Defining and Measuring Information Productivity

Including 2002 Productivity Ranking Of 1,319 International Firms

by

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Governance of Information Management Principles & Concepts 2000

Assessment of Productivity, Technology and Knowledge Capital - 2000

The Digital Economy and Information Technology 2001

The Economics of Knowledge Capital: Analysis of European Firms - 2001

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Executive Summary

In their work the corporate Chief Information Officers (CIOs) are continually confronted with disagreements about the scope as well as the effectiveness of their work. Although many of such arguments are phrased as technological, organizational, governance, security and accountability matters they ultimately resolve into questions of economics. The application of information economics, especially as revealed in the form of corporate budgeting, has now become one of the principal means for defining the practice of corporate information management.

The report ranks corporations based on the Information Productivity (IP) index, a metric that I derived to measure the value added to a corporation's profitability by information-centered tasks. In effect, the IPI recognizes the added value of information management.

Most common approaches to evaluating corporate productivity - such as ROA (Return on Assets), ROE (Return on Shareholders Equity) or ROI (Return on Shareholder Investment) – are not valid for evaluating information investments.

For one thing, capital is no longer the most important economic input for a modern corporation. It is now readily available for a competitive price. Capital also need not be owned any more; leasing, outsourcing and subcontracting offer a wide range of options to acquire capital.

The most important assets of a corporation are people. The management of information needed to support those people now greatly exceeds the costs of capital. If you consider a corporation's sales, general administrative expenses to be the "cost of transactions, for getting products or services to customers" then those expenses exceeded the costs of capital in the U.S. in 2002 by a factor of more than three to one, according to published financial statements. Focus is placed on "transaction cost analysis" that has so far escaped attention from researchers because "information technology" has tended to be treated as synonymous with "information management". Transaction cost analysis offers empirically verifiable answers to many of the questions that corporate executives are demanding when information professionals ask for money.

Information productivity analysis looks at how effectively corporations manage information. In effect, it identifies management value-added. This metric allows managers to identify situations in which information systems will exert their greatest leverage and automating only those business processes that are directly linked to improvements in profits.

I define Information Value-Added as the measure of economic output (in essence, profits minus the cost of shareholder capital recorded on standard accounting statements). I define information management as an approximate measure of economic input.

Information Value-Added (IVA) is a better measure of the economic contribution of corporate information management than accounting profits. It is what's left over after you subtract costs like land, cost of goods, compensation for shareholder capital, taxes and costs of information management from net profits after taxes. What's left is the economic value added by the effective use of information.

The IPI is output divided by input where: output is Information Value-Added and input is the economic cost of information resources as defined by transaction costs. In essence, it is profits minus cost of ownership of the assets of the organization.

To create this calculation, I use the Compustat database of publicly reported financial information. Transaction costs are derived from the sales, general & administrative expense line in corporate filings. These are the costs of generating and consuming data.

The cost of capital varies greatly by company and time period. The Information Productivity Index uses cost figures that are updated quarterly by means of the Capital Asset Pricing Model to generate timely values of Information Productivity for each firm. The Capital Asset Pricing Model is a generally accepted analytic method for calculating the cost of risk-free shareholder capital (e.g. Treasury bonds) adjusted for the costs of making investments in a particular firm.

The most frequently quoted indicators for assessing corporate productivity rely primarily on capital asset ratios, such as Return-on-Assets (ROA), Return-on-Investment (ROI) or Return-on-Equity (ROE). Such metrics are not adequate since capital has ceased to be the most important and scarcest input for a firm. Capital can be now treated just as another commodity that can be obtained at a competitive price. Information management has now overtaken capital both in importance as well as in magnitude. Information, not capital makes the decisive difference in a firm's economic performance.

Paul A. Strassmann

January 24, 2004

Why Information Productivity?

The Need for Information Productivity Metrics

Corporations rarely report about productivity in their annual reports, even though productivity is frequently touted as one of the firm's objectives. Part of the reason is that conventional accounting is more concerned with the interests of the holders of debt than with the concerns of those who would like to understand how the company could grow and prosper. The holders of debt like to know a great deal about the ratios of current assets to current liabilities, debt coverage and book value. All of these measures represent a banker's view of credit-worthiness in case of failure and subsequent liquidation of assets.[1] In contrast, the purpose of productivity measurement is to judge whether a firm is succeeding in the creation of new wealth.

Rare attempts to report on productivity, such as the Forbes annual ranking of corporations, measure it in terms of revenue per employee. Leading information-age firms, such as IBM, for many years reported to shareholders and to financial analysts revenue per employee as an indicator that its productivity was increasing even though it was accumulating huge under-utilized plant capacity while losing market share.

The most frequently used revenue per employee ratio is not only inconclusive but also misleading for making productivity comparisons. For instance, in a mature industry — food processing — the sales per employee for comparable six firms are practically identical:[2]

[1] This view has been also called "carcass value accounting."
[2] FY 2002 results. Standard and Poor's Research Insight Database, July, 2003

Primary SIC	Company Name	Revenues- $Millions	Employees - 000s	Return on Equity -%	Stockholders' Equity- $Millions	Net Income - $Millions	Revenues/ Employee
2024	YOCREAM INTERNATIONAL	$19	0.1	11	$8	$1	$353,436
2040	SPIGADORO INC	$162	0.5	-189	$10	$(19)	$343,881
2040	DOANE PET CARE CO	$887	2.7	6	$136	$15	$327,792
2080	COCA-COLA CO	$19,564	56	34	$11,800	$3,050	$349,357
2084	CONSTELLATION BRANDS	$2,732	7.7	17	$1,175	$203	$355,679
2085	ALLIED DOMECQ PLC	$4,172	12.1	56	$1,093	$607	$344,451

Figure 1 – For Similar Revenues/Employee Performance Differs

Although the revenue/employee indicator would suggest comparable performance, by any other measure (such as Return on Equity or Net Income) the results delivered by employees are different. The highest-ranking firm in terms of return-on-equity (Allied Domecq, with an ROE of 56%) has a 245% higher ROE than the lowest-ranking firm.

The companies also differ in terms of the net assets employed. For instance, the net assets (shareholder equity for Coca Cola) per employee are 233% greater than net assets per employee for Allied Domecq. These firms differ in how many assets they deploy per employee, how their compensation varies and the extent to which they pursue different policies with regard to purchasing packaging materials and transportation services from suppliers. To compare the effectiveness of any of the six firms with roughly equal revenues per employee requires productivity metrics that take into consideration all of the variables which influence the ability of these firms to create shareholder wealth.

Illustrative Example

Take the case of a paper firm that employs 400 people to produce boxes. It also requires 200 employees in executive, managerial, professional and sales occupations to manage the production, distribution and selling of its products.

An advanced computer system is installed. The company now requires only 300 workers for production and only 180 information-processing employees in information-handling jobs. Profits have increased modestly, but administrative expenses are up to pay for the new computer system. Inventories have been reduced, but assets and debt are higher than before. Meanwhile, the increased responsiveness to customers allows the firm to retain its traditional premium prices for boxes, though a small decline in revenues indicates rising competitive problems.

Do the increased revenues per employee prove that corporate productivity has increased? Does the reduced inventory-to-sales ratio confirm that information has been successfully traded for assets? Does the increased overhead ratio defined in terms of head counts give a contrary sign that information workers are now less productive? Does the increased variety of goods and services prove that productivity has improved even if it does not show up in any economic results?

None of these single-ratio indicators can prove much. Together they may offer contradictory findings. To measure corporate productivity requires a composite measure that reflects the interactions of the resources that are put to use in a modern organization. Unfortunately, most of the existing composite measures of corporate productivity are unsatisfactory.

Capital Measures Are Irrelevant for Benchmarking Information Technology

It is the principal thesis of this book that the current approach to evaluating the productivity of firms in terms of ROA (Return on Assets), ROE (Return on Shareholders Equity) or ROI (Return on Shareholder Investment) for evaluating I.T. investments is flawed, obsolete and potentially misleading for the following reasons:

1. Capital is no longer the most important economic input for a modern industrial corporation to function.

2. The availability of capital from investors has ceased to be the critical resource by virtue of its scarcity. It is now readily available, for a competitive price. The global financial markets make it possible to re-deploy a trillion dollars worth of capital at a moment's notice.

3. Capital has become a commodity and is readily available for a price that is commensurate with risk. Capital need not be owned any more — leasing, outsourcing and subcontracting offer a wide range of options to acquire capital through purchases or rentals.

4. The most important assets of a corporation are the people who sustain it and the relationships they develop both internally and externally.

5. The critical resource of the modern corporation is the management of information, which now exceeds the costs of capital ownership by a large multiplier as shown in the following table:[3]

$ Billions - 2002	Cost of Transactions	Cost of Capital	Transaction/Capital Costs
13,672 Corporations	$5,401	$1,640	329%

Figure 2 – Information Transactions Vastly Exceed Capital in Business

Competent information management teams are not easily available and are not easily replaced by other means, such as mergers and acquisitions. Furthermore, the expenditures for management have been found to be completely unrelated to results.

It is the principal thesis of this book that the capital-based approach to evaluating the productivity of firms is fundamentally flawed, obsolete and potentially misleading for the following reasons:

- Capital is no longer the most important economic input for a modern industrial corporation to function.
- The availability of capital from investors has ceased to be the critical resource by virtue of its scarcity. It is now readily available, for a competitive price. The global financial markets make it possible to re-deploy a trillion dollars worth of capital at a moment's notice.
- Capital has become a commodity and is readily available for a price that is commensurate with risk. Capital need not be owned any more — leasing, outsourcing and subcontracting offer a wide range of options to acquire capital through purchases or rentals.
- The most important assets of a corporation are the people who sustain it and the relationships they develop both internally and externally.

[3] The cost of transactions is the sum of Sales, General & Administrative Costs from 2002 Compustat database. The cost of capital is the sum of Shareholder Equity multiplied by the Capital Asset Pricing Model median value of 8.3%.

The critical resource of the modern corporation is the effective management of information, which now exceeds the costs of capital ownership by a large multiplier. Competent information management teams are not easily available and are not easily replaced by other means, such as mergers and acquisitions. Furthermore, the current expenditures for information management are unrelated to results.

The large multiplier of Transaction Costs over the Costs of Capital demonstrates why attention to the former has potentially greater leverage on economic performance than the overwhelming attention devoted to rationing of capital resources, as is the prevailing corporate practice.

The typical U.S. industrial corporation has ceased to be a capital-intensive enterprise over fifty years ago. Its performance cannot be judged by the returns the corporation realizes on its invested capital (as reflected in the ROI, ROA or ROE ratios). With capital cost inputs constituting a significantly smaller input than information, what matters from now on is the productivity of information management.

Ours is not an economy where capital budgeting for investing in tangible assets is the key to success with the exception of some sectors (such as in natural resources and real estate). Rather it is an economy in which information has ceased to be an expense and is increasingly taking on the attributes of long-term capital investments.

Today we can observe a change that in every respect is as dramatic as anything is that took place when the industrial era was born. During the transition from an order based on land-ownership to economies based on capital-ownership, many old institutions remained in place that masked the transformation. The asset-based measures of productivity are similar relics. They make it difficult to observe how the underlying economics of business is changing. Therefore, as the first step towards increased understanding of the productivity of the information resources, we must accept a change in the way productivity is defined and calculated.

The Importance of Multifactor Evaluations

Before one can consider a high sales or high profits per employee ratio as an indication of high productivity, one must also consider the cost of capital, the occupations of employees, purchases and taxes as an input. True increases in productivity are the result of an effective combination of many factors of production, including land, labor, capital and information. Taking any one factor in isolation as an indicator of productivity will be always misleading. Regrettably, such an approach to productivity reporting is still widely used in ranking the performance of most corporations.

Government statistical agencies also use such simplified methods for judging productivity gains, such as calculating productivity on the basis of hours worked by the employees or GDP per employee. These ratios largely depend on reasonably accurate reporting from the manufacturing sector, with admittedly unreliable data from non-manufacturing firms, from the public sector as well as from most services sectors. Such reporting, based mostly on data from the industrial sector, is becoming increasingly irrelevant as can be seen from Figure 2. This shows a steadily diminishing share of US economic activity from the manufacturing sector:[4]

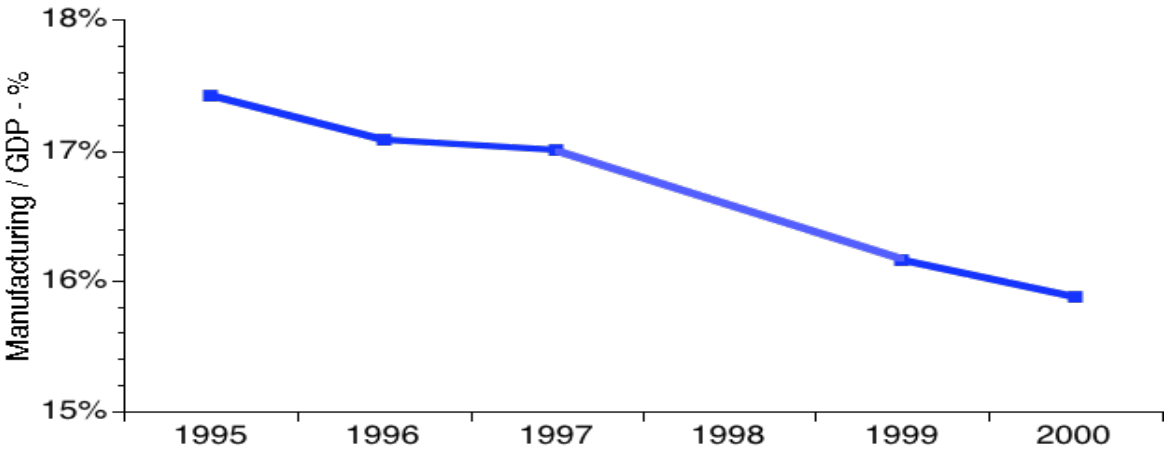

Figure 3 - Declining Importance of the US Manufacturing Firms

[4] Statistical Abstract of the United States, 2002 Edition, Table 632

It is our purpose to overcome the problems caused by an examination of isolated ratios. The solution is to concentrate on a measure of productivity that addresses most important information resource of the modern industrial corporation: the costs of transactions defined as the expenses incurred in marketing, selling, administering, delivering, supporting and otherwise facilitating the transfer of good of services from production to purchase by a customer.

The Importance of Measuring Productivity

The chairman of the Federal Reserve, Wall Street bankers and assorted chief business executives explained the enormous gains in the 1990s stock market as the consequence of rising investments in information technologies that were to deliver sustainable superior profits from steadily rising productivity gains. Accordingly, the build-up of computer applications would enable companies to offset increased payrolls with more efficient processes so that incomes could rise without fueling inflation, while keeping stock market valuations rising indefinitely.

