used to analyze the hypothesized relationship between the variables included in the Pyramid of Organizational Development and competitive success: (1) the Friedman two-way analysis of variance by ranks and (2) regression analysis. SPSS statistical software was used for both analyses. Results of the Friedman test indicate that ROE scores are significantly associated with total Pyramid of Organizational Development scores. At the significance level of 0.005, higher values of total scores are connected with higher ROE values, and lower total scores are linked with lower ROEs [Siegel (1956)].

To address the issue of the Sources of Potential Strategic Advantage we performed an analysis of the data on strategic organizational development scores shown below in Figure 4 to determine which of the six key variables comprising the Pyramid of Organizational Development actually differentiated one firm from another. As hypothesized, we found different frequencies or proportions of the variables comprising the Pyramid of Organizational Development. We also tested the hypothesis that the key sources of competitive advantage are a firm’s infrastructure, rather than its choice of markets and its products, using the Cochran Q Test. The results of this test indicate that the proportions of competitive advantages of each matched pair do differ significantly among the different sources of potential competitive advantages, at a significance level of 0.028. In addition, to test the hypothesis that infrastructure is significantly different from markets and products, we performed a Friedman Two Way Analysis of Variance. This test was significant at 0.014.

The empirical analysis above shows a clear relationship between the Pyramid of Organizational Development framework and competitive advantage. This has several significant implications for practicing managers and researchers.

Keywords: Organizational development, Competitive advantage, Organizational infrastructure, Strategic building blocks, Financial success
Introduction

It is well recognized that ‘competitive advantage is at the heart of a firm’s performance in competitive markets (Porter, 1985). There is a well-developed and valuable literature on strategy and competitive advantage, though much of it is based upon the competitive dynamics of industries and their ultimate evolution from competition in terms of broad factors such as cost leadership, differentiation, focus, and the like. This can be termed a ‘macro’ perspective on strategy and competitive advantage.

A great deal of this literature has treated what goes on within a firm as a ‘black box’ (Jensen, 1998). It has been recognized that ‘firm infrastructure’ can be a powerful source of competitive advantage (Porter, 1985 p. 43), but it is typically viewed in functional or activity terms (i.e., activities such as general management, planning, finance, accounting, marketing, legal, and human resource management).

The current paper deals with how a firm can create and sustain competitive advantage from the strategies it employs to build the ‘black box,’ the business itself, and, in particular its infrastructure. Accordingly, it represents a somewhat different perspective than traditionally used in strategy. This can be termed a ‘micro’ or firm perspective on competitive advantage.

The perspective used is derived from research and practice dealing with the process of building competitively successful organizations. It builds upon previous work by Flamholtz (1995) to develop a model of the determinants of organizational success and failure as well as subsequent empirical studies of the link between the model and financial performance (Flamholtz and Aksehirli, 2000; Flamholtz and Hua, 2002). The model identifies the six key tasks that organizations must perform to be successful at each stage of their growth. These tasks are viewed as ‘strategic building blocks’ of successful organizations. Accordingly, the model has been termed a framework for ‘strategic organizational development,’ because of its potential implications for corporate strategy and competitive advantage as well as for organizational development per se.

The current paper discusses the extension of the model from a framework for organizational development to a framework for building competitive advantage. It proposes a link between the organizational development model and the competitive success of organizations. It discusses how the model’s variables might serve as potential sources of competitive advantage. It also hypothesizes that an organization’s infrastructure (defined in terms of four of the model’s variables) are likely to be the true source of sustainable competitive advantage.

The paper also draws upon an empirical study that initially was designed to assess the relationship between the model and financial performance (Flamholtz and Aksehirli, 2000), specifically, to test the hypothesis of the relation between the model’s variables and competitive success.

The major purpose of the current paper is, however, to test the hypothesis about the role of infrastructure as the true source of sustainable competitive advantage. Accordingly, this paper draws upon some of the data derived from the prior study by Flamholtz and Aksehirli (2000), which has not been previously analyzed or reported, to identify empirically the sources of competitive advantage, and, in turn, test the hypothesis about the role of infrastructure as the true source of competitive advantage.

First we will present the model per se and discuss its role as a model of competitive success. Then we will summarize some empirical evidence of the model’s link to financial performance. Next we will provide some empirical evidence of the model’s ability to function as a framework of organizational success, and, in turn, competitive advantage. Then, we will provide some empirical evidence of the notion of infrastructure as the true source of competitive advantage. Finally, we shall examine some of the implications of the study for strategy.

Searching for Competitive Advantage: The Theoretical Framework

In a previous paper, Flamholtz (1995) proposed a six-factor framework to understand and plan the successful growth of firms at different stages of growth as well as to explain organizational success and failure. The initial premise or hypothesis underlying this framework is that organizations must perform certain tasks to be successful at each stage of their growth.

