
SPECIAL REPORT

BUSINESS VALUE OF INFORMATION TECHNOLOGY

EIGHT DIMENSIONS OF BUSINESS VALUE

**Center for Research on Information Technology
and Organizations (CRITO)**

Graduate School of Management
University of California, Irvine

and

CSC Index Research and Advisory Services
Cambridge, Massachusetts

December, 1995

Kenneth L. Kraemer
Vijay Gurbaxani
Graduate School of Management

Debora Dunkle
Center for Research on Information
Technology and Organizations (CRITO)
University of California, Irvine

Nicholas Vitalari
Vice President
CSCIndex Research
and Advisory Services

BUSINESS VALUE OF INFORMATION TECHNOLOGY

SPECIAL REPORT 1

EIGHT DIMENSIONS OF BUSINESS VALUE

OVERVIEW

The integration of information technology (I/T) with business performance is of major importance. How is I/T being used, and how well is it being used is the focus of this special report. The method used here is one of several different approaches to the study of the business value of I/T.

Executives within corporations are surveyed not only in terms of the assessment of the impact of I/T on business performance, but also the strategic objectives of the firm independent of I/T.

Following the work of Treacy and Wiersema (1993)¹, we have developed the framework below to organize the strategies pursued by corporations (Exhibit 1). According to Treacy and Wiersema, successful companies place major emphasis on one of three strategies -- operational excellence, customer intimacy, or product leadership -- rather than equal emphasis across the three foci. Our previous work on dimensions of business values (1994)² indicated that the dimensions we had identified were operational indicators of the three major business strategies identified by Treacy and Wiersema (Exhibit 1).

Exhibit 1. Framework of Business Strategy and Focus

Major Focus	Identified Dimensions
<i>Operational excellence</i> , i.e., emphasize efficiency and reliability; end-to-end supply chain optimization	<ul style="list-style-type: none">• Organizational efficiency & effectiveness• Supplier relations• Economies of production
<i>Customer intimacy</i> , i.e., emphasize flexibility and responsiveness; customer service, market-place management	<ul style="list-style-type: none">• Customer relations• Marketing support
<i>Product leadership</i> , i.e., emphasize creativity; product development, time-to-market and market communications	<ul style="list-style-type: none">• Product and service enhancement• Competitive dynamics• Business innovation

METHODS

¹ Treacy & Wiersema, "Customer Intimacy and Other Value Discipline," Harvard Business Review, 1993

² Kraemer, Gurbaxani, Mooney, Vitalari & Dunkle, "Business Value of Information Technology In Corporations," CRITO working paper, 1994.

Data for a total of 53 companies (23 manufacturers and 30 services) is being used to construct the baseline rates to compare one company or several companies. The primary breakdown between the 53 companies is in terms of industry: manufacturing firms vs. services firms.

In our previous analysis of the dimensions of business value we identified 10 dimensions. Further analyses with the larger sample of corporations has indicated that the 10 dimensions are really eight dimensions. “Efficiency” and “effectiveness”, which are distinguishable analytically, are not empirically. “Interorganizational coordination” crosses over the dimensions, affecting operational, customer and product strategies. Thus, we have combined “efficiency” and “effectiveness” into a single dimension and have dropped the “interorganizational coordination” dimension.

The 8 dimensions and the items used in measuring the dimension are listed in Exhibit 2. The Coefficient of Reliability (C.R.) is provided for each dimension. This measure, which varies from a 0 to 1.0, denotes how well the items form a unidimensional scale. All eight dimensions are reliable, unidimensional scales.

Exhibit 2. Eight Dimensions of Business Values

OPERATIONAL EXCELLENCE

Organizational Efficiency and Effectiveness (C.R. = .94)

- Improve the process and content of decision making
- Improve internal communication within your corporation
- Provide better coordination among functional areas in your corporation
- Improve strategic planning
- Facilitate implementing new processes that constitute a better way of doing business
- Increase your corporation's profit margins
- Increase your corporation's market shares
- Reduce your corporation's labor and related expenses
- Reduce your corporation's selling and general administrative expenses

Supplier Relations (C.R. = .94)