The optimistic forecasts about sustainable productivity growth were based almost exclusively on the government's macroeconomic data about productivity that turned out to be misleading. Had attention been paid to microeconomic data about declining corporate information productivity many of the excesses that have led to a sharp curtailment of economic growth could have been alleviated and made less damaging.[5]

[5] For Strassmann testimony on productivity measurement to the full membership of the Federal Reserve Board see http://www.strassmann.com/talks/one-talk.php?talk=2

Relevance of Productivity

The stakes in debates how to measure productivity of the information workforce, now accounting for 60% of total employment and an estimated 71% of wages, are enormous.[6] The performance of the stock market, the prospects of achieving a balanced budget and the ability to finance increasing government expenditures, all depend on the expectation of steadily rising productivity gains. Meanwhile, the presumption that information technologies improve productivity gives legitimacy to proposals to invest more money on computers. For instance, much of the current thrust to transfer business processes to network-based commerce is based on the presumption that this will offer corporations sustainable new opportunities to boost their productivity and profitability.

Without productivity assessment and productivity monitoring it is unlikely that enormous investments in Internet-based commerce will deliver the expected results, even though Internet transactions potentially offer lower costs for order processing, billing and supply-chain management. Though Internet-based transactions can eliminate many of the existing transaction processing steps, it does not necessarily follow that the Internet's impact will be to increase everybody's total transaction costs after the expenses for expediters, lawyers, transportation and coordination are included.

[6] Statistical Abstract of the United States, 2002 Edition, Table 588

The principal beneficiaries of Internet will be the consumers who will, for the first time in the history of the market economy, have the capability to evaluate available purchase options as well as the low transaction costs to shop for competitively priced goods and services. Global commercial rivalry will yield across the board reductions in corporate profitability as everyone shops for bargains. The established enclaves of imperfect competition, that have so far nourished legions of brokers, wholesalers, middlemen, coordinators, expediters, fixers and black-market operators will be largely disassembled except where protected by government or criminal fiat. Though huge administrative, sales and marketing costs will be purged from the marketplace, the aggregate economic-value added of the corporate producers will decline as profits are squeezed to the lowest levels that are sustainable by the costs of capital. Conventional measures of productivity, such as output per man-hour, could rise to astronomical levels as most of the labor is removed from production processes. This will make traditional productivity indicators increasingly irrelevant.

Therefore, the prevailing opinions of the productivity-through-information or productivity-through-Internet enthusiasts cannot be supported either by the hopeful pronouncements by government officials or by the selective analysis of the anecdotal narratives by business magazines. Only measures that can be explicitly related to corporate financial performance can settle the arguments whether a firm is either losing or gaining in productivity growth. Reliance on actual corporate financial results and soundly conceived financial plans, rather than on futuristic projections, has the added advantage of diverting speculations from unverifiable conjectures to what will become a reality for which management may be held accountable.

Purpose of Information Productivity Analyses

The purpose of information productivity analysis is to shift attention from information technology itself to the effectiveness of the executives who manage it. The key to obtaining business value from computers lies in linking the uses of the technology to business plans. This connection must be explicit by showing how it overcomes existing business problems and how it contributes to future gains. In isolation, computers are just pieces of metal, plastic and glass.

We have to evaluate the contributions of information technologies in terms of their effects on increasing the ratio of management value-added to management costs, which is how we define Information Productivity. If information productivity increases as a result of the deployment of information technologies, what will indicate whether one's computers are producing a business payoff? Focusing on information productivity rather than on information technology will lead to the following improved practices:

• Correctly diagnose conditions that will improve information productivity before making an attempt to re-systemize, reengineer or automate.

• Make management more productive before adding electronic means, by first finding what impairs their business performance.

• Automate only those business processes that are directly linked to measurable improvements in profits.

We propose here a measure of corporate productivity overcomes many of the limitations of capital-based measures. It does so by defining the Information Value-Added as the measure of economic output and the costs of information management, as an approximate measure of economic input.[7] This measure should be a supplemental indicator for assessing the planning, budgeting proposals as well as for evaluating operating results.

[7] The Information Value-Added is computationally similar to what economists call "economic profit" or what a consulting firm defines as Economic Value-Added.

Measuring Information Effectiveness

It is only a matter of time before corporate leadership will shift attention to information management as a resource of greater economic leverage than any other input. In terms of its value the total costs of information will certainly warrant at least the same concentrated attention as is presently bestowed on capital costs. The need to answer the following questions will direct such efforts:

- Is information technology improving the productivity of corporate information resources?
- How does one track gains from investments resulting from changes in management processes and increased employee training?
- What new measures of effectiveness are needed to equip operating management with indicators to guide their decisions investments in training, innovation, market development and business transformation?
- Which indicators support motivation to make the right choices and hence, that could be used for incentive compensation purposes?

Defining Terms

Productivity is defined as the ratio:

$$\frac{Output}{Input}$$

Where Output is the economic value of information resources and Input is the economic cost of information resources.

To come up with valuations of information productivity we will use the published financial data as the best available source.[8]

Where:

$$Output = Information\ Value\text{-}Added$$

[8] Standard & Poor's Research Insight databases COMPUSTAT and GLOBAL DATA. Our analytic database is updated monthly.

And

Input = Transaction Costs

The ratio of the Information Value-Added / Transaction Costs then defines **Information Productivity®**[9] index which is a remarkably useful ratio for ranking and benchmarking comparisons of corporate performance.

Determining Input

Controversies about the valuation of information inputs are the principal reason why productivity reporting related to information management is not popular. Financial analysts will allege that it is difficult to calculate information productivity because there are no precedents for clearly separating "information" from "production." Accountants prefer to dispense with that question by attaching most of the information management costs as an overhead multiplier to direct expenses. The typical overhead burden rates, sometimes exceeding 400% in factory operations, are very often much larger than the direct costs, thus making accounting for information as an overhead expense inappropriate for making decisions.[10]

The computation of information productivity depends on getting the costs of information approximately right. My definition of information costs is very broad. It includes all costs of managing, coordinating, training, communicating, planning, accounting, marketing and research. Economists apply the term "transaction costs" to those categories. We will adopt this term as most descriptive way to deal with a diversified set of cost elements. Unless an activity is identified as a direct expense associated with delivering to a paying customer a product or service it will be classified as a transaction expense.

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[9] Information Productivity® has been a United States Trademark #1,959,644 of Strassmann, Inc. since 1996. As Information Productivity™ it dates back to 1987.

[10] Allocating overhead to the cost of goods eliminates the visibility of such expenses. One of the greatest opportunities for improving profits is to examine the total costs of information transactions in the "value-chain" as goods are processed through many layers of successive manufacturing firms. It is safe to note that the techniques used in the valuation of inputs will generally understate the costs of information transactions in all cases where such costs are allocated to the costs of goods as a way of reducing the vulnerability of overhead expenses to budget cuts.

Activity-based costing methods are particularly useful in separating cost elements that are directly related to the production of customer value from those that are engaged in support. This method employs a disciplined and standardized approach to cost analysis. In this approach analysts fill out forms that reveal all the costs according to a prescribed method for separating the direct costs of operations from the supporting costs.

In most cases, especially when conducting exploratory or benchmarking studies, management does not need to engage in elaborate studies for coming up with insights about information productivity. For this purpose we use only independently certified public data to come up with estimates of transaction costs.

Identifying Transaction Costs

Industrial corporations include in their financial statements an item known as Sales, General & Administrative Cost (SG&A) which is also inclusive of R&D spending in most public financial statements. It represents the costs of coordinating, controlling, guiding, promoting, motivating, training and managing employees, customers and suppliers, while making and delivering the goods. The S.G.&A with the R&D expense largely accounts for a firm's overhead expenses. It also reflects the costs devoted to the generation and consumption of all data.[11]

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[11] Sales, General and Administrative Expense is defined as all commercial expenses of operation (such as, expenses not directly related to product production) incurred in the regular course of business pertaining to the securing of operating income. This item includes the following expenses when broken out separately. However, if a company allocates any of these expenses to cost of goods sold, Standard & Poor's will not include them in Selling, General, and Administrative Expenses:

1. Advertising expense, including publicity and market development for insurance companies
2. Amortization of research and development costs (including software costs)
3. Bad debt expense (provision for doubtful accounts)
4. Commissions
5. Directors' fees and remuneration
6. Engineering expense
7. Foreign currency adjustments when included by the company
8. Freight-out expense
9. Indirect costs when a separate cost of goods sold figure is given
10. Lease expense
11. Marketing expense, including advertising expense for brokers/dealers
12. Operating expenses when a separate cost of goods sold figure is given and there is no selling, general, and administrative expenses, staff expense other than agents' commissions for real estate companies
13. Parent company charges for administrative services
14. Pension, retirement, profit sharing, provision of bonus and stock options, employee insurance, and other employee benefit expenses (for non-manufacturing companies)
15. Research and development expenses (unless included in cost of goods sold by the company)

Transaction Cost Indicators

To be of operational use in the corporate context information economics must be concerned primarily with the demand side how information goods and information services are consumed by organizations in order to create greater economic profits. Therefore, the primary objective for information economics is to measure and evaluate the effectiveness and efficiency of information workers whose primary tasks is to organize, coordinate, manage, teach, promote and otherwise communicate about the products and services produced by their enterprises. The analysis and the assessment of the efficiency of supplying the technological means in support of information workers are only of secondary concern. One can assert categorically that when it comes to information work only people and not machines can be productive.

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16. Software expense
17. Strike expense
18. Extractive industries' lease rentals or expense, exploration expense, research and development expense, and geological and geophysical expenses

This item includes the related expenses of sales from companies with software development operations. This item also includes dry-hole expenses for those companies using the successful-efforts method of accounting for oil assets. However, when dry hole expense is combined with another item properly classified as depreciation (such as, abandonments and dry holes), Standard & Poor's will determine whether abandonment or dry holes constitutes the more significant figure and it will be placed in either Depreciation or included in the calculation for Selling, General, and Administrative Expenses. This item excludes depreciation allocated to Selling, General, and Administrative Expenses (included in Depreciation) and thus understates the total cost by excluding capital charges for most information technologies.

The current generations of corporate executives have received tutoring in economics or in financial analysis from textbooks that omitted discussions how deal with information assets.[12] When one examines the writings of the current chairman of the Council of Economic Advisors one would be hard pressed to find the topic of information analysis addressed at all.[13] So far, the economists' research on investment decision-making or the financial executives' studies have not resulted in a formal discipline that could be used by corporate staffs in tackling decisions how and where to invest in information projects.[14] The most promising lines of inquiry were pursued by an examination how IT technologies could improve the capacity of firms to coordinate business activities.[15] Though the importance of "coordination" was also noted in numerous other publications none of it resulted in a prescriptive approach how to determine the payoffs from such efforts.

The breakthrough in the orientation to viewing the firm as a self-contained agent to examining it as institution characterized by its externally related transaction costs occurred when the Nobel Prizes in Economics were awarded to Ronald H. Coase in 1991 and to Douglass C. North in 1997.

The principal contribution by Coase was to formulate a theory of transaction costs.[16] This theory is primarily concerned with the effectiveness of intra-organizational information management and how that interacts with what economists call a firm's competitors. Until recently, little attention was paid to Coase's work because economists overlooked how the internal structure of firms influenced a firm's externalities, such as prices, market share, brand management, the management of the firm's supply value-chain or the capacity to establish monopoly dominance.

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[12] Samuelson, P.A., "Economics," McGraw-Hill, New York, 1948.
[13] Mankiw, N.G., "Principles of Microeconomics," Harcourt College Publishers, Ft. Worth, Tx., 2001.
[14] Strassmann, P.A., "A Growing Bubble," Computerworld, April 9, 2001.
[15] Malone,T.W., Yates,J. and Benjamin, R. I., "The Logic of Electronic Markets," Harvard Business Review, Vol. 67, 3, 1989, p.166.
[16] Coase, R.H., "The Nature of the Firm," Economica, Vol. 4, pp. 386-405, 1937.

In his Nobel Prize acceptance address, Coase explained why economists were not interested in the internal arrangements within organizations but only in what happens on the marketplace.[17] Coase said "What happens in between the purchase of the factors of production and the sale of the goods that are produced by these factors is largely ignored…it is undeniable that microeconomics is largely a study of the determination of prices and output, indeed this part of economics is often called price theory."

The origins of transaction cost economics can be found in Coase's seminal paper on the theory of the firm. He explains the success of firms was due to their capacity to become effective in managing the high costs of doing business and successfully coordinating complex interactions between suppliers, producers and customers. North emphasized the importance of institutional innovations that lowered transaction costs by increasing the mobility of capital; by lowering information costs; by spreading risks in commerce; and in improved enforcement of contracts.

Coase studied why organizations are formed, what guides their growth and what leads to their demise. He observed that firms would expand the scope of their operations until their internal costs of coordination would reach diminishing returns. When that happens an external source of supply would have the capacity to perform the identical work at a lower cost. This formulation is now recognized as Coase's Law: *The cost of organizing an extra transaction within the firm becomes equal to the costs of carrying out the same transaction on the open market.* This view re-defines what until now was called by information managers as the "costs of information", the "costs of management" or the costs of "coordination, command & control" and places it into a much broader context that is acceptable to economists. Coase's views were initially not accepted by academic economists. The innovative approach to "transaction cost" studies now offers a new perspective on policy matters that previously escaped analysis and is attracting rising attention by researchers. The significance of "transaction cost analysis" to information economics has so far escaped attention from researchers in the field of information sciences. It is one of the purposes of this paper to surface its significance in the corporate context.

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[17] Coase, R.H., "The Institutional Structure of Production, Lecture to the memory of Alfred Nobel," World Scientific Publishing Co., Singapore 1991.

Information Value-Added

Information Value-Added™ (IVA) is a better measure of the economic contribution of corporate information management than accounting profits.[18] In judging the performance of corporate information management one must consider that only thirty-nine percent of U.S. industrial corporations deliver a positive economic value-added whereas sixty-six percent of these corporations report positive accounting profits.[19]

	Number of Firms	Economic Value-Added - $B
Firms with Positive EVA	1,039	$117
Firms with Negative EVA	1,642	$-4,535

Figure 4 – Most U.S. Firms Deliver Negative Economic Value-Added

The material differences between accounting reports and economic performance are the principal reason why we had to develop a methodology the separates the economic contributions of capital from the contributions of management. Only in rare cases do the published financial statements adjust the reported accounting profits for the shareholder's contributions of capital to the corporation.[20]

[18] Information Value-Added is a Trademark of Strassmann, Inc.

[19] Taub, Stephen, Which companies created the most wealth for shareholders last year?, CFO Magazine, July 2003, based on evaluations by the consulting firm Stern, Stewart, owners of the EVA® Trademark. The difference between the Strassmann IVA and the Stern, Stewart EVA is in how profits and capital are accounted for. EVA offers a conservative evaluation of financial reports, discounting many FASB entries and focusing primarily on relationships with stock market valuations. IVA accepts FASB profit definitions (prior to adjustments) as well as the nominal values of shareholder equity, as reported in the published financial statements.

[20] A number of European firms follow this practice.

Valuations, such as EVA and IVA that subtract from accounting profits the full costs of capital, are necessary for coming up with an assessment of the economic contributions of information. Without measures that filter out the contributions of capital there is no valid way of assessing a firm's information productivity.