The six key tasks, or ‘strategic building blocks, which have all been supported by previous research are:

- Identification and definition of a viable market niche (Aldrich, 1979; Brittain and Freeman, 1980; Freeman and Hanham, 1983),
- Development of products or services for the chosen market niche (Burns and Stalker, 1961; Midgley, 1981),
- Acquisition and development of resources required to operate the firm (Pfeffer and Salancik, 1978; Brittain and Freeman, 1980; Caroll and Yangchung, 1986),
- Development of day-to-day operational systems (Starbuck, 1965),
- Development of the management systems necessary for the long-term functioning of the organization (Child & Keiser, 1981; Tushman et al., 1985)
- Development of the organizational culture that management feels necessary to guide the firm...
A second premise or hypothesis is that each of these tasks must be performed in a stepwise fashion in order to build a successful organization. Taken together, they comprise a pyramid of strategic building blocks of organizational success or development, as shown in Figure 1 below.

A third premise, and the one that is most relevant to the current paper, is that these six key tasks are areas for competition among enterprises; that is, organizations compete with each other on six key levels or dimensions: markets, products, resources, operational systems, management systems, and culture management. This, in turn, suggests that each of these key tasks or strategic building blocks of organizational development are potential sources of competitive advantage, as shown in Figure 2 below.

Each of these key ‘tasks’ or strategic building blocks will be discussed in detail below, together with the sense in which they comprise a source of competitive advantage.

Markets: Identification of Market Segment and Niche

The first challenge for a new venture in organizational survival or success is to identify a market need for a marketable service or product. The chances of organizational success are enhanced to the extent that the firm is successful in this step (Flamholtz, 1995).

The challenge is not merely to identify the market but also, if possible, to capture a ‘market niche,’ a relatively protected place that would give the company sustainable competitive advantages (Flamholtz, 1995; Kumar et al., 2000). Failing to define a niche or mistakenly abandoning the historical niche can cause an organization to experience difficulties and even failure. The process of identifying the market involves the development of a strategic market plan to identify
potential customers and their needs and the creation of a competitive strategy (Flamholtz, 1995).

Once this task is achieved, the firm has created its ‘position’ in market space. This, in turn, then comprises a source of potential strategic advantage.

**Products: Development of Products and/or Services**

The second challenge or strategic building block involves the development of products and/or services. This process can also be called ‘productization,’ which refers to the process of analyzing the needs of customers in the target market, designing the product and developing the ability to produce it (Flamholtz and Randle, 2000). For a production firm this stage involves the design and manufacturing phases, whereas for a service firm, this stage involves forming a system for providing services to customers (Flamholtz and Randle, 2000). In this context, it is also important to distinguish between a ‘nominal product’ and an ‘effective’ or ‘real product.’ A nominal product is the good or service provided, and an effective or real product is the full set of utilities perceived or provided to a customer. Furthermore, K-Mart and Wal-Mart sell the same set of nominal products, but the real product provided via different shopping experiences at each store (wide aisles, friendly service) can be quite different.

Success during this stage is highly related to the previous critical task, proper definition of a market niche (Flamholtz, 1995). Unless a firm fully understands the needs of the market, it cannot satisfy those needs in productization.

**Resources: Acquiring and Managing Resources**

Success in identifying a market niche and productization will create increased demand for a firm’s products or services. Consequently, the resources of the firm will be spread very thin (Flamholtz, 1995). The organization will require additional physical, financial and human resources. This is the point at which the entrepreneur/s should start thinking about the long-term vitality of the firm and procure all the necessary resources to survive the pressure of current and future increase in demand (Flamholtz and Randle, 2000).

**Operational Systems: Development of Day-to-Day Systems to Operate Firm**

The fourth critical task is the development of basic day-to-day operational systems, which include accounting, billing, collection, information systems, advertising, personnel recruiting and training, sales, supply chain operations, production, delivery and related systems (Flamholtz, 1995). Entrepreneurial companies tend to quickly outgrow the administrative systems available to operate them. Therefore, it is necessary to develop sufficient operational systems to support the successful growth of an organization. In contrast, large established companies might have developed overly complicated operational systems. In this case, the success of the organization depends on the reengineering of operational systems (Flamholtz, 1995).

**Management Systems: Development of Management Systems**

The fifth step is to develop the management systems, which is essential for the long-term viability of the firm (Flamholtz and Randle, 2000). Management systems include systems for planning, organization, management development and control.

Planning systems involve planning for the overall development of the organization and the development of scheduling and budgeting operations. It includes strategic planning, operational planning and contingency planning (Flamholtz, 1995). The mere existence of planning activities does not indicate that the firm has a planning system. A planning system ensures that planning activities are strategic and ongoing.

Organizational structure involves the ways in which people are organized and activities are coordinated. As was true for planning activities, success depends not on the mere existence of a structure but on the match between the structure and business strategy (Chandler, 1962; Flamholtz, 1995). It involved the correct choice of functional, divisional, matrix, or hybrid organizational forms.

Management Development Systems refers to ‘...the process of planned development of the people needed to run an organization as it grows’ (Flamholtz, 1995, p. 43).

The Control System is the set of processes (budgeting, goal setting) and mechanisms (performance appraisal) that encourages behaviors that would help achieve organizational objectives (Flamholtz, 1995).