- Help your corporation to gain leverage over its suppliers
- Reduce transaction costs by making it easier for suppliers to handle orders
- Help to reduce variance in supplier lead times
- Enhance the ability to monitor the quality of products/services received from suppliers

Economies of Production (C.R. = .90)

- Reduce the cost of designing new products/ services
- Improve levels of production or throughput
- Reduce the production cost of tailoring products/services to market segments
- Improve the productivity of labor through automation
- Improve the utilization of machinery

CUSTOMER INTIMACY

Customer Relations (C.R. = .83)

- Enable your corporation to provide administrative support to customers (for example, product ordering, inventory management, billing, etc.)
- Provide on-line access of your corporation's products/services database to customers
- Position customers to rely increasingly on your corporations' electronic support systems (e.g., order entry terminals, order tracking)

Market Support (C.R. = .95)

- Provide support for identifying market trends through powerful analytical tools

- Assist your corporation in serving new market segments
- Enhance the accuracy of sales forecasts
- Track market response to discounts
- Track market response to promotional or introductory pricing
- Facilitate targeted response to competitors' pricing strategies

PRODUCT LEADERSHIP

Product & Service Enhancement (C.R. = .91)

- Provide your corporation with unique opportunities for product and service innovation
- Reduce the cycle time for development of new products/services
- Reduce variance and uncertainty in product/service quality
- Reduce variance and uncertainty in product/service delivery times
- Enhance the value of products/services by becoming a part of these products/services

New Business Innovation (C. R. = .93)

- Make new areas of business technologically feasible for your corporation
- Make new areas of business economically feasible for your corporation.

Competitive Dynamics (C.R. = .94)

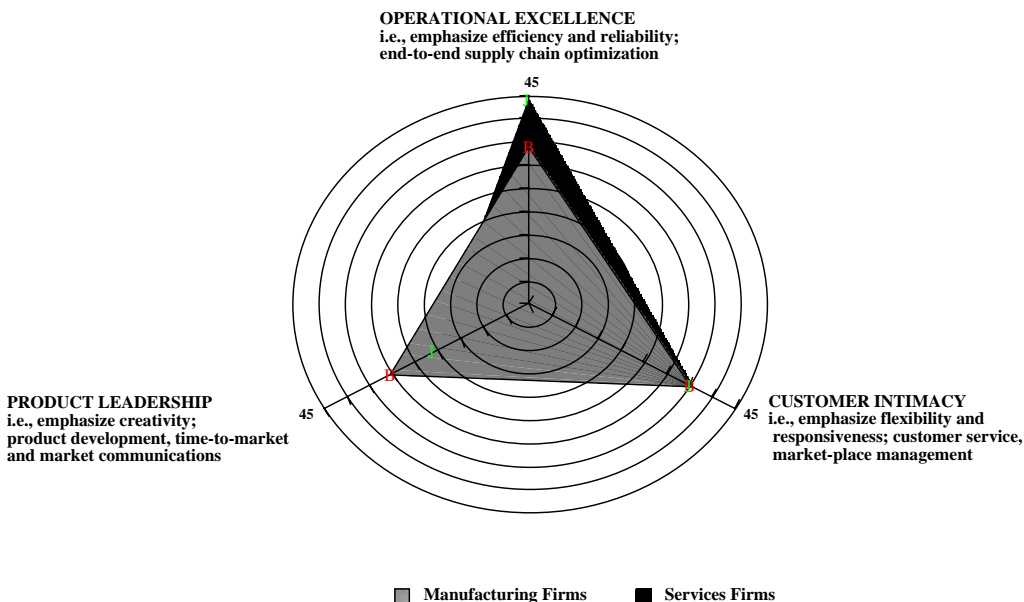
- Help to delay competitor entry into your corporation's product/service areas because of the investments required in information technology
- Support your corporation in offering a product/service that your competitors cannot immediately match.
- Help your corporation to provide substitutes for your competitors' products/services
- Make it easier to capture distribution channels and thereby increase the cost and difficulty for competitors to enter a new or existing market segment

FINDINGS

Primary Strategy of Firms. Exhibit 3 displays graphically and numerically, the distribution of all manufacturing and services firms in terms of the average weighting of the three major strategies. The major findings are:

- *Services firms place significantly more emphasis on operational excellence, i.e., efficiency and effectiveness, than do manufacturing firms.*
- *Product leadership, including creative development, is valued more as a strategy for manufacturing firms than for services firms.*
- Differences in emphasis are less associated with sub-sectors of manufacturing, such as computers and electronics, lumber, than for services firms such as utilities, insurance, banking. The equal distribution of weights across the three major foci masks variations among manufacturing firms but not among specific sectors of manufacturing.