Calculating Information Value-Added

Information Value-Added is the residual (e.g. surplus value) after subtracting all economic costs (land, cost of goods, compensation for shareholder capital, taxes and costs of information management) from profits after taxes. What is left is the surplus available for further investment.[21]

EVA and IVA do not equal accounting profits after taxes. The typical financial statements do not reflect the fact that shareholders have investments tied up in the firm. Shareholders should receive a return on their original capital (plus any excess earning retained in the corporate treasury) that remains under management control, such as retained earnings, reserves and allowances. In its most sophisticated form the calculation of EVA calls for adjustments to accounting entries such as write-offs, good will, and research expenses. The most comprehensive description of how to calculate EVA is by G. B. Stewart.[22] The EVA valuations of Fortune 1,000 companies are available from Stern Stewart Management Services.[23]

Contrary to claims by a number of consulting firms, the term "Economic Value-Added" is neither original, proprietary nor precedent breaking. Economists have used this term for over two hundred years. U.S. corporations have used this concept since the 1950's, such as in the case of General Electric Corporation where it was called "residual value." GE operating divisions had to reduce their operating profit by an interest charge for their share of invested corporate capital.

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[21] Taxes are classified here as an involuntary overhead expense, in contrast to information management costs that are a discretionary overhead expense. From a budgetary standpoint taxes and allocations of corporate overhead costs have many similar characteristics – they are often levied by political fiat and without directly demonstrable benefits.

[22] They deserve credit for popularizing EVA concepts, especially by getting their annual rankings published by Fortune magazine and by profuse advertising in leading magazines read by corporate executives. The book by Stewart, G.B., *The Quest for Value*, Harper Business, 1991 is still the best reference source about the intricacies and uses of EVA calculations.

[23] The Stern Stewart Performance 1000 Database. Published annually.

The Strategic Planning Institute, an outgrowth of GE, adopted this measure in calculating the profit impact of marketing strategies (PIMS) in the 1970's.[24] I adopted this approach in pursuing a seven-year research program about management productivity as a method for evaluating the business value of computers.[25] The "Management Value-Added" calculations used in my 1985 work turned out to be a good approximation of EVA.[26]

In this book Information Value-Added is calculated as follows:[27]

IVA™ = Profit – Cost of Ownership of Capital

Where:

Profit = Accounting profit after taxes and before preferred dividends but prior to special charges and adjustments.[28]

Cost of Ownership of Capital = Cost of Capital * Capital

Where:

Cost of Capital = Expected rate of return as determined by the capital asset pricing model (CAPAPM)[29].

Capital = Shareholder equity[30].

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[24] Robert D. Buzzell and Bradley T. Gale, *The PIMS Principles*, The Free Press, 1987

[25] I used extensively the term "economic profit" as the proxy for "management value-added" throughout *The Business Value of Computers*, The Information Economics Press, 1990

[26] Paul A. Strassmann, *Information Payoff*, *The Transformation of Work in the Electronic Age*, The Free Press, 1985

[27] This is "basic EVA" as described in Ehrbar, A., *EVA-The Real Key to Creating Wealth*, Wiley & Sons, 1998.

[28] This item represents the income of a company after all expenses, including special items, income taxes, and minority interest - but before provisions for common and/or preferred dividends. This item does not reflect discontinued operations (appearing below taxes) or extraordinary items.
This item includes (when reported below taxes):

1. Amortization of intangibles
2. Equity in earnings of unconsolidated subsidiaries
3. Gain or loss on the sale of securities when they are a regular part of a company's operations
4. Shipping companies' operating differential subsidies (current and prior years)

This item, for banks, includes net after-tax and after-minority interest profit or loss on securities sold or redeemed.

[29] CAPAPM is a method of determining the expected rate of return for an asset at a given level of risk. The Cost of Capital is based on: Risk Free Rate + Beta (Market Risk Premium), where:
Risk Free Rate = 3 Month Treasury Bill Rate (for the US) and LIBOR (for all other countries).
Market Risk Premium = Difference between Expected Return on the Market and the Risk Free Rate.

Calculating the Capital Asset Pricing Model, With Risk Premium

When calculating the expected shareholder return from investing in a corporation one of the most difficult choices is the interest rate to be used as the cost of capital. There are many different views how to make such a choice. Each approach reflects a point of view that ultimately becomes reflected in opinions whether a particular corporation's shares are over-valued or under-valued.[31] The following shareholders' cost of capital valuation models are most frequently applied:

The Treasury Bond Model: The "fair value" of shareholders' cost of capital is the current yield of a 10-year Treasury bond.[32]

The Capital Asset Pricing Model Without Risk Premium: This model does not recognize a shareholder's risk premium. The "fair value" is the return on long term Treasury Bonds or, and appropriate after tax expected return whichever is higher.[33]

The Capital Asset Pricing Model With Risk Premium: The "fair value" is the current rate of a Treasury Bill plus the "Beta" value of stock market volatility multiplied by the difference between the risk-adjusted returns from the stock market minus the "risk free" rate of return on Treasury Bills.[34]

In calculating the cost of capital we have tried to apply each of the above interest valuation schema. We found them inconsistent with what corporations reported as their costs of debt. Individual corporations paid interest charges that could be explained only as a reflection of their particular banking relationships and credit-worthiness rather than by any of the above three models.

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[30] Shareholder Equity includes 1. Capital surplus; 2. Common stock; 3. Nonredeemable preferred stock; 4. Redeemable preferred stock; 5. Retained earnings; 6. Treasury Stock; 7. Set-aside reserves that cannot be explained by liabilities.

[31] Weber, J., and Laderman, J.M., The Market: Too High? Too Low?, *Business Week*, April 5, 1999

[32] At the time (March 1999) the 10-year Treasury bond interest rate was 5.62%.

[33] B.Lev and S.L.Mintz, Seeing is Believing, *CFO Journal*, February 1999

[34] The current rate on Treasury Bills is 4.45%. The difference between the stock market average returns and the Treasury bill interest is also called the market risk premium. At present such risk premium is estimated at about 7%. Since 1926 large company stocks have been producing average returns of 11% whereas the long-term Treasury bonds have returned only 5.2%. (See J.K.Glassman and K.A.Hassett, Stock Prices Are Still Far Too Low, *The Wall Street Journal*, March 17, 1999). For a detailed discussion on applying this model see Brigham, E.F. and Houston, J.F., Fundamentals of Financial Management, The Dryden Press, 8th Edition, 1998, p.176

From the standpoint of financial and accounting rigor only the Capital Asset Pricing Model, with Risk Premium, could be applied consistently across our entire international sample of over 14,000 corporations.

The calculation of the Capital Asset Pricing Model Without Risk Premium involves the following data:

- Risk-free rate - 3 month Treasury notes;
- Risk-free rate - LIBOR
- Beta – the sensitivity of a company's stock price as a measure of risk;
- Expected Return to the Market

Risk Free Rate

The 3-month Treasury notes are constant maturity interest rates provided by the Federal Reserve Bank and the Bank of America in San Francisco.

LIBOR is the London Interbank Offering Rate. It is an interest percentage quoted as the London Interbank Offering Rate for two months.

Both rates are sensitive to changes in money supply as well as inflationary or deflationary expectations as shown in the recent changes in this fundamental indicator of the price of capital:

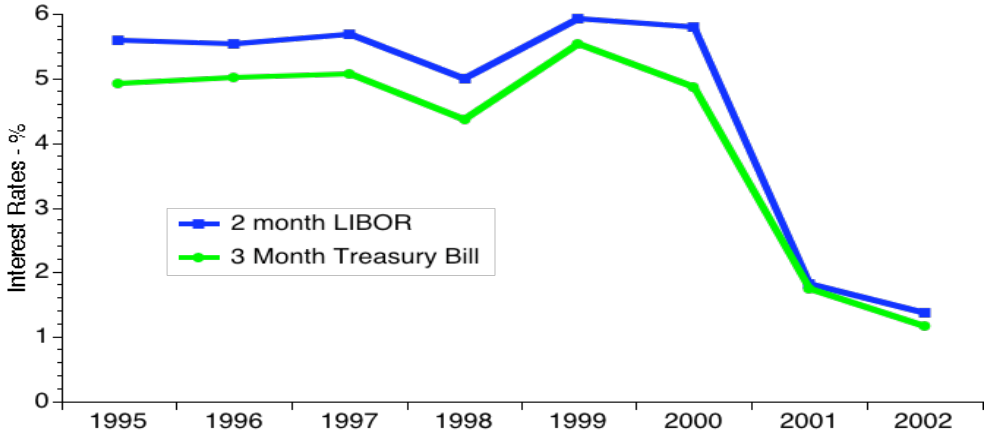

Figure 5 – The Risk-Free Cost of Capital Shows Remarkable Reductions

The remarkable decrease in the risk-free cost of capital since year 2000 will tend to improve the valuation of Information Value-Added for all firms. Theoretically this suggests that CIO ought to have an easier job of delivering improved information productivity gains.

Beta – A Measure of Risk

The monthly fundamental Beta is a measurement of the sensitivity of a company's stock price to the overall fluctuation in the Standard & Poor's 500 (S&P 500) Index Price for U.S Companies, the S&P/TSX Composite Index (formerly TSE 300 Index) Price for Canadian Companies or the fluctuations in the prices quoted for shares at their respective foreign stock exchanges. For example, a beta of 1.5 indicates that a company's stock price tends to rise (or fall) 1.5%, with a 1% rise (or fall) in the index price.

In the Capital Asset Pricing Model the value of Beta is used as an indicator of capital risk to shareholders. The following shows that the values of Beta are widely distributed:

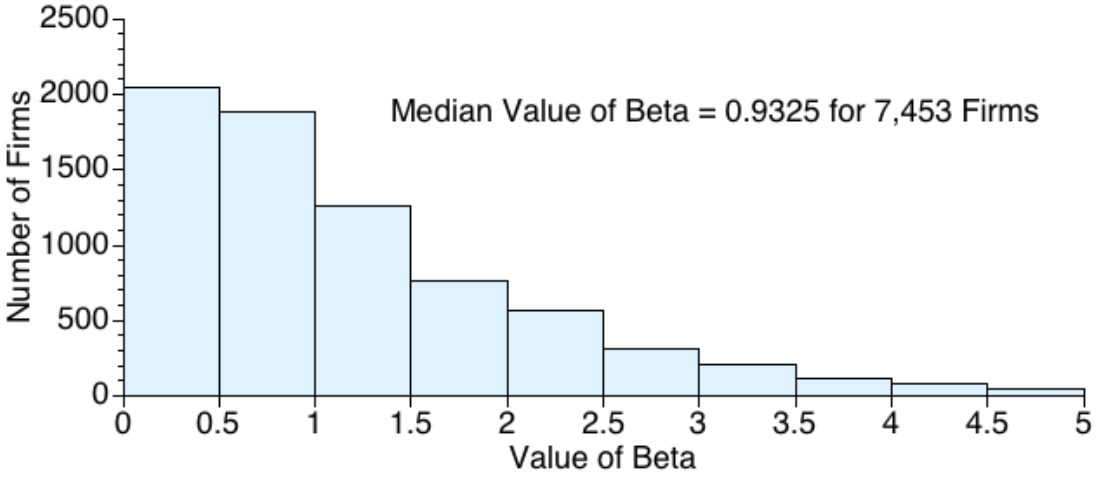

Figure 6 – The Distribution of Beta – A Measure of Rising Capital Risk

Beta is calculated for a 5-year (60-month) time period, ending in the current month. If less history is available, Beta will be calculated for as few as 24 months. Month end closing prices (including dividends) are used in the calculation.

Expected Return to Market

This reflects an annualized rate of total return to a shareholder over a 10 year time period, including price appreciation in the stock valuation plus reinvestment of dividends and the compounding effects of dividends paid on reinvested cash proceeds from stock ownership.

The expected returns are reasonably stable, but change rapidly with fluctuation in interest rates and shareholder sentiment.

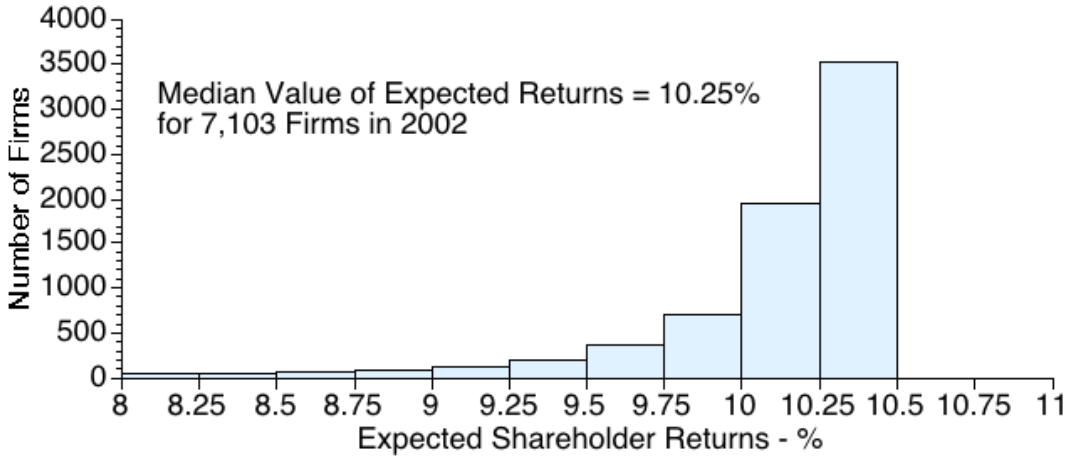

Figure 7 – The Distribution of Expected Shareholder Returns

As can be seen from the above bar graph, the expected returns are clustered in a limited range, with most of the firms showing expected returns at 10.25% in 2002.

Capital Asset Pricing Interest Rate

The cost of capital, as calculated by the capital pricing model, yields interest rates that vary monthly is unique for each firm. The ValueIT software is updated quarterly with the Capital Asset Pricing Model to generate timely values of Information Productivity.

The variability of the cost of capital can be observed from the following table:

Sector Code	Number of Firms	Economic Sector Description	2001 Cost of Capital - %	2002 Cost of Capital - %
1000	535	Materials	10.65	7.95
2000	1,564	Consumer Discretionary	11.86	9.43
3000	362	Consumer Staples	7.39	5.07
3500	1,051	Health Care	9.36	8.24
4000	389	Energy	10.5	7.88
5000	1,465	Financials	9.61	7.01
6000	1,188	Industrials	10.9	8.33
8000	1,865	Information Technology	21.46	16.91
8600	302	Telecommunication Services	17.93	14.22
9000	305	Utilities	6.3	5.54

Figure 8 – Median Costs of Capital for Diverse Economic Sectors

Calculating Information Productivity

Calculating Information Value-Added

The accounting definitions included in GAAP are a mind-boggling collection of rules that favor interpretations that tend to reflect the tangible liquidation value of a firm. GAAP avoids accounting interpretations that may reflect what a firm may be worth as an ongoing concern in the market. GAAP rules are particularly allergic to accounting for anything that may resemble the valuation of Knowledge Capital®.[35]

According to GAAP rules, the assets as well as liabilities have been reported in a most conservative manner to satisfy the lenders' need to know if they can recover outstanding loan balances in case of bankruptcy.[36] To compensate for the liquidation bias of GAAP a number of consulting firms have developed what they claim to be proprietary adjustments for some or all of the following accounting entries:[37]

Research and Development expenses that represent future products and processes are capitalized, but not expensed in the current year.