**Culture: Developing and Managing Corporate Culture**

Just as people have personalities, organizations have other cultures (Walton, 1986), which are comprised of shared values, beliefs and norms (Flamholtz, 2000). Shared values refer to the importance the organization attaches to the aspects of product quality, customer service, and treatment of employees. Beliefs are the ideas that the people in the organization hold about themselves and the firm. Lastly, the norms are the unwritten rules that guide interactions and behavior (Flamholtz, 1995).
Organizational Infrastructure

The last four of the strategic building blocks (resources, operational systems, management systems, and culture) comprise a firm’s ‘infrastructure.’ In this context, infrastructure is defined as the capabilities (both tangible and intangible resources, and systems) required to support the growth and development of a firm as well as its day-to-day operations.

The Model as a Whole

Taken together, these six tasks or strategic building blocks comprise a hierarchical model of organizational development (Figure 1). Similar hierarchical views are present in the previous literature. For example, Woodward (1985) discussed a similar relation between market niche and product, and structure and culture. In addition, Chandler’s (1962) book, Strategy and Structure, suggests that a firm’s structure follows from its long-term strategy.

It should be noted that the pyramid shape does not imply that the key tasks are carried out simultaneously. However, the relative emphasis on each task or level of the Pyramid will vary according to the organization’s stage of growth (Flamholtz, 1995). The emphasis that should be given to each task differs depending on the size of the firm. Organizations experience developmental problems if their infrastructure is not consistent with their size. The parallel relationship between size and organizational structure leads to an organizational life cycle model that complements the Pyramid of Organizational Development (Flamholtz, 1995).

Implications for Competitive Strategy

What are the model’s potential implications for strategy? The first two levels of the pyramid are markets and products. Although the prevailing paradigm of strategy tends to view these two areas as the principal ‘weapons’ for strategy, in the longer term they are unlikely to be so. If one firm ‘finds’ a market, it will attract competitors, and even with ‘the first mover advantage,’ history is replete with examples of companies that have lost their position to new entrants. Similarly, even though marketing strategy is built around the classic ‘4Ps’ (product, price, promotion, and place), competition will typically neutralize product advantages in a relatively short time. Of course, there are exceptions such as pharmaceutical products with patent protection, but even there is product competition which results in ‘product equivalency.’

Where then are the true sources of sustainable competitive advantage? These can be found where there is less potential for imitation, within the ‘black box’ of the business per se.

A basic premise or hypothesis of the paper is that the top four levels of the pyramid, which form the ‘infrastructure’ of the firm, are less susceptible to imitation (Flamholtz, 1995), and, accordingly, provide the basis for long-term sustainable competitive advantage. Thus, although competition between firms takes place at all levels of the Pyramid, long-term sustainable advantage is primarily found at the top four levels.

Previous Empirical Research

Previous empirical research has been conducted to assess the predictive ability of Pyramid of Organizational Development framework in relation to financial performance. Specifically Flamholtz and Aksehirli (2000) performed an empirical test of the model in relation to financial performance. Using regression analysis and a Friedman Two Way Analysis of Variance, they tested the predictive validity of the six variable model for eight matched pairs of companies (see Figure 3). They found that there is a statistically significant relationship between the hypothesized critical success factors and overall financial success (measured as return on investment).

Flamholtz and Hua (2002) performed an empirical test of the model in a single organization. Using regression analysis, they tested the predictive validity of the six variable model for fifteen divisions of a single company. They found that there is a statistically significant relationship between the hypothesized six critical success factors and overall financial success (measured as ‘EBIT’).

In brief, there is an indication (some empirical evidence) that there is a statistically significant relationship between the hypothesized critical success factors and overall financial success of firms.

Empirical Support for the Model as a Source of Competitive Advantage

Drawing on the framework and empirical research described above, this section will provide an empirical examination of the relation between success in six critical tasks of the Pyramid of Organizational Development and the competitive success of the organizations.

Data originally collected for the study reported in Flamholtz and Aksehirli (2000) to test the relation between the model and financial performance will be utilized to test hypotheses concerning the model and competitive success and sources of competitive advantage, as described below. Some of the data derived from the prior study by Flamholtz and Aksehirli (2000), which has not been previously analyzed or reported, will be used to identify empirically the sources of competitive advantage, and, in turn, test the hypothesis about the role of infrastructure as the true source of sustainable competitive advantage. In addition, some of the data derived from the prior study will be reinterpreted in order to test a hypoth-
thesis about the relationship between successful performance of the six key tasks of strategic organizational development and the competitive success of firms. This is described below.

Research Hypotheses

There are two main hypotheses that follow from this model: (1) one concerns the relationship between successful performance of the six key tasks of strategic organizational development and the competitive success of firms, and (2) the other concerns the notion that the key sources of competitive advantage are a firm’s infrastructure.

The primary hypothesis is that there is a relationship between successful performance of the six key tasks of strategic organizational development and the competitive success of firms. This suggests that those firms which have developed a greater degree of strategic organizational development (in terms of the six key Pyramid dimensions) will achieve greater competitive success.