Exhibit 3. Firm Strategy: Manufacturing vs. Services Firms



Intercorporate Measurement Project
CRITO (UC Irvine) and CSC Research & Advisory Services

	Manufacturing	Services
Operational excellence , i.e., emphasize efficiency and reliability, end-to-end supply chain optimization	34%	44%
Customer intimacy , i.e., emphasize flexibility and responsiveness; customer services, market-place management	36%	36%
Product leadership , i.e., emphasize creativity, product development, time-to-market and market communications	30%	20%

Rank and Performance of Business Value Dimensions. Exhibit 4 displays the average rank and the average performance score for each of the eight dimensions. “Rank” refers to the executive rank of the strategic importance to the firm of the business value dimension. “Rating” refers to the executive assessment of information technology’s contribution to overall performance of the business value dimension. The major findings are:

- *Overall performance* of the dimensions of business value indicate that the effect of information technology is considered to be *average*.
- *Services*, on the whole, tend to *assess the effect of information technology on the dimensions of business value higher than manufacturing firms*.
- Area where most progress has occurred in both manufacturing and services is that of “operational excellence”, especially ‘organizational efficiency and effectiveness’ and ‘economies of production’.
- In *ranking* of the dimensions in terms of importance to corporate strategy, both manufacturing and services firms rank ‘customer relations’ as most important. ‘Supplier relations’ is ranked as of least importance.

Exhibit 4. Assessment of Performance and Rankings of Business Value Dimensions

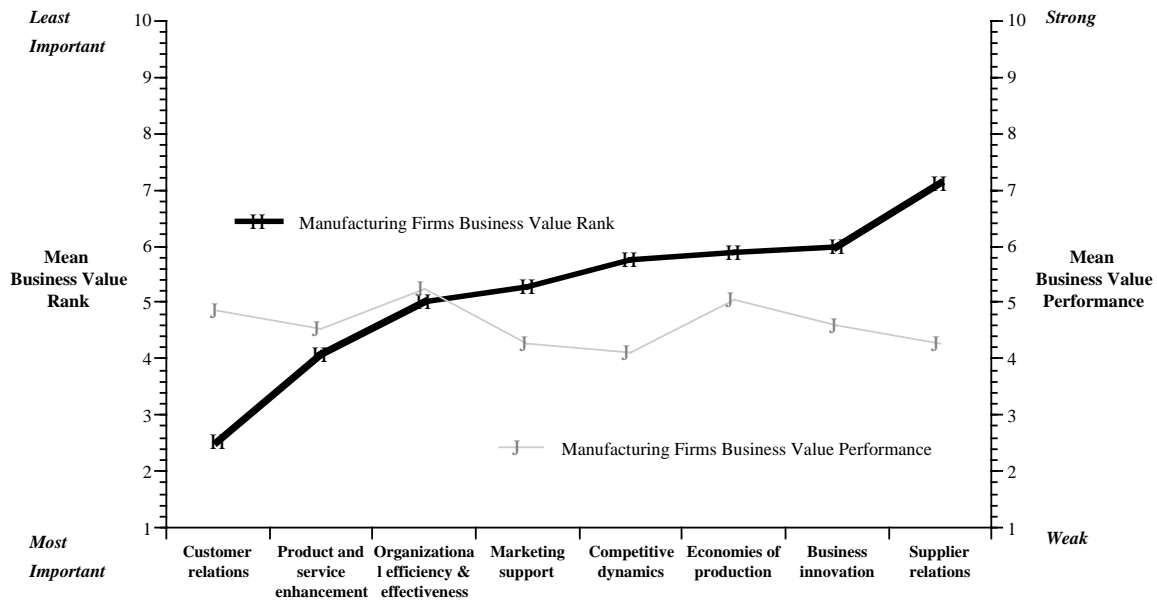
Performance	Manu- facturing	Services	Ranking	Manu- facturing	Services
Operational excellence			Operational excellence		
• Organizational efficiency & effectiveness	5.23	5.94	• Organizational efficiency & effectiveness	5.02	4.42
• Supplier relations	4.27	4.58	• Supplier relations	7.12	7.80
• Economies of production	5.04	5.48	• Economies of production	5.88	5.74
Customer intimacy			Customer intimacy		
• Customer relations	4.84	5.36	• Customer relations	2.51	2.91
• Market support	4.26	4.47	• Market support	5.26	5.81
Product leadership			Product leadership		
• Product and service enhancement	4.54	5.36	• Product and service enhancement	4.06	4.95
• Competitive dynamics	4.12	4.98	• Competitive dynamics	5.74	5.33
• New business innovation	4.61	5.67	• New business innovation	5.99	6.05