Software expenses for programs and databases that can be expected to have a long life are capitalized and written off over the useful life and not expensed. As software costs rise to become a major component of information management costs the GAAP practice of writing off software as current cost is the chief culprit in making the prevailing practice of squandering computer resources acceptable simply because it becomes untraceable.[38]

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[35] Strassmann, Inc. owns the Registered Trademark for Knowledge Capital® and how to calculate it.

[36] GAAP rules have been jokingly referred to as an undertakers' accounting method. The accountant's approach to valuation of net assets has been also called the "carcass" valuation technique – the worth the remaining assets would fetch on the market after a firm's demise.

[37] The most noteworthy of these is the article by Dr. Sidney Schoeffler, *The Purpose of Full-Value Economic Statements*, http://www.mantis-boston.com/FVESintro.htm. March 1998.

[38] This matter has been largely neglected because it is in the interest of everyone -- but the shareholders -- to keep increasing funds flowing into newer and larger computer projects. This practice is treated in considerable detail in Strassmann, P.A., *The Squandered Computer*.

Good-will write-offs call for depreciation of the difference between the accounting valuation and the acquisition costs of another company. That diminishes both reported earnings as well as assets on the balance sheet. A number of consultants reverse these charges in the belief that shareholders should be measuring the long-term economic value of mergers and acquisitions.

Changes in Depreciation Charges would account for company-owned assets as leased equipment. This would make replacements with improved models more attractive.

Restructuring charges have been the source of the worst GAAP-sanctioned distortions in the reported profitability of corporations. Business magazines report weekly about firms that have written off tens of billions of dollars from the shareholder equity as "restructuring" costs. This practice made it possible to keep up the appearance of high reported operating profits thus justifying bonuses for executives.[39]

Adjustments for actually paid taxes are necessary because of the large difference between calculated taxes and taxes actually paid out. The presence of this inconsistency usually can be observed by a large entry on the balance sheet that shows up as "deferred taxes." In fact, this is shareholder capital because these taxes will never be paid out, but will be deferred from year to year.

Additional adjustments are often made for transforming reported accounting profits into any of the many proprietary versions of economic profit. The difference between GAAP profits and any other version of economic profits receives much attention whenever a corporation chooses to adopt any such adjustments to calculate executive compensation incentives.[40]

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[39] Even the venerable cereal company Kellogg, Inc. has taken "one time" restructuring charges four years in a row to "streamline operations." The total charged to earnings was equivalent to one quarter of Kellogg's net income. See New York Times, December 27, 1998, BU8.

[40] A common practice followed by US industrial corporations.

The proprietary calculations of economic profits are usually held as private and confidential information. The IVA-based evaluations in this book calculate the Information Value-Added primarily for the purpose of productivity benchmarking. As a rule we calculate IVA as a two-year moving average to smooth out the effects of one-time accounting adjustments. The primary benefit of this approach is that it diminishes the impact of immediate write-offs and of restructuring charges that are a frequent phenomenon on the current U.S. industrial scene.

IVA Data

Sixty four percent of U.S. firms delivered negative IVA during 2001 and 2002 in a period that offered one of the lowest costs of capital in history and thus made the achievement of favorable IVA easier.

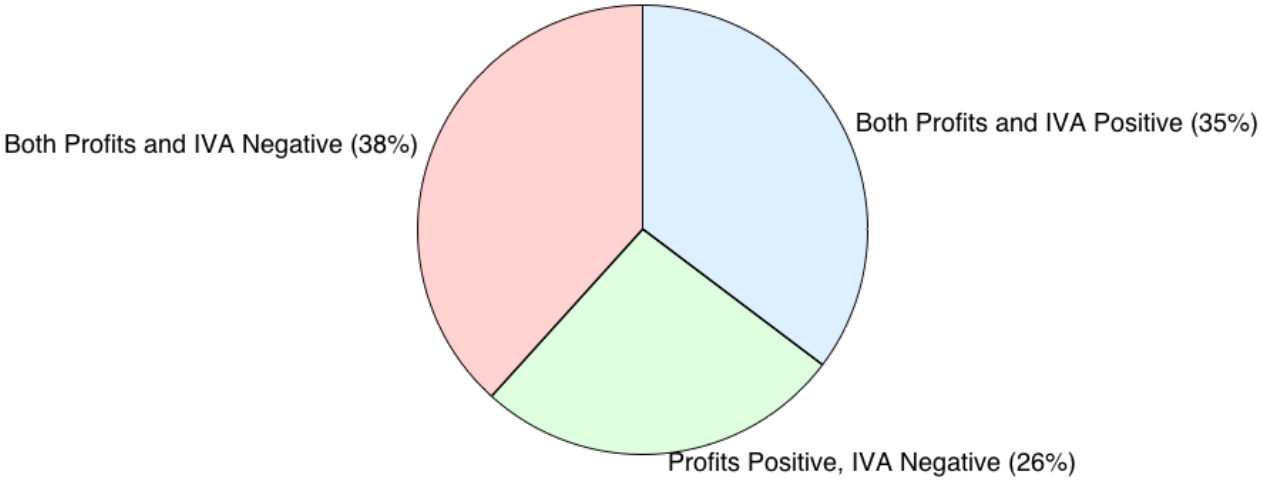

Figure 9 - Most Firms Delivered Negative Information Value-Added

The presence of negative IVA should cause apprehension about the future prospects of information technology investments if corporations do not materially improve their economic performance.[41]

[41] The reader should remember that my calculations of IVA are based on the most favorable interpretation of the GAAP reported financial results.

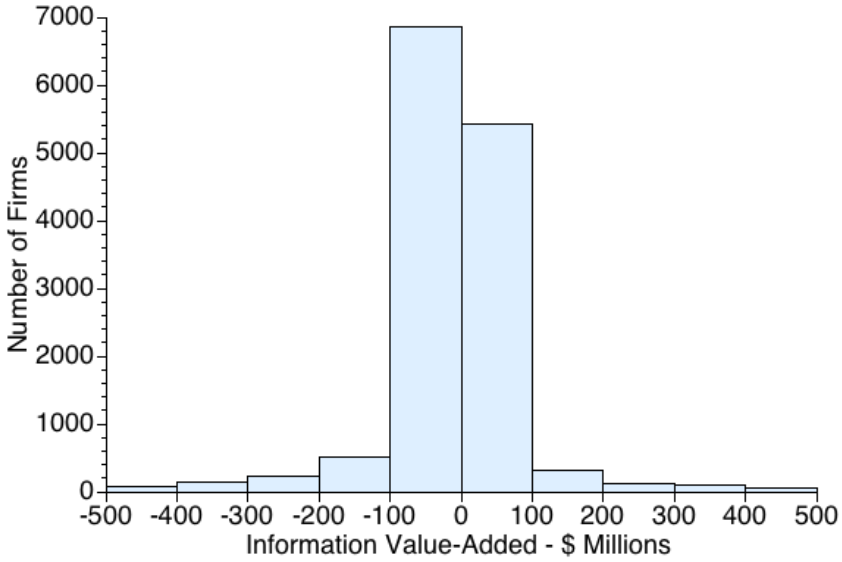

Figure 10 – Distribution of Information Value-Added for 14,585 Firms

In dollar terms, the 5,113 U.S. firms with positive IVA and positive profits delivered $1,198 billion of IVA and $2,092 billion in profit. The 5,564 firms with negative profits and negative IVA delivered a total of $2,020 billion of negative IVA and negative profits of $1,260 billion. This suggests that the opportunities for improvements remain enormous.

The challenge for at least half of the firms remains how to deploy profitable applications of information technologies for improved results. The alternative is to liquidate all operations that cannot demonstrate a capacity to create a positive IVA.

If IVA were to be adopted as one of the standard measure of performance at least half of the nation's CIOs would have to explain why they projects are delivering lower returns than the shareholder expect for an equivalent level of risk. One should recognize that IVA-based reporting is a tough and unpopular taskmaster. It confronts executives with greater economic hurdles to surpass before they can claim achievement of satisfactory levels of performance.

Whenever the reversal from poor performance takes place more firms ought to convert from being IVA detractors to becoming IVA gainers. For that to occur improving the effectiveness of how information resources are used would offer one of the most attractive options for improving financial results. Corporate executives will then have added incentives to institute long overdue improvements in their firms' information management practices.

Information Productivity Example

After all of the prerequisite computations (Capital Asset Pricing, Beta values and Information Value-Added) are completed it is a relatively simple matter to proceed with the calculation of Information Productivity:[42]

Company Name	Income Before Adjustments - $ Millions	Capital Asset Pricing Model - %	Stockholders' Equity - $ Millions	Transaction Expenses - $ Millions	Information Value-Added - $ Millions	Information Productivity - %
INTEL	$2,204	19.1	$35,649	$8,402	$1,848	22.0%
MICROSOFT	$8,911	17.0	$56,600	$11,441	$8,345	72.9%
WAL-MART	$7,355	9.7	$37,220	$38,608	$6,983	18.1%
XEROX	$23	17.6	$2,346	$5,487	$-1	-0.0%

Figure 11 – Information Productivity Reveals Wide Diversity

For instance, Intel and Wal-Mart Stockholder Equity are comparable, yet Wal-Mart Profits as 334% greater. Using the conventional asset-based measures (such as ROE), Wal-Mart would be ranked superior to Intel. In fact, we rank Intel higher than Wal-Mart in information productivity because it achieves its results by spending only 22% of Wal-Mart's transaction costs. Even though Intel is rated to be in a more risky business (the wild semiconductor business calls for returns of 19.1%) that is still not a sufficient penalty to depress Intel's higher productivity rank.

[42] Data represent averages for 2001 and 2002.

Exploratory Studies

The compilation of a global database about information productivity offers many opportunities to study the characteristics of corporate costs and corporate economic performance. As we complete such studies, they will be added to this book when it appears as an e-Publication of the Information Economics Press.

Transaction Cost vs. Information Value-Added

Transaction costs are a large multiplier of IVA. Therefore, any firm that is attempting to increase its IVA should look to the effective and efficient deployment of these costs as one of greatest sources of leverage for delivering favorable financial results.

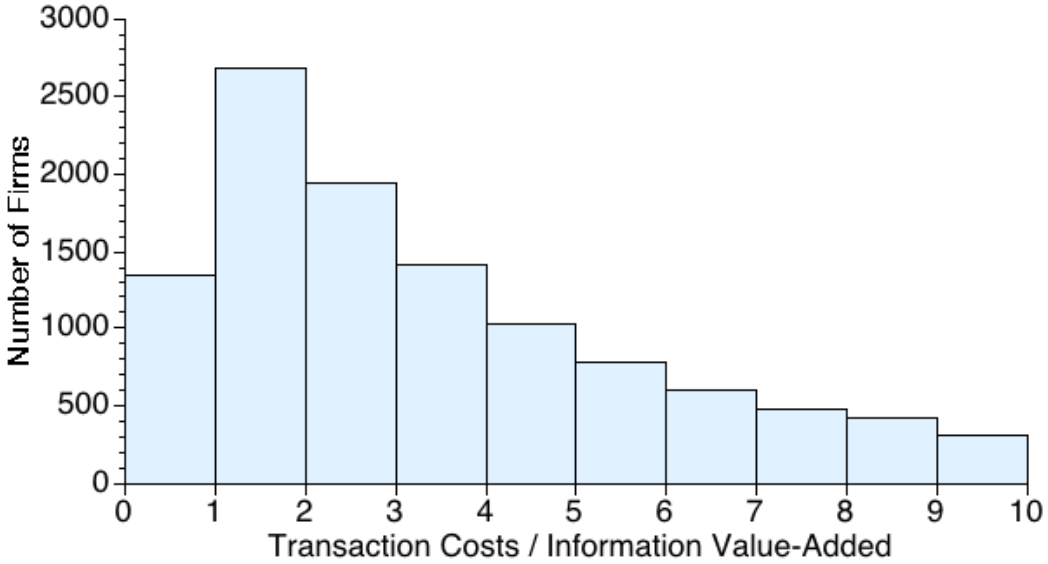

Figure 12 - Information Management Costs are Large Multiple of IVA

This large multiplier shows that both the expenses as well as the effectiveness of information management have potentially greater effects on corporate profits than other discretionary expenses.

Global Information Productivity Rankings

Aerospace and Defense Sector

	AEROSPACE AND DEFENSE								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	EMBRAER-EMPRESA BRAS AERO SA	3721	BRA	2,739	338	345	417	12.227	98%
2	SINGAPORE TECHNOLOGIES ENGR	3812	SGP	1,463	135	161	185		84%
3	ALLIANT TECHSYSTEMS INC	3760	USA	2,172	129	199	129	12	65%
4	COBHAM PLC	3728	GBR	1,104	61	137	107	7.912	45%
5	BOEING CO	3721	USA	54,069	1,820	4,173	2,319	165	44%
6	POLARIS INDS INC	3790	USA	1,521	83	194	104	3.5	43%
7	THOR INDUSTRIES INC	3790	USA	1,245	30	75	51	5.384	40%
8	NORTHROP GRUMMAN CORP	3812	USA	17,206	611	1,711	697	117.3	36%
9	UNITED TECHNOLOGIES CORP	3724	USA	28,215	1,288	4,313	2,236	155	30%
10	RAYTHEON CO	3812	USA	16,760	362	1,651	755	76.4	22%
11	GOODRICH CORP	3728	USA	3,910	63	550	166	22.9	12%
12	SAAB AB	3721	SWE	1,707	26	244	76	13.446	11%
13	SMITHS GROUP PLC	3812	GBR	4,687	130	1,234	278	32.507	11%
14	HARRIS CORP	3812	USA	2,093	4	432	60		1%
15	SEQUA CORP	3724	USA	1,688	-9	229	9	10.375	-4%
16	THALES	3812	FRA	10,498	-64	1,277	105	60.662	-5%
17	ROLLS-ROYCE GROUP PLC	3724	GBR	8,696	-311	841	80	39.2	-37%
18	HONEYWELL INTERNATIONAL INC	3728	USA	22,274	-1,216	2,712	-220	108	-45%
19	EADS NV	3812	NLD	28,266	-1,463	2,128	-283	103.967	-69%

Agriculture Sector

AGRICULTURAL									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	FRESH DEL MONTE PRODUCE INC	100	CYM	2091	166	103	201	25	161%
2	SERVICEMASTER CO	700	USA	3589	133	761	170	40	17%
3	PPB GROUP BHD	100	MYS	2068	12	72	66	15.085	17%
4	CHAROEN POKPHAND FOODS PCL	200	THA	1748	12	147	61		8%
5	MARUHA CORP	900	JPN	6605	-2	560	14	11.368	0%
6	NICHIRO CORP	900	JPN	1922	-15	319	-2	2.222	-5%
7	FUTURIS CORP	700	AUS	3547	-18	165	33		-11%
8	CARTER HOLT HARVEY	800	NZL	1903	-233	374	64	10.896	-62%
9	CHIQUITA BRANDS INTL	100	USA	1990	-543	222	-250	28	-244%