We formulate the following formal hypothesis to assess this:

H1: The greater the ability of a company to manage the six key tasks, or strategic building blocks, of the Pyramid of Organizational Development framework the greater competitive success of the firm.

A related hypothesis is that the key sources of competitive advantage are a firm’s infrastructure, rather than its choice of markets and its products. Stated differently, this suggests that the real competitive battle among companies takes place at the top of the pyramid of organizational development in terms of organizational infrastructure, rather than at the products and market level.

We formulate the following formal hypothesis to assess this:

H2: The greater the ability of a company to manage the four key tasks of the Pyramid of Organizational Development comprising its ‘infrastructure’ the greater competitive success of the firm.

Overall Design for Testing the Hypotheses

To address these hypotheses we will draw on research reported by Flamholtz and Aksehirli (2000) to study the predictive validity of the model in relation to financial performance.

Research Design. It is not feasible to set up a formal experiment with organizations with controlled manipulation of the experimental variables. Since this was not feasible, we utilized quasi-experimental analysis (Cook and Campbell, 1979). In order to test the hypothesis stated above, we used a paired comparison of a ‘natural experiment.’ Naturally occurring experiments are the occurrences in the environment where the variables of interest change and other conditions remain approximately the same. Sixteen companies from eight industries were selected as matched pairs. The pairs were chosen by the senior author in order to maximize the initial similarity of the firms. Firms within each pair have roughly similar products and/or services and operated at approximately the same time periods. The list of companies selected is shown in Figure 3 above.

Due to the necessity of measuring financial performance, the firms selected were chosen from publicly traded companies. In order to maximize the potential variance in the sample, each pair of companies included one company that was successful and another that was, a priori, believed to be less successful. The rationale was that if there was not sufficient variance between the pairs when there were differences in success, then the hypothesized relationship was unlikely to exist.

Testing Hypothesis 1: This hypothesis is that there is a relationship between successful performance of the six key tasks of strategic organizational development and the competitive success of firms. To test this hypothesis we used financial performance as a surrogate or proxy measure of competitive success. Specifically, we used Return on Equity, a classic measure of financial performance, as the proxy measure of competitive success.

Testing Hypothesis 2: This hypothesis is that the key sources of competitive advantage are a firm’s infrastructure, rather than its choice of markets and its

<table>
<thead>
<tr>
<th>Industry</th>
<th>Firm I</th>
<th>Firm II</th>
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<tbody>
<tr>
<td>IBM Compatible PC</td>
<td>Compaq</td>
<td>AST Research</td>
</tr>
<tr>
<td>Airline</td>
<td>Southwest Airlines</td>
<td>People Express</td>
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<tr>
<td>Sports shoes and Apparel</td>
<td>Nike</td>
<td>L.A. Gear</td>
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<tr>
<td>Discount Retailers</td>
<td>Wal-Mart</td>
<td>K-Mart</td>
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<tr>
<td>Health Care</td>
<td>Pacificare</td>
<td>Maxis care</td>
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<tr>
<td>PC Hardware &amp; Software</td>
<td>Microsoft</td>
<td>Apple Computers</td>
</tr>
<tr>
<td>Software Development(database)</td>
<td>Oracle</td>
<td>Sybase</td>
</tr>
<tr>
<td>Fast Food Retailers</td>
<td>Starbucks</td>
<td>Boston Markets</td>
</tr>
</tbody>
</table>

Figure 3  List of Organizations
products. To test this hypothesis we constructed a distribution of the frequency that each potential source of competitive advantage (markets, products, resources, etc.) was actually an advantage for each firm in our sample. This was done by an analysis of data in Figure 4 below to determine the number of times each competitive factor was evaluated as a (strategic) advantage to one firm or the other in each pair, as explained below.

**Measurement and Operationalization of Variables**

To assess these two hypotheses, three key variables were measured: (1) a primary measure of the degree of ‘strategic organizational development,’ for each of the six key variables comprising the pyramid of organizational development, (2) a measure of ‘competitive advantage,’ between pairs of firms, and (3) a measure of firm success. Each is described, in turn, below.

**Measuring Strategic Organizational Development.** The method used to measure ‘Strategic Organizational Development’ was to assign scores by a binary system. Under this approach, the firm that was more developed on the variable received a score of ‘1’ and the company that was less developed received a score of ‘0’ on that variable. Using this method of paired comparison with a ‘1/0’ scoring system is preferable to trying to use a scaling method (such as a Likert scale) to measure the degree of organizational development, because of the potential difficulties in measuring each variable (i.e., the possibility of measurement error). This method also results in a relatively easy way to replicate measurement in test–retest research.

Drawing upon the information in paired ‘company profiles’ (described below), the authors compared the pairs at each level of the Pyramid of Organizational Development framework. The individual scores (1 or 0) were summed in order to have a total ‘Strategic Organizational Development Score.’ This measured the degree of strategic organizational development, or the company’s success in managing the various levels of the Pyramid of Organizational Development. By this procedure, every company could receive a maximum score of six and a minimum score of zero (from the process of assessing their performance on markets, products, resources, operational and managerial systems and organizational culture).