Exhibit 5 displays the average rating of executives (on a 1 - 10 scale) on each business value dimension compared with the ranking of the importance of these dimensions to corporate strategy.

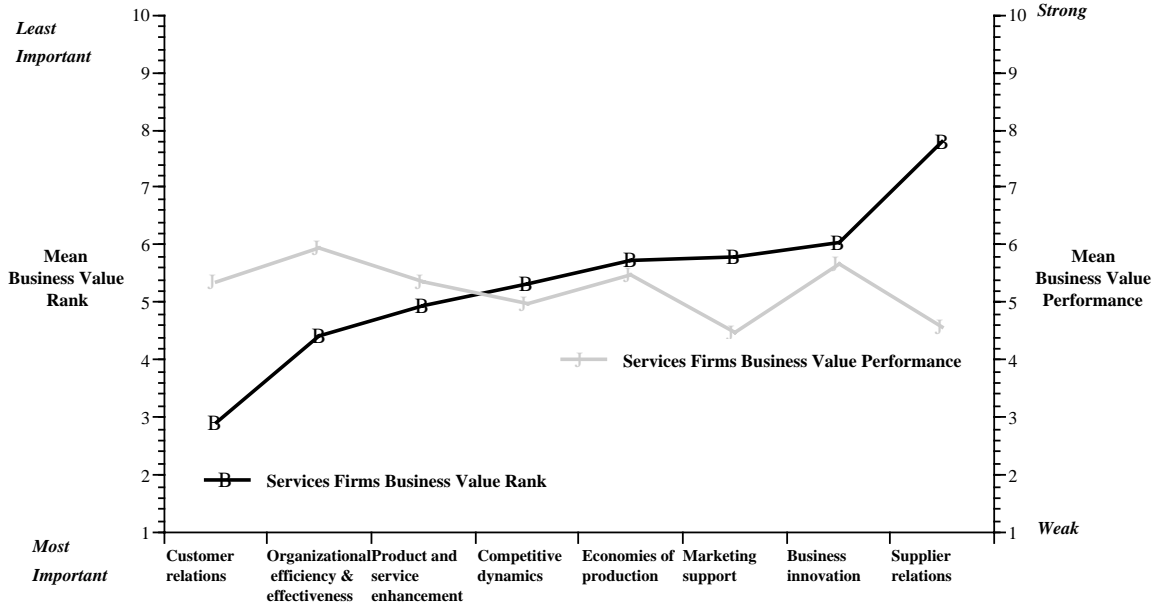
- Executives in both manufacturing and services rank use of information technology for ‘customer relations’ the highest of all dimensions. Yet, their rating of the current performance of information technology on customer relations is no greater than other dimensions. This shows that *more emphasis needs to be placed on the use of information technology on enhancing customers relations.*

Exhibit 5. Comparison of Rank and Performance of Dimensions of Business Value

Manufacturing Firms



Service Firms



**CSC Index Research and
Advisory Services**

A Company of Computer Sciences Corporation

Headquarters:

Five Cambridge Center
Cambridge, MA 02142
617.492.1500

**Center for Research on Information
Technology and Organizations (CRITO)**

University of California, Irvine
Suite 320, Berkeley Place North
Irvine, CA 92717
714.824.5246
KKraemer@uci.edu