Conglomerate Sector

CONGLOMERATES									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	ENKA INSAAT VE SANAYI AS	9997	TUR	1,008	68	100	144	12.417	68%
2	WALTER INDUSTRIES INC	9997	USA	1,943	58	202	73	6.326	29%
3	TELEFLEX INC	9997	USA	2,076	64	365	125	18.1	18%
4	CARLISLE COS INC	9997	USA	1,971	24	232	72	11.631	10%
5	TEXTRON INC	9997	USA	10,658	59	1,508	364	49	4%
6	COCA-COLA WEST JAPAN CO	9995	JPN	1,982	20	675	57	4.631	3%
7	GRUPO CARSO SA DE CV	9997	MEX	5,504	7	799	266		1%
8	SIEMENS AG	9997	DEU	77,197	-1,469	14,201	2,386	426	-10%
9	FKI PLC	9997	GBR	2,247	-98	423	19	15.255	-23%
10	E.ON AG	9997	DEU	34,151	-1,723	6,231	-658	107.856	-28%
11	DESC SA DE CV	9997	MEX	2,030	-127	370	-108	16.324	-34%
12	BERJAYA GROUP BHD	9997	MYS	2,169	-205	380	-171	24.299	-54%
13	TYCO INTERNATIONAL	9997	BMU	35,644	-7,476	7,710	-3,070	267.5	-97%
14	IDB DEVELOPMENT CORP	9998	ISR	3,870	-878	698	-768		-126%
15	KOOR INDUSTRIES	9997	ISR	1,698	-662	283	-603		-234%

Construction Sector - 1

CONSTRUCTION									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	WILSON BOWDEN PLC	1520	GBR	1,478	108	83	189	2.152	130%
2	PERSIMMON PLC	1520	GBR	2,571	146	114	265	4.182	128%
3	WIMPEY (GEORGE) PLC	1520	GBR	3,907	238	210	288	5.185	114%
4	BELLWAY PLC	1520	GBR	1,124	58	55	128	1.842	104%
5	FLUOR CORP	1600	USA	9,959	125	139	170	44.809	90%
6	BARRATT DEVELOPMENTS PLC	1520	GBR	2,595	71	80	228	3.978	88%
7	TOLL BROTHERS INC	1531	USA	2,327	173	236	220	2.96	73%
8	PERINI CORP	1540	USA	1,085	24	33	23	3.2	73%
9	BERKELEY GROUP PLC	1520	GBR	1,793	108	155	241	1.521	69%
10	TECHNIKI OLYMPIAKI SA	1600	GRC	1,703	130	201	136	2.3	65%
11	TAKAMATSU CORP	1520	JPN	1,428	72	111	86		65%
12	CREST NICHOLSON PLC	1520	GBR	1,015	53	89	65	1.488	60%
13	TAYLOR WOODROW PLC	1520	GBR	3,318	112	192	233	6.03	58%
14	MERITAGE CORP	1531	USA	1,120	51	107	70	0.869	48%
15	WILSON CONNOLLY	1520	GBR	1,074	44	101	52	1.74	44%
16	LENNAR CORP	1531	USA	7,277	340	792	545	9.419	43%
17	TECHNICAL OLYMPIC USA	1520	USA	1,417	61	164	67	1.418	37%
18	CREST NICHOLSON PLC	1520	GBR	1,015	33	89	65	1.488	37%
19	PULTE HOMES INC	1531	USA	7,472	272	768	445	9.2	35%
20	LG ENGINEERNG &	1500	KOR	2,685	57	166	129	3.017	34%
21	STANDARD PACIFIC CP	1531	USA	1,885	60	175	119	1.3	34%
22	PEAB AB	1500	SWE	2,046	35	133	50	10.973	26%
23	D R HORTON INC	1531	USA	6,739	168	715	405	5.701	24%
24	GRANITE CONSTRUCTION	1600	USA	1,765	32	146	49	5.017	22%
25	WESTBURY PLC	1520	GBR	1,213	24	112	87	1.386	21%
26	MCALPINE (ALFRED) PLC	1540	GBR	1,154	23	110	22	6.476	21%
27	KIER GROUP PLC	1540	GBR	1,975	20	99	29	7.025	20%
28	DAITO TRUST CONSTRUCTION CO	1520	JPN	3,089	119	623	201	7.361	19%
29	CENTEX CORP	1531	USA	9,117	336	1,773	556	0.155	19%
30	JACOBS ENGINEERING	1600	USA	4,556	66	411	110	34.9	16%
31	BEAZER HOMES USA INC	1531	USA	2,641	42	293	123	2.89	14%
32	CARILLION PLC	1540	GBR	2,775	21	224	41	16.959	9%
33	MORGAN SINDALL PLC	1540	GBR	1,560	11	121	16	4.844	9%
34	HASEKO CORP	1520	JPN	3,728	12	147	41	3.3	8%
35	INTERSERVE PLC	1540	GBR	1,651	10	142	37	11.585	7%
36	NCC AB	1500	SWE	4,662	22	326	85	25.554	7%
37	EMCOR GROUP INC	1731	USA	3,968	24	368	63	26	7%
38	MORGAN SINDALL PLC	1540	GBR	1,560	8	121	16	4.844	6%
39	MORIMOTO CORP	1600	JPN	1,000	1	20	1		4%
40	SEKISUI HOUSE	1500	JPN	10,498	20	1,430	279	19.432	1%
41	TAISEI CORP	1500	JPN	13,508	1	1,011	123	17.159	0%
42	KAJIMA CORP	1500	JPN	15,399	-3	819	83	17.376	0%
43	KYOWA EXEO CORP	1731	JPN	1,530	-1	128	14	5.31	-1%
44	CHINA RESOURCES	1520	HKG	3,670	-7	549	180	66	-1%
45	MISAWA HOMES CO	1520	JPN	3,391	-14	720	22	8.215	-2%
46	TOKYU LAND CORP	1531	JPN	4,178	-19	584	42	14.232	-3%
47	DAELIM INDUSTRIAL CO	1540	KOR	3,103	-10	232	86	3.193	-4%
48	MITSUI HOME CO	1520	JPN	1,838	-24	397	-4	3.781	-6%
49	SEKISUI CHEMICAL CO	1520	JPN	6,568	-106	1,628	76	17.329	-7%

Construction Sector - 2

CONSTRUCTION

Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	WILSON CONNOLLY HLDGS PLC	1520	GBR	1,074	-7	101	52	1.74	-7%
51	PS MITSUBISHI	1600	JPN	1,122	-9	110	8		-8%
52	ENCOMPASS SERVICES CORP	1731	USA	3,905	-42	492	-14	31	-9%
53	AMEC PLC	1600	GBR	4,827	-32	358	16	22.964	-9%
54	INTEGRATED ELECTRICAL SVCS	1731	USA	1,475	-18	174	10	13.5	-10%
55	COFLEXIP SA	1700	FRA	1,766	-16	160	43	7.329	-10%
56	MITSUI FUDOSAN CO	1531	JPN	8,890	-99	954	210	12.615	-10%
57	JENOPTIK AG	1540	DEU	1,498	-18	161	35	9.824	-11%
58	TOENEC CORP	1731	JPN	1,468	-17	146	5	6.651	-11%
59	SHIMIZU CORP	1500	JPN	12,728	-77	636	56	13.455	-12%
60	NIPPON DENSETSU	1600	JPN	1,201	-14	108	16	3.625	-13%
61	ASANUMA CORP	1540	JPN	1,819	-11	85	4	2.04	-13%
62	SUMITOMO DENSETSU CO	1731	JPN	1,151	-9	72	2	3.119	-13%
63	ANDO CORP	1500	JPN	1,863	-12	80	2	1.988	-15%
64	FUKUDA CORP	1500	JPN	1,528	-16	103	9	2.651	-16%
65	MCALPINE (ALFRED) PLC	1540	GBR	1,154	-19	110	22	6.476	-17%
66	ZENITAKA CORP	1500	JPN	1,794	-16	84	-5	1.948	-19%
67	DAI-DAN CO	1731	JPN	1,348	-18	94	8		-19%
68	JGC CORP	1600	JPN	3,105	-22	105	56	3.802	-21%
69	KYUDENKO CORP	1731	JPN	1,828	-29	140	20	7.543	-21%
70	NISHIMATSU	1540	JPN	4,156	-44	208	37	4.493	-21%
71	DAELIM INDUSTRIAL CO	1540	KOR	3,103	-53	232	86	3.193	-23%
72	SUMITOMO FORESTRY CO	1520	JPN	5,299	-184	788	-127	10.378	-23%
73	OBAYASHI CORP	1540	JPN	11,014	-150	634	26	13.17	-24%
74	SKANSKA AB	1500	SWE	15,027	-212	883	-86	76.358	-24%
75	TOA CORP	1600	JPN	1,954	-32	131	2	2.788	-24%
76	TEKKEN CORP	1500	JPN	1,882	-26	102	6	2.489	-26%
77	NEC SYSTEM INTEGRATION & CON	1731	JPN	1,663	-35	136	12	4.331	-26%
78	PANAHOME CORP	1520	JPN	2,076	-154	603	-86	7.207	-26%
79	TAIKISHA	1700	JPN	1,591	-27	96	18	2.923	-28%
80	TOYO ENGINEERING CORP	1600	JPN	1,472	-32	91	-8	2.146	-35%
81	FUDO CONSTRUCTION CO	1540	JPN	1,289	-33	93	-26	2.174	-36%
82	NIPPON COMSYS CORP	1731	JPN	1,648	-46	127	20	4.759	-36%
83	DAIHO CORP	1600	JPN	1,175	-22	60	-5		-36%
84	TAKASAGO THERMAL ENGINEERING	1700	JPN	1,612	-45	110	8		-41%
85	NIPPON HODO CO	1600	JPN	2,429	-70	149	22	4.297	-47%
86	OKUMURA CORP	1600	JPN	2,508	-98	189	-14	2.662	-52%
87	TOKYU CONSTRUCTION CO	1500	JPN	3,125	-70	133	1	3.291	-53%
88	KANDENKO CO	1731	JPN	3,574	-118	210	2	8.868	-56%
89	MATSUMURA GUMI CORP	1520	JPN	1,182	-28	49	-21	1.213	-57%
90	MAEDA ROAD	1600	JPN	1,290	-43	71	15	1.85	-61%
91	DOOSAN HEAVY INDS & CONSTR	1600	KOR	2,843	-100	164	60	6.224	-61%
92	YURTEC CORP	1731	JPN	1,276	-68	107	-31	4.774	-64%
93	DAIWA HOUSE INDUSTRY	1520	JPN	9,729	-985	1,479	-751	18.454	-67%
94	MAEDA CORP	1520	JPN	3,769	-158	219	-62	4.768	-72%
95	SANKI ENGINEERING CO	1700	JPN	1,820	-83	111	26	2.463	-75%
96	ALSTOM SA	1600	FRA	21,235	-1,538	2,038	-1,373	109.671	-75%
97	PENTA-OCEAN	1600	JPN	3,178	-166	210	-134	3.934	-79%
98	CHUDENKO CORP	1731	JPN	1,060	-119	127	17	5.395	-93%
99	KINDEN CORP	1731	JPN	3,398	-286	267	-105	7.844	-107%

Electronics and Appliances Sector - 1

	ELECTRONICS AND APPLIANCES								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	AMETEK INC	3621	USA	1,041	55	105	84	7.7	53%
2	NOKIA (AB) OY	3663	FIN	28,375	1,226	3,101	3,196	51.748	40%
3	ENERGIZER HLDGS INC	3690	USA	1,740	177	454	186	9.963	39%
4	AMPHENOL CORP	3678	USA	1,062	56	153	80	11.1	37%
5	VESTEL ELEKTRONIK SANAYI TIC	3651	TUR	1,225	41	120	88		35%
6	OYL INDUSTRIES BHD	3585	MYS	1,140	49	144	62	8.766	34%
7	KEIHIN CORP	3590	JPN	2,097	43	129	79	8.27	33%
8	MAYTAG CORP	3630	USA	4,666	186	578	191	20.643	32%
9	AMERICAN STANDARD	3585	USA	7,795	354	1,191	371	60	30%
10	SAMSUNG ELECTRONICS	3600	KOR	47,692	2,469	10,497	5,647	48.421	24%
11	EMERSON ELECTRIC CO	3600	USA	13,824	656	2,922	1,060	111.5	22%
12	HUBBELL INC	3640	USA	1,588	57	265	109	11.476	21%
13	KIDDE PLC	3669	GBR	1,322	59	320	70	7.268	18%
14	FUNAI ELECTRIC CO	3651	JPN	2,722	58	318	158	15.442	18%
15	HUME INDUSTRIES	3585	MYS	1,265	31	178	51	10.603	17%
16	SMITH (A O) CORP	3621	USA	1,469	32	206	51	16.2	15%
17	TECHTRONIC INDUSTRIES	3679	HKG	1,217	36	237	52		15%
18	IMATION CORP	3695	USA	1,067	30	228	73	2.8	13%
19	TCL INTERNATIONAL	3651	CYM	1,563	29	238	73		12%
20	TECUMSEH PRODUCTS	3585	USA	1,344	13	117	54	22	11%
21	WHIRLPOOL CORP	3630	USA	11,016	193	1,719	262	68.272	11%
22	ELECTROLUX AB	3630	SWE	13,744	248	2,389	526	81.971	10%
23	ROCKWELL AUTOMATION	3620	USA	3,909	95	953	226	22	10%
24	SPX CORP	3612	USA	5,046	89	956	276	24.2	9%
25	SEB SA	3634	FRA	2,359	74	797	111	15.493	9%
26	LEGRAND SA	3612	FRA	2,808	65	724	176		9%
27	RINNAI CORP	3630	JPN	1,558	21	299	71	6.822	7%
28	ALPINE ELECTRONICS INC	3651	JPN	1,826	20	352	50	6.345	6%
29	LENNOX INTERNATIONAL INC	3585	USA	3,026	47	826	59	18	6%
30	KENWOOD CORP	3651	JPN	1,853	24	418	35	8.628	6%
31	ON SEMICONDUCTOR	3674	USA	1,085	13	231	-135	7.82	6%
32	YORK INTL	3585	USA	3,843	31	558	81	22.8	5%
33	MULTIBRAS ELETRODOMESTICOS	3630	BRA	1,433	10	224	40	6.134	5%
34	LEGRAND SA	3612	FRA	2,808	20	724	176		3%
35	MITSUBA CORP	3690	JPN	1,101	3	140	17	6.272	2%
36	HARMAN INTERNATIONAL	3651	USA	1,826	9	388	58	10.389	2%
37	DAIKIN INDUSTRIES	3585	JPN	4,702	26	1,129	177	15.677	2%
38	COOPER INDUSTRIES	3640	BMU	3,961	16	736	214	28.4	2%
39	BRASMOTOR SA	3630	BRA	1,449	3	227	16	16.693	2%
40	CLARION CO	3651	JPN	1,524	3	239	13	10.837	1%
41	BRASMOTOR SA	3630	BRA	1,449	2	227	16	16.693	1%
42	ELCO HOLDINGS	3585	ISR	1,876	1	339	25		0%
43	CALSONIC KANSEI CORP	3585	JPN	4,476	-8	349	52	14.806	-2%
44	KYODEN CO	3672	JPN	1,618	-22	358	-5	4.645	-6%
45	VICTOR CO OF JAPAN	3651	JPN	7,948	-144	2,271	52	34.183	-6%
46	SONY CORP	3651	JPN	61,385	-1,240	18,963	949	161.1	-7%
47	ARCELIK AS	3630	TUR	1,766	-24	321	41	9.349	-7%
48	JAPAN STORAGE	3690	JPN	1,080	-15	203	10	4.607	-7%
49	MITSUBISHI ELECTRIC	3674	JPN	29,890	-506	6,520	-97	110.279	-8%