**Measuring ‘competitive advantage.’** The method used to measure ‘competitive advantage’ was to create an index of differential advantage. This involved calculating the difference between the total ‘Strategic Organizational Development Score’ for each pair of companies. For example (as seen in Figure 4), Wal-Mart has a total ‘Strategic Organizational Development Score’ of ‘6,’ while K-Mart has a total ‘Strategic Organizational Development Score’ of ‘0.’ The difference between these two scores is ‘6,’ and this is the measure of competitive advantage of Wal-Mart versus K-Mart. Measures of competitive advantage for all of the eight pairs of companies is shown in Figure 5.

**Measuring Competitive Success.** The method used to measure Competitive Success involved using ‘Return on Equity’ as a surrogate or proxy for Competitive Success. Return on equity (ROE) is well recognized (Teitelbaum, 1996; Eiseman, 1997) as a good measure for assessing the overall performance of a firm. In this study, ROE was used as a measure of competitive success.

**Data Collection**

This section describes the collection of the data required for these three measurements. Data used in this study draws upon research reported by Flahsoltz and Aksehirli (2000) to study the predictive validity of the model in relation to financial performance, as described below.

**Data on Strategic Organizational Development.** To provide an independent source of information about the sample companies’ ‘degree of organizational development,’ information about these companies was collected from published material. This included articles from academic and professional management journals, and relevant books. For each company, a junior author (for reasons discussed below) prepared a concise summary of the information regarding the key tasks outlined in the Pyramid of Organizational Development, and compiled this into a ‘Company Strategic Organizational Development Profile.’ The summaries of information about the companies were used to compare the two companies in each pair concerning every variable included in the Pyramid of Organizational Development. Scores (1 or 0) were assigned to each variable to each firm based upon our judgement of which had a competitive advantage in development of the specific variable. It should also be noted that to minimize potential measurement bias in the assessment of the development of each company in terms of the pyramid variable, a junior author was solely responsible for the collection and analysis of relevant data as well as assessment of each company’s degree of development. It should be noted that the use of a totally ‘blind coder’ was rejected as not feasible, although this might be an avenue for future research to replicate this study.

**Company Profiles and Evaluation of Pyramid of Organizational Development.** Appendix A includes a sample of the company profiles of three pairs of the firms studied, including comparison of the firms with respect to the elements of the Pyramid of Organizational Development in terms of data collected from independent sources. This will provide the reader with the rationale underlying the assessment of the degree of development of each company in terms of the Pyramid’s variables as well as the basis to assess the face validity of the measures (1 or 0) assigned to indi-
Figure 4 Strategic Organizational Development Scores and Related Competitive Success Scores (Average ROEs) for 16 Companies

<table>
<thead>
<tr>
<th>Company</th>
<th>Market</th>
<th>Products</th>
<th>Resources</th>
<th>Operational Systems</th>
<th>Managerial Systems</th>
<th>Culture</th>
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<tbody>
<tr>
<td>1. Compaq vs. AST</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>2. People vs. Southwest Airlines</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>3. Nike vs. LA Gear</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>4. K-Mart vs. Wal-Mart</td>
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<td>5. Apple vs. Microsoft</td>
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<td>6. Starbucks vs. Boston Market</td>
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<td>7. Oracle vs. Sybase</td>
<td>0</td>
<td>1</td>
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<td>1</td>
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<td>1</td>
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<td>8. Pacific vs. Maxi</td>
<td>0</td>
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<td>1</td>
<td>1</td>
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<td>0</td>
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</table>

Figure 5 Assessing Sources of Potential Strategic Advantage

The individual scores were summed in order to have a total ‘Strategic Organizational Development Score,’ as seen in Figure 4 above. This data was derived from Flamholtz and Aksehirli (2000). However, there was one change in the relative evaluation of strategic organizational development in one pair of companies: Compaq versus AST. Specifically, in the present study AST was assigned a score of 0 (rather than 1 in the prior study) for the ‘resources’ variable. This means that Compaq was assessed to have greater resources than AST. This was done based upon a reinterpretation of the supporting data from the prior study.

Data on Competitive Success. The method used to measure Competitive Success involved using Return on Equity (‘ROE’) as a surrogate or proxy for Competitive Success.

Financial information was gathered from the COMPUSTAT financial database. Average Return on Equity was used as an indicator of financial performance. Net income and Shareholder’s equity from the COMPUSTAT database were used in calculating this ratio. Figure 4 shows the Average ROEs for the companies in our sample.

Data Analysis and Statistical Methods

Hypothesis 1: Relation between Strategic Organizational Development and Competitive Success. Two different statistical methods were used to analyze the hypothesized relationship between the variables included in the Pyramid of Organizational Development and competitive success: (1) the Friedman two-way analysis of variance by ranks and (2) regression analysis. SPSS statistical software was used for both analyses.

The Friedman two-way analysis of variance was
appropriate because the data consisted of two matched samples (Siegel, 1956). The Friedman test determines whether the pairs come from the same set of companies or they differ significantly regarding their scores in the Pyramid of Organizational Development.