Electronics and Appliances Sector - 2

ELECTRONICS AND APPLIANCES									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	ALPS ELECTRIC CO	3679	JPN	4,943	-54	660	144	30.243	-8%
51	KOITO MANUFACTURING	3640	JPN	2,556	-22	259	48	12.599	-8%
52	FUJI ELECTRIC CO	3620	JPN	6,837	-112	1,256	32	25.822	-9%
53	NITTO DENKO CORP	3679	JPN	3,111	-52	559	158	9.57	-9%
54	PIONEER CORP	3651	JPN	5,850	-141	1,498	132	34.656	-9%
55	MARCONI CORP PLC	3661	GBR	3,096	-57	603	-1,769	21	-9%
56	RYOBI	3590	JPN	1,285	-16	169	37	5.669	-10%
57	BOSCH AUTOMOTIVE	3585	JPN	2,397	-28	278	15	11.001	-10%
58	SANKEN ELECTRIC CO	3674	JPN	1,200	-18	169	33	9.986	-10%
59	MATSUSHITA ELECTRIC	3640	JPN	9,365	-249	2,236	54	48.091	-11%
60	FUJITSU GENERAL	3600	JPN	1,302	-31	250	-24	5.352	-12%
61	EXIDE TECHNOLOGIES	3690	USA	2,361	-58	436	-141	16.1	-13%
62	NIDEC CORP	3621	JPN	2,453	-39	292	53	40.932	-13%
63	MATSUSHITA ELECTRIC INDL CO	3600	JPN	60,794	-1,834	13,701	-160	288.324	-13%
64	SANDEN CORP	3585	JPN	1,811	-37	278	7	7.603	-13%
65	OMRON CORP	3620	JPN	4,395	-196	1,440	4	23.476	-14%
66	YASKAWA ELECTRIC	3621	JPN	1,857	-54	398	-21	7.72	-14%
67	OKI ELECTRIC INDUSTRY	3661	JPN	4,809	-152	1,066	-54	22.52	-14%
68	ROHM CO	3674	JPN	2,877	-81	562	435	16.841	-14%
69	MEIDENSHA CORP	3620	JPN	1,518	-39	266	8	7.465	-15%
70	YUASA CORP	3690	JPN	1,086	-34	227	10	7.136	-15%
71	KURITA WATER	3580	JPN	1,163	-42	243	45	3.346	-17%
72	KYUSHU MATSUSHITA ELECTRIC	3661	JPN	3,017	-89	500	-27	12.737	-18%
73	ISHIKAWAJIMA-HARIMA	3590	JPN	8,370	-170	935	-79	23.575	-18%
74	HITACHI METALS	3679	JPN	3,357	-100	541	6	19.437	-19%
75	HITACHI MAXELL	3695	JPN	1,805	-99	533	47	5.05	-19%
76	SHARP CORP	3600	JPN	16,453	-618	3,129	268	46.633	-20%
77	IBIDEN CO	3672	JPN	1,726	-39	188	6	6.33	-21%
78	SAMSUNG TECHWIN CO	3674	KOR	1,169	-27	126	31	3.697	-21%
79	SAMSUNG ELECTRO-	3600	KOR	3,125	-49	199	167	8.438	-25%
80	MAXIM INTEGRATED	3674	USA	1,153	-90	358	310		-25%
81	THOMAS & BETTS CORP	3640	USA	1,346	-72	282	-8	10	-25%
82	NIKON CORP	3674	JPN	3,852	-325	1,253	-67	13.184	-26%
83	SAMSUNG ELECTRO-MECHANICS CO	3600	KOR	3,125	-53	199	167	8.438	-26%
84	AMERICAN PWR CNVRSION	3620	USA	1,300	-90	330	117	5.424	-27%
85	DAINIPPON SCREEN MFG	3674	JPN	1,379	-91	333	-28	4.468	-27%
86	MINEBEA CO	3600	JPN	2,236	-113	389	-20	43.002	-29%
87	HITACHI KOKUSAI ELECTRIC INC	3679	JPN	1,063	-78	251	12	5.176	-31%
88	INTEL CORP	3674	USA	26,764	-2,710	8,543	3,117	78.7	-32%
89	ACT MANUFACTURING INC	3672	USA	1,371	-17	52	29	8.8	-32%
90	AVAYA INC	3663	USA	4,956	-666	1,979	-666	18.8	-34%
91	JAPAN RADIO CO	3663	JPN	2,130	-135	375	-87	8.625	-36%
92	SGL CARBON GROUP	3620	DEU	1,051	-67	177	-22	7.36	-38%
93	BENCHMARK	3672	USA	1,630	-24	64	36	6.38	-38%
94	KYOCERA CORP	3663	JPN	8,787	-600	1,562	338	49.42	-38%
95	MOLEX INC	3678	USA	1,711	-169	426	76	16.64	-40%
96	NVIDIA CORP	3674	USA	1,869	-151	374	91	1.513	-40%
97	NATIONAL	3674	USA	1,673	-282	692	-33	9.8	-41%
98	THOMSON	3663	FRA	9,630	-535	1,261	353	65.487	-42%
99	SCIENTIFIC-ATLANTA INC	3663	USA	1,446	-161	337	100		-48%

Financial and Insurance Sector – 1

	FINANANCIAL AND INSURANCE								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	SCHWEIZERISCHE NATIONALBANK	6020	CHE	1,858	1,395	158	1,617	0.617	883%
2	VIAD CORP	6099	USA	1,647	59	17	114	5.52	346%
3	GOLDEN WEST FINANCIAL CORP	6035	USA	3,744	775	444	958	7.841	174%
4	JEFFERSON-PILOT CORP	6311	USA	3,480	274	167	450	3.77	164%
5	NORTH FORK BANCORPORATION	6020	USA	1,310	357	230	417	2.878	155%
6	GREENPOINT FINANCIAL CORP	6036	USA	1,777	346	278	498	4.742	124%
7	HANG SENG BANK	6020	HKG	2,499	484	491	1,277		98%
8	ASTORIA FINL CORP	6035	USA	1,374	141	160	248	2.115	88%
9	CHARTER ONE FINL INC	6020	USA	2,834	376	438	578	7	86%
10	FIFTH THIRD BANCORP	6020	USA	6,317	1,066	1,328	1,635	19.119	80%
11	ADVANCEPCS	6411	USA	14,111	167	231	170	6.5	72%
12	WASHINGTON MUTUAL INC	6035	USA	18,755	2,895	4,052	3,896	52.459	71%
13	ANGLO IRISH BANK	6020	IRL	1,035	87	130	169	0.901	67%
14	BANCO DO ESTADO SAO PAULO SA	6020	BRA	3,355	854	1,419	996	14.723	60%
15	ASSOCIATED BANC CORP	6020	USA	1,012	139	234	211	4.085	59%
16	AMSOUTH BANCORPORATION	6020	USA	2,998	472	822	609	11.6	58%
17	BB&T CORP	6020	USA	6,127	860	1,639	1,293	22.5	52%
18	U S BANCORP	6020	USA	15,422	1,816	3,492	3,326		52%
19	M & T BANK CORP	6020	USA	2,354	291	564	485	9.197	52%
20	NATIONAL CITY CORP	6020	USA	8,728	1,172	2,336	1,594	32.731	50%
21	TCF FINANCIAL CORP	6020	USA	1,150	182	379	233	8.2	48%
22	UNION PLANTERS CORP	6020	USA	2,684	336	723	529	10.836	47%
23	NATIONAL COMMERCE FINANCIAL	6020	USA	1,521	156	361	324	5.49	43%
24	EXPRESS SCRIPTS INC	6411	USA	12,261	169	395	204	7.561	43%
25	WELLS FARGO & CO	6020	USA	28,473	3,991	9,488	5,710		42%
26	SOUTHTRUST CORP	6020	USA	3,326	381	922	650	13.2	41%
27	POPULAR INC	6020	USA	2,544	269	666	352	10.96	40%
28	COMPASS BANCSHARES INC	6020	USA	1,828	206	514	314	7.2	40%
29	ANZ-AUSTRALIA & NEW ZEALD BK	6020	AUS	6,548	644	1,615	1,235	22.482	40%
30	BANK OF AMERICA CORP	6020	USA	46,362	4,970	12,586	9,249	133.944	39%
31	HIBERNIA CORP	6020	USA	1,340	136	357	250	5.588	38%
32	BANKNORTH GROUP INC	6020	USA	1,510	153	405	299	6.596	38%
33	KEYCORP	6020	USA	6,132	669	1,798	976	20.437	37%
34	BANK NEGARA INDONESIA TBK PT	6020	IDN	1,502	96	258	172	13.483	37%
35	GREAT-WEST LIFE & ANNUITY IN	6311	USA	2,965	275	773	284	6.8	36%
36	BANCO SANTANDER-CHILE	6020	CHL	1,037	85	244	188	4.772	35%
37	OXFORD HEALTH PLANS	6324	USA	4,974	192	560	222	3.5	34%
38	MID ATLANTIC MEDICAL	6324	USA	2,313	85	251	97	3.315	34%
39	SBERBANK SAVINGS BANK RUSSIA	6020	RUS	4,713	628	1,865	940	197.122	34%
40	SUNTRUST BANKS INC	6020	USA	7,527	787	2,345	1,332	27.622	34%
41	REGIONS FINL CORP	6020	USA	3,796	398	1,215	620	15.695	33%
42	PNC FINANCIAL SVCS GROUP INC	6020	USA	6,356	711	2,215	1,200	23.9	32%
43	SIERRA HEALTH SERVICES	6324	USA	1,279	43	134	42	3.7	32%
44	KOMERCNI BANKA AS	6020	CZE	1,193	140	447	277	9.951	31%
45	HUNTINGTON BANCSHARES	6020	USA	2,474	178	569	333	8.177	31%
46	BANCO POPULAR ESPANOL	6020	ESP	2,888	262	841	599	12.464	31%
47	WESTPAC BANKING	6020	AUS	6,707	632	2,058	1,166	27.088	31%
48	UNIONBANCAL CORP	6020	USA	2,592	271	904	528	9.472	30%
49	ZIONS BANCORPORATION	6020	USA	1,833	181	610	317	8.073	30%

Financial and Insurance Sector - 2

	FINANANCIAL AND INSURANCE								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	WESTCORP	6035	USA	1,227	45	153	80	2.36	30%
51	CONCORD EFS INC	6099	USA	1,967	35	124	301	2.64	29%
52	PROVIDENT FINL GROUP	6141	GBR	1,315	102	359	178	6.5	28%
53	MANULIFE FINL CORP	6311	CAN	10,463	448	1,576	867		28%
54	MBNA CORP	6020	USA	10,431	652	2,352	1,766	26.1	28%
55	MARSHALL & ILSLEY CORP	6020	USA	2,650	259	937	480	12.625	28%
56	COMERICA INC.	6020	USA	3,676	284	1,028	601	11.358	28%
57	BERKSHIRE HATHAWAY	6321	USA	42,353	792	3,161	4,286	147	25%
58	STATE STREET CORP	6020	USA	4,900	477	1,916	1,015	19.501	25%
59	SYNOVUS FINANCIAL CP	6020	USA	2,298	209	852	365	10.406	25%
60	UNITEDHEALTH GROUP	6324	USA	25,020	1,052	4,387	1,352	32	24%
61	ALLIED IRISH BANKS	6020	IRL	6,004	496	2,161	988	32.397	23%
62	SOVEREIGN BANCORP INC	6035	USA	2,492	125	573	342	8.007	22%
63	FIRST TENNESSEE NATL CORP	6020	USA	2,580	249	1,144	376	10.632	22%
64	FIRST NATL OF	6020	USA	1,296	82	392	81	6.209	21%
65	COBALT CORP	6324	USA	1,534	68	327	65	3.364	21%
66	FIRSTRAND	6020	ZAF	5,447	220	1,056	452	34.046	21%
67	STANDARD BANK GROUP	6020	ZAF	7,451	221	1,072	534	26.456	21%
68	BANK OF IRELAND	6020	IRL	5,013	328	1,630	836	18.214	20%
69	LLOYDS TSB GROUP	6020	GBR	21,981	1,444	7,296	2,676	82.625	20%
70	SVENSKA	6020	SWE	6,274	195	1,021	752	9.752	19%
71	BANCO COMERCIAL	6020	PRT	3,947	259	1,358	447	17.606	19%
72	COMMERCE BANCORP INC/NJ	6020	USA	1,013	82	431	145	6.8	19%
73	WELLPOINT HLTH	6324	USA	17,339	526	2,849	698	16.2	18%
74	ING GROEP NV	6311	NLD	88,617	2,150	11,737	4,254	113.056	18%
75	BANK ONE CORP	6020	USA	22,171	1,000	5,536	3,295	73.685	18%
76	OTP BANK	6020	HUN	1,080	85	477	171	8.293	18%
77	IRISH LIFE & PERMANENT PLC	6311	IRL	1,626	41	231	274	5.137	18%
78	MEGA FINANCIAL HOLDING CO	6020	TWN	1,247	18	105	193		18%
79	MELLON FINANCIAL CORP	6020	USA	4,714	379	2,333	667	24.1	16%
80	ALLIANCE & LEICESTER	6020	GBR	3,807	195	1,206	510	9.301	16%
81	NATIONAL AUSTRALIA BK	6020	AUS	11,441	510	3,163	1,794	46.642	16%
82	NATL WESTMINSTER BANK	6020	GBR	16,073	1,070	6,863	2,804	23	16%
83	HEALTH NET INC - CL A	6324	USA	10,202	154	1,057	238	9.4	15%
84	SHINHAN FINANCIAL GROUP	6020	KOR	3,674	123	864	482		14%
85	BANK OF INDIA	6020	IND	1,382	44	319	107	43.42	14%
86	BANCO ITAU HLDG FINANCEIRA	6020	BRA	11,235	541	4,115	840	42.051	13%
87	COMMONWEALTH BANK AUSTRALIA	6020	AUS	7,899	343	2,723	1,390	34.498	13%
88	WACHOVIA CORP	6020	USA	23,591	1,042	8,329	3,579	80.778	13%
89	NORTHERN TRUST CORP	6020	USA	2,791	123	993	447	9.317	12%
90	PROVIDENT FINANCIAL	6020	USA	1,647	32	281	95	3.3	12%
91	HBOS PLC	6020	GBR	30,223	573	5,523	2,879	63.982	10%
92	KORAM BANK	6020	KOR	2,043	43	479	208	2.985	9%
93	BANCO DO BRASIL	6020	BRA	13,099	413	4,708	717		9%
94	KREDIETBANK SA LUXEMBOURG	6020	LUX	2,953	50	578	171	3.925	9%
95	ICAP PLC	6211	GBR	1,046	72	852	119	2.519	8%
96	BANCO ESP DE CREDITO	6020	ESP	2,390	66	814	412	10.299	8%
97	STATE BANK OF INDIA	6020	IND	10,377	237	2,945	704		8%
98	ABN-AMRO HOLDINGS NV	6020	NLD	35,208	974	12,122	2,280	107.416	8%
99	DANSKE BANK AS	6020	DNK	10,212	154	1,982	1,049	16.969	8%

HealthCare Sector

	HEALTHCARE								
	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	DAVITA INC	8090	USA	1,855	179	181	187	13	98%
2	TENET HEALTHCARE	8062	USA	12,481	693	922	720	115.129	75%
3	MANOR CARE INC	8051	USA	2,903	42	118	132	61	35%
4	COVENTRY HEALTH CARE	8011	USA	3,577	121	438	146	3.985	28%
5	LABORATORY CP OF AMER HLDGS	8071	USA	2,508	147	586	255	24	25%
6	QUEST DIAGNOSTICS INC	8071	USA	4,108	240	1,075	322	33.4	22%
7	NICHII GAKKAN CO	8060	JPN	1,407	28	222	57	5.41	13%
8	APRIA HEALTHCARE	8082	USA	1,252	93	730	116	10.553	13%
9	FRESENIUS MEDICAL	8090	DEU	5,084	31	914	302	39.264	3%
10	GAMBRO AB	8090	SWE	2,846	-94	470	63	20.804	-20%

High Tech and Telecommunications Sector - 1

	HIGH TECH & TELECOMMUNICATIONS								
	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	QUANTA COMPUTER INC	3571	TWN	4,484	190	95	314	2.4	199%
2	HON HAI PRECISION IND CO	3571	TWN	7,091	321	194	489		165%
3	ASUSTEK COMPUTER INC	3577	TWN	3,320	118	125	290		94%
4	FIRST DATA CORP	7374	USA	7,636	799	1,283	1,238	29	62%
5	COMPAL ELECTRONIC INC	3571	TWN	2,329	34	60	160	2.5	57%
6	MISYS PLC	7373	GBR	1,592	120	211	70	6.662	57%
7	DELL INC	3571	USA	35,404	1,360	3,505	2,122	39.1	39%
8	LOGITECH INTERNATIONAL SA	3577	CHE	1,100	67	184	99		36%
9	ORACLE CORP	7372	USA	9,475	1,238	3,693	2,307	40.65	34%
10	AUTOMATIC DATA PROCESSING	7374	USA	9,653	630	2,082	1,101	40	30%
11	LEGEND GROUP	3571	HKG	2,594	63	221	130	9.705	28%
12	SAMSUNG SDI CO	3670	KOR	5,311	133	490	472	7.368	27%
13	LEXMARK INTL INC	3577	USA	4,356	234	866	367	12.068	27%
14	LEGEND GROUP	3571	HKG	2,594	59	221	130	9.705	27%
15	BENQ CORP	3571	TWN	3,193	64	244	214		26%
16	SUNGARD DATA SYSTEMS INC	7372	USA	2,593	160	664	326	8.8	24%
17	DELTA ELECTRONIC INC	3670	TWN	1,265	23	105	106		22%
18	MICRO-STAR INTERNATIONAL CO	3577	TWN	1,665	19	94	97		20%
19	DIEBOLD INC	3578	USA	1,940	68	353	132	13.072	19%
20	ELECTRONIC ARTS INC	7372	USA	2,482	165	864	317	4	19%
21	PEROT SYSTEMS CORP	7373	USA	1,318	31	176	78	9.1	18%
22	WESTERN DIGITAL CORP	3572	USA	2,151	33	231	53	9.55	14%
23	BROTHER INDUSTRIES	3570	JPN	3,356	100	962	182	15.412	10%
24	UNISYS CORP	7373	USA	5,607	112	1,265	223	36.4	9%
25	CANON INC	3577	JPN	23,523	569	7,162	1,526	97.802	8%
26	SYNNEX TECH INTL CORP	3571	TWN	2,432	5	72	71		8%
27	INVENTEC CO	3571	TWN	2,373	9	139	99		7%
28	MICROSOFT CORP	7372	USA	32,187	632	12,278	9,993		5%
29	SYMANTEC CORP	7372	USA	1,407	-1	797	248	4.3	0%
30	SABRE HLDGS CORP	7373	USA	2,043	-6	505	214	6.3	-1%
31	OTSUKA SHOKAI CO	7373	JPN	2,594	-19	485	19	7.46	-4%
32	NCR CORP	3578	USA	5,585	-60	1,389	128	30.1	-4%
33	XEROX CORP	3577	USA	15,849	-237	5,248	154	67.8	-5%
34	FSAS INC	7373	JPN	1,813	-13	286	41	5.126	-5%
35	TOSHIBA CORP	3570	JPN	46,454	-547	11,448	152	165.776	-5%
36	CASIO COMPUTER CO	3570	JPN	3,619	-51	860	46	11.481	-6%
37	HITACHI CHEMICAL CO	3670	JPN	4,059	-48	793	71	17.061	-6%
38	HITACHI	3571	JPN	67,283	-1,118	14,770	229	320.528	-8%
39	NEC CORP	3571	JPN	38,563	-770	9,209	-202	145.807	-8%
40	TOSHIBA TEC CORP	3570	JPN	2,806	-80	911	32	13.336	-9%
41	STORAGE TECHNOLOGY CP	3572	USA	2,040	-107	772	110	7.1	-14%
42	NIPPON ELECTRIC GLASS CO	3670	JPN	2,701	-46	333	120	8.841	-14%
43	SAP AG	7372	DEU	7,008	-284	1,916	481	28.41	-15%
44	BMC SOFTWARE INC	7372	USA	1,327	-172	1,140	48	6.861	-15%
45	FUJITSU	3571	JPN	37,927	-1,697	9,765	-1,003	157.044	-17%
46	PEOPLESOFT INC	7372	USA	1,949	-179	973	183	8.293	-18%
47	TEAC CORP	3572	JPN	1,142	-43	232	-23	8.705	-19%
48	CISCO SYSTEMS INC	3576	USA	18,878	-1,489	7,917	3,578		-19%
49	MITAC INTERNATIONAL CORP	3571	TWN	4,597	-35	180	25	1.968	-19%

High Tech and Telecommunications Sector – 2

	HIGH TECH & TELECOMMUNICATIONS								
	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	LITEON TECHNOLOGY CORP	3577	TWN	3,019	-50	249	148		-20%
51	HOSIDEN CORP	3670	JPN	1,918	-21	103	31	7.501	-21%
52	CADENCE DESIGN SYS INC	7372	USA	1,293	-184	863	72	5.175	-21%
53	TITAN CORP	7373	USA	1,392	-52	189	-8	9.9	-28%
54	COMPUWARE CORP	7372	USA	1,375	-170	598	103	9.356	-28%
55	APPLE COMPUTER INC	3571	USA	5,742	-542	1,557	65	12.241	-35%
56	SANYO ELECTRIC CO	3579	JPN	18,677	-1,112	3,108	-598	79.025	-36%
57	INTUIT INC	7372	USA	1,358	-275	766	70	6.5	-36%
58	HEWLETT-PACKARD CO	3570	USA	56,588	-5,885	12,345	-923	141	-48%
59	SYMBOL TECHNOLOGIES	3577	USA	1,453	-219	440	-55	5.25	-50%
60	NOVELL INC	7372	USA	1,134	-345	651	-103	6.524	-53%
61	VERITAS SOFTWARE CO	7372	USA	1,507	-510	920	57	5.647	-56%
62	GATEWAY INC	3571	USA	4,171	-579	994	-298	11.5	-58%
63	EMC CORP/MA	3572	USA	5,438	-1,554	2,460	-119	17.4	-63%
64	SIEBEL SYSTEMS INC	7372	USA	1,635	-585	922	-36	5.909	-63%
65	TAIYO YUDEN CO	3670	JPN	1,263	-154	241	25	15.791	-64%
66	ATI TECHNOLOGIES INC	3577	CAN	1,022	-183	278	-47	2.092	-66%
67	KONAMI CORP	7372	JPN	2,083	-294	436	-234	4.313	-67%
68	MAXTOR CORP	3572	USA	3,780	-374	550	-261	12.449	-68%
69	SAFEGUARD SCIENTIFICS INC	7373	USA	1,661	-207	273	-129	4.614	-76%
70	SUN MICROSYSTEMS INC	3571	USA	11,434	-3,998	5,166	-2,378		-77%
71	GETRONICS NV	7373	NLD	3,398	-414	504	-387	24.978	-82%
72	AMDOCS	7372	GBR	1,614	-313	348	-5	9.4	-90%
73	FIRST INTERNATIONAL COMPUTER	3571	TWN	1,923	-114	117	-60		-97%
74	GROUPE BULL	7373	FRA	1,431	-371	351	-518	8.351	-106%
75	GROUPE BULL	7373	FRA	1,431	-385	351	-518	8.351	-110%
76	LEVEL 3 COMMUN INC	7373	USA	3,148	-1,073	944	-1,113	6.275	-114%
77	ARIMA COMPUTER CORP	3570	TWN	1,908	-57	48	13		-120%
78	EPCOS AG	3670	DEU	1,205	-164	135	-35	13.069	-121%
79	MITSUMI ELECTRIC CO	3577	JPN	1,998	-150	120	-50	47.48	-125%
80	VISHAY INTRTECHNOLOGY	3670	USA	1,823	-460	311	-93	25.25	-148%
81	TRIGEM COMPUTER INC	3570	KOR	2,068	-433	267	-448		-162%
82	AVX CORP	3670	USA	1,134	-222	92	-12	12.8	-242%
83	VERISIGN INC	7372	USA	1,222	-5,384	469	-4,961	3.2	-1149%

Hospitality, Food & Beverages Sector - 1

	HOSPITALITY, FOOD & BEVERAGES								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	ANHEUSER-BUSCH COS INC	2082	USA	13,566	1,876	2,455	1,934	23.176	76%
2	LANCASTER COLONY	2030	USA	1,130	74	105	92	5.9	71%
3	CP POKPHAND CO	2040	BMU	1,542	92	149	93		62%
4	CIA BEBIDAS AMERICAS	2082	BRA	2,590	437	727	534		60%
5	HERSHEY FOODS CORP	2060	USA	4,120	426	816	404	15.4	52%
6	COTT CORP QUE	2086	CAN	1,199	57	110	59	2.798	52%
7	COCA-COLA CO	2080	USA	19,564	3,448	7,001	3,976	56	49%
8	INDUSTRIAS BACHOCO SA	2015	MEX	1,034	61	139	115	11.215	44%
9	CONSTELLATION BRANDS	2084	USA	2,732	154	351	203	7.68	44%
10	COCA-COLA FEMSA SA DE	2086	MEX	1,814	188	520	266	14.457	36%
11	GENERAL MILLS INC	2040	USA	10,506	861	2,405	917	27.338	36%
12	FFM BHD	2040	MYS	1,738	16	46	43	3.587	35%
13	WRIGLEY (WM) JR CO	2060	USA	2,746	342	1,011	402	11.25	34%
14	CAMPBELL SOUP CO	2030	USA	6,133	530	1,567	525	25	34%
15	TINGYI (CAYMAN ISLAND)	2090	CYM	1,100	83	255	91	24.643	33%
16	KELLOGG CO	2040	USA	8,304	712	2,227	721	25.676	32%
17	GEEST PLC	2000	GBR	1,145	37	117	48	10.065	32%
18	HEINZ (H J) CO	2030	USA	8,237	514	1,625	555	38.9	32%
19	ARCHER-DANIELS-	2070	USA	23,454	259	827	511	24.746	31%
20	PEPSICO INC	2090	USA	25,112	2,658	8,523	3,313	142	31%
21	CONAGRA FOODS INC	2000	USA	19,839	699	2,271	840	63	31%
22	DEL MONTE FOODS CO	2000	USA	2,171	98	332	134	17.2	30%
23	NORTHERN FOODS PLC	2000	GBR	2,198	135	459	156	22.011	29%
24	MCCORMICK & CO	2090	USA	2,320	166	571	180	9	29%
25	STARBUCKS CORP	2090	USA	3,289	53	184	215	62	29%
26	IAWS GROUP PLC	2040	IRL	1,101	42	148	49	2.514	28%
27	CADBURY SCHWEPPES	2060	GBR	7,960	706	2,511	823	42.314	28%
28	IAWS GROUP PLC	2040	IRL	1,101	42	148	49	2.514	28%
29	RALCORP HOLDINGS INC	2040	USA	1,280	44	162	54	5.4	27%
30	BROWN-FORMAN	2085	USA	2,060	207	808	245	6.7	26%
31	SMUCKER (JM) CO	2033	USA	1,312	70	280	96	2.775	25%
32	GRUPO MODELO SA DE CV	2082	MEX	3,429	277	1,130	438	48.445	25%
33	INDOFOOD SUKSES MAKMUR (PT)	2000	IDN	1,436	40	174	73		23%
34	HORMEL FOODS CORP	2011	USA	3,910	146	652	189		22%
35	TYSON FOODS INC	2011	USA	23,367	193	877	383	120	22%
36	ASSOCIATED BRITISH	2000	GBR	6,682	239	1,110	473	34.957	22%
37	DANONE (GROUPE)	2000	FRA	12,814	964	4,853	1,213	92.209	20%
38	SARA LEE CORP	2000	USA	17,628	941	5,323	1,010	154.9	18%
39	FOSTER'S GROUP	2082	AUS	2,393	156	905	294	12.95	17%
40	DREYER'S GRAND ICE	2024	USA	1,346	20	116	29	4.6	17%
41	CSM NV	2000	NLD	3,141	127	742	150	12.944	17%
42	SADIA SA	2015	BRA	1,498	54	324	83		17%
43	PERNOD RICARD SA	2080	FRA	4,571	264	1,617	390	12.526	16%
44	DEAN FOODS CO	2020	USA	8,991	233	1,667	268	27.6	14%
45	NESTLE SA/AG	2000	CHE	57,466	3,353	24,808	4,875	254.199	14%
46	FOMENTO ECONOMICO MEXICANO	2082	MEX	5,469	240	1,780	294	41.656	14%
47	INTERBREW SA	2082	BEL	6,610	316	2,522	441	35.044	13%
48	COORS (ADOLPH)	2082	USA	3,776	128	1,057	162	8.7	12%
49	NONG SHIM CO	2090	KOR	1,102	27	242	64	4.71	11%