Regression analysis was also used to evaluate the relationship between Pyramid of Organizational Development success and competitive success (measured by ROE). To assess the ability of the Pyramid of Organizational Development framework to determine competitive advantage of a firm, total Pyramid of Organizational Development score and Average ROE were used in a regression analysis as independent and dependent variables, respectively.

Both of these tests were originally reported in Flaholtz and Aksehirli (2000), but have been reinterpreted for our research purposes here.

Hypothesis 2: Sources of Potential Strategic Advantage. To address this issue we performed an analysis of the data on strategic organizational development scores shown in Figure 4 to determine which of the six key variables comprising the Pyramid of Organizational Development actually differentiated one firm from another.

This analysis, which was not previously conducted or reported, involved determining whether there are significant differences in the frequency of the six key variables in terms of their comprising a competitive advantage between pairs of firms. For example, in comparing Wal-Mart with K-Mart (see Figure 4), we can see that Wal-Mart has advantages at all of the six key factors of organizational development. Similarly, in comparing Compaq with AST Research we can see that Compaq had competitive advantages in four of the six areas: markets, operational systems, management systems, and culture.

This analysis is shown in Figure 5. Row nine shows the total frequencies that each competitive factor was an advantage to either member of the paired firms in each industry.

As seen in Figure 5, ‘markets’ was an advantage to four of the firms, ‘products’ was an advantage to five of the firms, ‘resources, operational systems, and management systems’ were advantages to eight of the firms, while ‘culture’ was an advantage to six. When a factor is not shown as an advantage it means that both companies in the pair were deemed equal on that factor (i.e. both companies had a score of zero or one on that competitive factor).

Two different statistical methods were used to analyze the hypothesized differences between the variables included in the Pyramid of Organizational Development as potential sources of competitive advantage: (1) The Cochran Q Test and (2) the Friedman two-way analysis of variance by ranks. SPSS statistical software was used for both analyses.

The Cochran Q Test was used to determine whether the frequencies or proportions of competitive advantages of each matched pair differ significantly among the different sources of potential competitive advantages (Siegel, 1956). According to Siegel (1956, p. 161) ‘the Cochran Test is particularly suitable when the data are in a nominal scale or are dichotomized ordinal information’ (emphasis added), as in the present case.

In addition, we also used the Friedman two-way analysis of variance by ranks.

Findings

Hypothesis 1

This hypothesis is that there is a relationship between successful performance of the six key tasks of strategic organizational development and the competitive success of firms. The analysis was done in two steps: (1) the non-parametric Friedman test was used to compare the distributions of total Pyramid of Organizational Development scores and average ROE and (2) regression analysis was used to evaluate the connection between the six key tasks of the Pyramid of Organizational Development and the financial performance of the companies.

Results of the Friedman test indicate that ROE scores are significantly associated with total Pyramid of Organizational Development scores. At the significance level of 0.005, higher values of total scores are connected with higher ROE values and lower total scores are linked with lower ROEs (Siegel, 1956). This is an unusually strong level of association.

In order to quantify the relation between Total Pyramid Score and ROE, Return on Equity values were regressed on Total Pyramid of Organizational Development scores. In this regression analysis, Total Pyramid Score was found to be significant in predicting financial performance at the level of P < 0.01. The regression equation is:

\[
\text{Estimated ROE} = -0.067 + 0.05 \times \text{Total Score}
\]

\[t = -0.940 \ (t = 2.984)\]

where * indicates significance at level 0.01. \(R^2\) for this model was found to be 0.389.

Both the Friedman test and the regression analysis suggest a significant relationship between the success in six critical tasks proposed in the Pyramid of Organizational Development framework and financial performance of the companies. This, in turn, sug-
gests that the six critical tasks of the Pyramid are related to competitive success.

Hypothesis 2

This hypothesis is that the key sources of competitive advantage are a firm’s infrastructure, rather than its choice of markets and its products. The Cochran Q Test was used to determine whether the frequencies or proportions of competitive advantages of each matched pair differ significantly among the different sources of potential competitive advantages (Siegel, 1956).

The Q test indicates that the frequencies or proportions of competitive advantages of each matched pair do differ significantly among the different sources of potential competitive advantages (Q= 12.57, df = 5, and asymp. significant at 0.028).

Conclusions and Implications

The empirical analysis above shows a clear relationship between the Pyramid of Organizational Development pyramid framework and competitive success. This has several significant implications for practicing managers and researchers. It shows that there is a statistically significant relationship between performance of the six key tasks of strategic organizational development and the competitive success of firms. There is also some evidence that, contrary to conventional wisdom, the key sources of competitive advantage are a firm’s infrastructure rather than markets and products.

Implications for Managers

We believe that managers should be using the Pyramid of Organizational Development/competitive strategy framework as the ‘lens’ for planning the competitive strategy and related strategic development of the firm. This means that it can and should be used in strategic planning as a focus for organizational development and for formulating competitive strategy.

Managers can apply the framework as a lens for assessing differential competitive advantage between firms, using a tool or construct we have created: a differential competitive advantage score. For example, the differential competitive advantage of Wal-Mart versus K-Mart (using data from Figure 5) is 6.0, as shown in Figure 6 below. This construct (a differential competitive advantage score) is relatively easy to create and will be user friendly for managers. It will enable them to assess the overall level of competitive advantage vis-a-vis other relevant industry players. The set of all ‘differential competitive advantage scores’ for the eight pairs of companies used in this study (see Figure 3) is shown in Figure 7 below.

Another implication for management is derived from our findings about the sources of competitive advantage. It is true that organizations are competing at all levels of the pyramid. However, because markets can be easily entered and products can be easily copied, the real competition goes on at the top four levels of the pyramid. This phenomenon can be observed in several pairs used in this paper. Perhaps the clearest example is Wal-Mart versus K-Mart. Companies such as Microsoft or Oracle, can have products based upon proprietary technologies. Companies such as Roche or Pharmacia have patents. Unlike those companies, there is no physical product that Wal-Mart can offer that cannot be offered by K-Mart. Accordingly, the difference in sustainable competitive advantages over the long run and, in turn, differences in financial performance between Wal-Mart and K-Mart are ultimately derived from differences at the top of the pyramid. This is counter to the conventional view that companies typically compete in product and markets, and it provides empirical evidence that management actually matters.

Of course, organizations actually do compete in products and markets, and in practical, terms they can and do develop competitive advantages in product and markets; but the premise here is that those are the result of advantages in the infrastructure of the enterprise. Stated differently, competitive advantage in infrastructure creates advantages in products and markets (brand equity, market position, etc.). The bottom line is that infrastructure (rather than being merely ‘overhead’) is a true source of potential competitive advantage.

Implications for Researchers

This research represents the first attempt to apply or extend the Pyramid of Organizational Development framework to competitive strategy. In addition, the empirical results presented provide a preliminary indication of the validity of the hypothesized relationships. These results should be supplemented with further studies. Other possible approaches to assess the same hypothesis are feasible and ought to be investigated.

The paper also opens up other avenues for future research. Specifically, this paper suggests that the sources of competitive success are somewhat different than conventionally believed. It remains for future research to examine this phenomenon in other contexts, not just in North America but throughout the world.2
### Sources of Competitive Advantage

<table>
<thead>
<tr>
<th></th>
<th>Wal-Mart</th>
<th>K-Mart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture and Culture Management</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Management Systems</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Operational Systems</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Resources</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Products</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Markets</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Competitive Advantage Score</strong></td>
<td><strong>6.0</strong></td>
<td><strong>0.0</strong></td>
</tr>
<tr>
<td><strong>Differential Competitive Advantage Score</strong></td>
<td><strong>(Wal-Mart – K-Mart) = 6.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 6** Differential Competitive Advantage: Wal-Mart vs K-Mart

<table>
<thead>
<tr>
<th>Company</th>
<th>DCA Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Compaq vs. Ast</td>
<td>5.0</td>
</tr>
<tr>
<td>2. People vs. Southwest Airlines</td>
<td>5.0</td>
</tr>
<tr>
<td>3. Nike vs. LA Gear</td>
<td>6.0</td>
</tr>
<tr>
<td>4. Kmart vs. Wal-Mart</td>
<td>6.0</td>
</tr>
<tr>
<td>5. Apple vs. Microsoft</td>
<td>4.0</td>
</tr>
<tr>
<td>6. Starbucks vs. Boston Market</td>
<td>5.0</td>
</tr>
<tr>
<td>7. Oracle vs. Sybase</td>
<td>5.0</td>
</tr>
<tr>
<td>8. Pacific vs Maxi</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Figure 7** Summary Differential Competitive Advantage

**Concluding Comment**

This paper discusses the extension of the model from a framework for organizational development to a framework or ‘lens’ for building competitive advantage. It proposes a link between the organizational development model and the competitive success of organizations. It discusses how the model’s variables might serve as potential sources of competitive advantage. It also hypothesizes that an organization’s
infrastructure (defined in terms of four of the model’s variables) are likely to be the true source of sus-
tainable competitive advantage.

The empirical analysis above shows a clear relation-
ship between the Pyramid of Organizational Devel-
opment framework and competitive advantage. This
has several significant implications for practicing
managers and researchers. It suggests that the Pyra-
mid framework can be used as a ‘strategic lens’ for
planning competitive strategy. It also shows that
there is a statistically significant relationship between
different sources of competitive advantage, and that
infrastructure is a major source of competitive advan-
tage.

Although it does not fully resolve all issues in this
area, we believe that the framework and research
presented in this paper provides the foundation for
a different direction in strategy research and practice
that can ultimately be of significance.

Acknowledgements
The authors are grateful for the assistance of Zeynep Aksehirli
in the preparation of this paper.

Appendix A

Sample Company Profiles and Evaluation of
Elements of the Pyramid of Organizational
Development

Comparative Analysis of K-Mart and Wal-Mart

<table>
<thead>
<tr>
<th></th>
<th>K-Mart</th>
<th>Wal-Mart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market definition</td>
<td>0 (neglected the core business and went into specialty retailing, not aware of customer profile)</td>
<td>1 (clear identity in shopper’s mind, niche marketing in small communities)</td>
</tr>
<tr>
<td>Products and services</td>
<td>0 (usually out of stock, aisles are full of empty boxes, bad customer service, diverted cash flow to acquisition of specialty retailers, poor quality products)</td>
<td>1 (employees are eager to please the customers)</td>
</tr>
<tr>
<td>Resources</td>
<td>0 (bad pricing strategies resulting in decreasing profit, rich in real estates)</td>
<td>1 (has its own warehouses, highly developed into infrastructure)</td>
</tr>
<tr>
<td>Operational systems</td>
<td>0 (bad inventory control, long lines, even renewal needs a renewal, opening new stores and neglecting the old ones)</td>
<td>1 (strong information systems, efficient distribution system, sharp buying, very strong information systems, exacting cost controls, highly efficient inventory system)</td>
</tr>
<tr>
<td>Management systems</td>
<td>0 (poor in implementing plans, switching the plans at the halfway of the implementation, poor leadership, trial error management style, lacks a strategy)</td>
<td>1 (flat organization, empowerment, extensive information sharing with all levels of organization, opportunity oriented management)</td>
</tr>
<tr>
<td>Culture</td>
<td>0 (no motivation, clash of culture with new information systems, different cultures at different parts of the firm, little sense of urgency about turnaround plans, spend money on new stores and expand the chain, lack of confidence in the company’s capabilities)</td>
<td>1 (high motivation, bare-bones corporate culture, action and flexibility are highly valued, participative, able to transfer culture to new places, high commitment)</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>
### Comparative Analysis of Nike and LA Gear

<table>
<thead>
<tr>
<th></th>
<th>LA Gear</th>
<th>Nike</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market definition</strong></td>
<td>0 (back and forth between fashion and performance sneakers, inconsistent image)</td>
<td>1 (strong domestic growth, sustained growth with globalization, a strategic mistake: moving to casual shoes, commanding market position)</td>
</tr>
<tr>
<td><strong>Products and services</strong></td>
<td>0 (insufficient spending on R&amp;D, not enough new models)</td>
<td>1 (formed the brand image then diversified, heavy spending on research)</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>0 (aggressive financial tactics, huge labor layoffs)</td>
<td>1 (minimum investment on plant and equipment by outsourcing)</td>
</tr>
<tr>
<td><strong>Operational systems</strong></td>
<td>0 (excess inventory, no control systems to match the rate of growth, unstable distribution lines)</td>
<td>1 (strong relations with retailers, stable inventory and production planning systems, modular system, strong design staff)</td>
</tr>
<tr>
<td><strong>Management systems</strong></td>
<td>0 (mishandling, disagreements about the long-term strategies)</td>
<td>1 (skillful management, able to do self-examination and strategic planning, breaking things up into digestible chunks and dealing with them, collaborative management)</td>
</tr>
<tr>
<td><strong>Culture</strong></td>
<td>0 (high optimism and confidence, lack of focus)</td>
<td>1 (strong culture, high motivation and strong leadership, team-based system, active culture management)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

### Comparative Analysis of People Express and Southwest Airlines

<table>
<thead>
<tr>
<th></th>
<th>People (C)</th>
<th>Southwest (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market definition</strong></td>
<td>1 (strong market niche, aggressive marketing, switching b/w short and long hauls)</td>
<td>1 (flamboyant marketing, consistent in following their niche)</td>
</tr>
<tr>
<td><strong>Products and services</strong></td>
<td>0 (cheap fares, no frills, short route, unreliable schedules and service)</td>
<td>1 (short haul, no frills, cheap air travel)</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>0 (flexible human resources ‘just grow, don’t worry about profits’)</td>
<td>1 (financially strong, finance is less dependent on the sector’s health, highly productive human resources)</td>
</tr>
<tr>
<td><strong>Operational systems</strong></td>
<td>0 (low labour cost, unstructured, lacks specialists, doesn’t pay attention to all critical factors)</td>
<td>1 (conservative financial controls, one type of aircraft to decrease the maintenance and training cost, fast turn around at the gate, leanly staffed, institutionalized O.S. and controls)</td>
</tr>
<tr>
<td><strong>Management systems</strong></td>
<td>0 (don’t hire outsiders for high ranks, promotion to ranks beyond capacity, communal management style)</td>
<td>1 (high management turnover, hands-on style of Kelleher, properly empowered employees, ready successor for senior positions, mentoring system)</td>
</tr>
<tr>
<td><strong>Culture</strong></td>
<td>0 (highly democratic X lacks autonomy, commited, workaholic)</td>
<td>1 (humorous family, very good relations with employees, inclusion of customers to processes, caring for other people, actively managing the culture due to largeness)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>
Notes
2. These results have been confirmed in another unpublished study in a very different type of company: a financial services firm.

References

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