Hospitality, Food & Beverages Sector – 2

HOSPITALITY, FOOD & BEVERAGES									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	PEPSI BOTTLING GROUP INC	2086	USA	9,216	331	3,317	428	65	10%
51	AJINOMOTO CO INC	2090	JPN	8,113	151	1,680	273	24.406	9%
52	FUJI OIL CO	2000	JPN	1,269	17	200	38	2.675	9%
53	YAKULT HONSHA CO	2020	JPN	1,994	68	848	118	13.407	8%
54	KATOKICHI CO	2030	JPN	2,159	18	231	39	2.965	8%
55	QP CORP	2030	JPN	3,463	51	712	74	8.55	7%
56	CORN PRODUCTS INTL INC	2040	USA	1,871	9	130	63	6.5	7%
57	NISSIN FOOD PRODUCTS	2090	JPN	2,590	73	1,056	118	5.834	7%
58	COCA-COLA ENTERPRISES	2086	USA	16,889	333	5,103	494	74	7%
59	CARLSBERG A/S	2082	DNK	4,522	111	1,724	129	27.368	6%
60	DAIRY CREST GROUP PLC	2020	GBR	1,928	20	311	56	7.489	6%
61	PEPSIAMERICAS INC	2086	USA	3,240	62	968	136	15.2	6%
62	GRUPO BIMBO SA DE CV	2050	MEX	3,627	100	1,704	158	67.452	6%
63	ITO EN	2080	JPN	1,777	44	755	66	4.075	6%
64	COCA-COLA BTLNG CONS	2086	USA	1,247	22	404	23	6.2	6%
65	EXPRESS DAIRIES PLC	2020	GBR	1,105	11	319	12	5.358	4%
66	FOMENTO ECONOMICO	2082	MEX	5,469	61	1,780	294	41.656	3%
67	PRIMA MEAT PACKERS	2011	JPN	2,266	10	394	13	4.155	2%
68	FRASER & NEAVE	2086	SGP	1,929	7	384	134	11.816	2%
69	INTERSTATE BAKERIES CP	2050	USA	3,526	22	1,599	27		1%
70	MARUDAI FOOD CO	2013	JPN	1,826	3	364	44	2.808	1%
71	MORINAGA MILK	2020	JPN	4,586	5	1,358	40	6.423	0%
72	ASAHI BREWERIES	2082	JPN	11,003	4	2,673	118	15.07	0%
73	GRUMA SA DE CV	2040	MEX	1,909	0	607	34	15.585	0%
74	KIRIN BEVERAGE CORP	2086	JPN	2,554	-1	1,192	49	3.577	0%
75	CJ CORP	2000	KOR	4,368	-4	1,010	97		0%
76	COCA-COLA HELLENIC	2086	GRC	3,752	-5	1,219	33	35.59	0%
77	TOYO SUISAN KAISHA	2090	JPN	2,623	-8	693	61	3.903	-1%
78	NIPPON SUISAN KAISHA	2092	JPN	4,105	-8	653	41	6.307	-1%
79	KIRIN BREWERY CO	2082	JPN	12,667	-53	3,671	260	23.07	-1%
80	MEIJI DAIRIES CORP	2020	JPN	6,015	-23	1,494	33	7.754	-2%
81	KIKKOMAN CORP	2030	JPN	2,813	-18	955	68	6.456	-2%
82	GREENCORE GROUP PLC	2060	IRL	1,634	-6	272	9	11.741	-2%
83	BAVARIA SA	2080	COL	1,172	-9	337	129	3.148	-3%
84	NISSHIN SEIFUN GROUP INC	2040	JPN	3,304	-24	822	87	4.645	-3%
85	KAGOME CO	2080	JPN	1,209	-17	584	3		-3%
86	COCA-COLA CENTRAL JAPAN CO	2086	JPN	1,735	-18	602	18	3.223	-3%
87	HOUSE FOODS CORP	2090	JPN	1,572	-21	662	44	3.799	-3%
88	MIKUNI COCA-COLA BOTTLING CO	2086	JPN	1,061	-12	338	17	1.667	-3%
89	YAMAZAKI BAKING CO	2050	JPN	5,783	-64	1,767	53	23.079	-4%
90	NICHIREI CORP	2090	JPN	4,628	-25	659	43	6.622	-4%
91	NIPPON MEAT PACKERS INC	2013	JPN	7,474	-54	1,358	36	15.356	-4%
92	PERDIGAO S/A	2015	BRA	1,031	-9	207	3	24.2	-4%
93	PILGRIMS PRIDE CORP	2015	USA	2,534	-6	135	14	24.8	-4%
94	MORINAGA & CO	2060	JPN	1,424	-31	660	4	3.212	-5%
95	EZAKI GLICO CO	2060	JPN	2,207	-40	857	20	4.383	-5%
96	MEIJI SEIKA KAISHA	2060	JPN	2,903	-59	1,174	22	7.017	-5%
97	KINKI COCA-COLA	2080	JPN	1,467	-28	547	1	3.231	-5%
98	PERDIGAO S/A	2015	BRA	1,031	-12	207	3	24.2	-6%
99	UNI-PRESIDENT	2000	TWN	1,762	-25	419	44		-6%

Manufacturing Sector – 1

	MANUFACTURING								
	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	JOY GLOBAL INC	3532	USA	1,151	4,063	213	-23	6.8	1909%
2	ANGLO AMERICAN PLATINUM CORP	3330	ZAF	1,871	346	57	549	45.436	611%
3	CHINA STEEL CORP	3300	TWN	2,892	338	105	487		322%
4	VODAFONE AG	3500	DEU	12,469	7,366	2,856	8,951	29.796	258%
5	APASCO SA DE CV	3270	MEX	1,002	138	81	193		169%
6	GUDANG GARAM (PT)	2111	IDN	1,762	121	102	205		119%
7	CSR	3270	AUS	4,096	1,092	1,021	1,155		107%
8	KT&G CORPORATION	2111	KOR	1,448	216	236	258	4.426	91%
9	ALTRIA GROUP INC	2111	USA	62,182	10,520	12,282	11,102	166	86%
10	BALL CORP	3411	USA	3,859	142	171	159	12.5	83%
11	FOAMEX INTERNATIONAL INC	3086	USA	1,328	69	95	63	5.8	72%
12	SILGAN HOLDINGS INC	3411	USA	1,988	53	76	54	7.1	70%
13	KIMBERLY-CLARK CORP	2621	USA	13,566	1,445	2,254	1,686	63.9	64%
14	BELGO MINEIRA-CIA SIDERURGIC	3312	BRA	1,120	62	98	112	7.184	63%
15	GERDAU SA SIDERURG	3312	BRA	3,239	200	354	282	17.25	56%
16	PACTIV CORP	2673	USA	2,880	164	296	220	16	55%
17	GALLAHER GROUP PLC	2111	GBR	3,544	406	765	383	9.602	53%
18	BEMIS CO	2670	USA	2,369	114	247	166	11.837	46%
19	SAMMY CORP	3990	JPN	1,362	154	339	189		45%
20	CEMENTOS DE MEXICO SA DE CV	3241	MEX	6,802	605	1,352	1,157		45%
21	BAXTER INTERNATIONAL INC	3841	USA	8,110	894	2,063	1,033	54.6	43%
22	SWEDISH MATCH AB	2100	SWE	1,408	147	348	148	14.795	42%
23	INSTRUMENTARIUM CORP	3845	FIN	1,065	143	344	147	5.65	42%
24	VIOHALCO	3330	GRC	1,184	32	79	38	6.932	40%
25	MEDTRONIC INC	3845	USA	7,665	1,117	3,121	1,600	29.581	36%
26	GUIDANT CORP	3841	USA	3,240	501	1,431	612	11	35%
27	3M CO	2670	USA	16,332	1,649	4,709	1,974	68.774	35%
28	BIOMET INC	3842	USA	1,192	171	488	240	3.24	35%
29	GILLETTE CO	3420	USA	8,453	1,088	3,172	1,209	30.3	34%
30	METALURGICA GERDAU SA	3312	BRA	3,239	119	365	153	17.25	33%
31	BECTON DICKINSON & CO	3841	USA	4,033	398	1,252	480	25.249	32%
32	LEAR CORP	2531	USA	14,425	162	517	312	115	31%
33	METALURGICA GERDAU SA	3312	BRA	3,239	112	365	153	17.25	31%
34	JOHNSON MATTHEY PLC	3341	GBR	6,688	80	266	189	7.505	30%
35	PRECISION CASTPARTS CORP	3320	USA	2,117	57	191	159	11.9	30%
36	SIAM CEMENT PCL	3241	THA	2,982	105	353	340		30%
37	DONALDSON CO INC	3564	USA	1,126	67	226	87	8.166	29%
38	HUHTAMAKI OYJ	3089	FIN	2,116	65	220	83	15.909	29%
39	MASONITE INTERNATIONAL CORP	2430	CAN	1,620	45	155	90	12	29%
40	TAI HAN ELECTRIC WIRE CO	3300	KOR	1,083	14	49	53		29%
41	ST JUDE MEDICAL INC	3845	USA	1,590	207	714	276	6.042	29%
42	AMCOR	2650	AUS	3,920	156	549	446	23.6	28%
43	APOGENT TECHNOLOGIES INC	3821	USA	1,075	76	271	135	6.9	28%
44	DENTSPLY INTERNATL INC	3843	USA	1,514	130	479	148	7.8	27%
45	SANKYO CO (MACHINERY)	3990	JPN	1,021	51	189	153	1.103	27%
46	GENCORP INC	3060	USA	1,135	15	55	30	10.112	27%
47	LAFARGE NORTH AMERICA INC	3270	USA	3,442	83	318	268	15.5	26%
48	MATTEL INC	3942	USA	4,885	408	1,590	455	25	26%
49	FORTUNE BRANDS INC	3430	USA	5,367	369	1,442	526	28.592	26%

Manufacturing Sector – 2

	MANUFACTURING								
	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	USG CORP	3270	USA	3,468	78	312	139	14.1	25%
51	STANLEY WORKS	3420	USA	2,593	128	537	185	14.9	24%
52	BRIGGS & STRATTON	3510	USA	1,658	42	178	81		24%
53	ILLINOIS TOOL WORKS	3540	USA	9,468	403	1,720	932	48.7	23%
54	BARD (C.R.) INC	3841	USA	1,274	102	439	155	7.7	23%
55	WORTHINGTON INDUSTRIES	3310	USA	2,220	41	183	75		22%
56	HUNTER DOUGLAS NV	2590	NLD	1,600	98	449	118	14.712	22%
57	INVACARE CORP	3842	USA	1,089	46	220	65	5.3	21%
58	AVERY DENNISON CORP	2670	USA	4,207	190	913	257	20.5	21%
59	VF CORP	2300	USA	5,084	252	1,221	364	56	21%
60	UPONOR OYJ	3080	FIN	1,075	44	214	61	5.302	20%
61	SONOCO PRODUCTS CO	2650	USA	2,812	58	289	135	17.4	20%
62	MASCO CORP	2430	USA	9,419	298	1,507	682	61	20%
63	AGGREGATE INDUSTRIES PLC	3272	GBR	2,071	107	545	134	8.272	20%
64	HANSOL PAPER CO	2621	KOR	1,320	28	142	52	0.892	19%
65	INTL DE CERAMICA SA DE CV	3250	MEX	2,706	134	698	174		19%
66	LA-Z-BOY INC	2510	USA	2,112	63	332	96	16.8	19%
67	EASTMAN KODAK CO	3861	USA	12,835	607	3,260	793	70	19%
68	CARDO AB	3442	SWE	1,071	50	270	70	7.851	19%
69	WEIR GROUP PLC	3561	GBR	1,054	39	217	75	7.886	18%
70	SAPPI	2670	ZAF	3,729	60	332	220	17.572	18%
71	JOHNSON CONTROLS INC	2531	USA	20,103	310	1,725	601	111	18%
72	SKF AB	3562	SWE	4,380	117	654	255	38.609	18%
73	RJ REYNOLDS TOBACCO HLDGS	2111	USA	6,211	257	1,463	418	9.3	18%
74	SCA HYGIENE PRODUCTS AG	2670	DEU	3,435	119	683	140	12.758	17%
75	STRYKER CORP	3842	USA	3,012	224	1,307	346	14.045	17%
76	BECKMAN COULTER INC	3826	USA	2,059	115	672	136	10.013	17%
77	BOSTON SCIENTIFIC CORP	3841	USA	2,919	228	1,345	373	13.9	17%
78	SMITH & NEPHEW PLC	3842	GBR	1,668	138	813	168	7.506	17%
79	NINTENDO CO	3944	JPN	4,141	128	763	553	2.977	17%
80	ARUZE CORP	3990	JPN	1,133	34	205	144		16%
81	LUXOTTICA GROUP SPA	3851	ITA	2,961	254	1,562	352		16%
82	SANDVIK AB	3541	SWE	5,027	171	1,050	355	36.118	16%
83	OUTOKUMPU OY	3350	FIN	5,254	73	451	150	21.13	16%
84	INTL DE CERAMICA SA DE CV	3250	MEX	2,706	111	698	174		16%
85	WESTPOINT STEVENS INC	2390	USA	1,811	41	265	-13	14.706	15%
86	NEWELL RUBBERMAID INC	3089	USA	7,454	201	1,300	312	47	15%
87	BLACK & DECKER CORP	3540	USA	4,394	166	1,097	230	22.3	15%
88	DANAHER CORP	3823	USA	4,577	165	1,097	434	29	15%
89	MOHAWK INDUSTRIES INC	2273	USA	4,522	108	718	284	31.78	15%
90	NOK CORP	3050	JPN	2,446	54	371	103	13.516	15%
91	RUSSELL CORP	2253	USA	1,164	34	236	47	13.915	14%
92	MAYR-MELNHOF KARTON AG	2650	AUT	1,197	27	190	79	6.786	14%
93	HARSCO CORP	3390	USA	1,977	43	316	88	17.5	14%
94	HUNTER DOUGLAS NV	2590	NLD	1,600	61	449	118	14.712	14%
95	TOKAI RUBBER INDUSTRIES	3050	JPN	1,498	18	134	57	6.278	13%
96	NIKE INC	3021	USA	10,697	414	3,134	740	23.3	13%
97	LEGGETT & PLATT INC	2510	USA	4,272	51	394	233	31	13%
98	TUPPERWARE CORP	3089	USA	1,104	79	621	90	6.1	13%
99	JUNGHEINRICH AG	3537	DEU	1,395	33	278	51	9.234	12%

Oil, Gas, Mining & Basic Materials Sector

	OIL, GAS,MINING AND BASIC MATERIALS								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	CANADIAN NATURAL RESOURCES	1311	CAN	2,172	258	46	364		564%
2	ANGLOGOLD	1040	ZAF	1,758	174	42	330	53.097	416%
3	SHELL REFINING CO (FOM) BHD	2911	MYS	1,173	28	8	40	0.307	366%
4	APACHE CORP	1311	USA	2,560	283	105	554	1.958	271%
5	ENTERPRISE OIL PLC	1311	GBR	2,002	146	68	395	0.71	214%
6	PAKISTAN STATE OIL CO	1311	PAK	2,172	31	23	52		133%
7	FREEPRT MCMOR	1000	USA	1,910	93	71	168	8.542	131%
8	YACIMIENTOS PETE	2911	ARG	6,661	640	504	1,137		127%
9	COMPANHIA VALE DO RIO	1000	BRA	5,189	510	405	722	29.349	126%
10	PETROL OFISI AS	2911	TUR	4,199	128	106	151		120%
11	PETROBRAS-PETROLEO	2911	BRA	24,454	2,104	1,838	2,863		114%
12	ANADARKO PETROLEUM	1311	USA	3,860	334	314	831	3.8	106%
13	OCCIDENTAL PETROLEUM	1311	USA	7,338	810	811	1,163	7.244	100%
14	NEXEN INC	1311	CAN	1,627	169	216	286	2.767	78%
15	EXXON MOBIL CORP	2911	USA	178,909	7,546	13,276	11,011	92.5	57%
16	S-OIL CORP	2911	KOR	5,947	129	239	150	2.377	54%
17	BURLINGTON	1311	USA	2,964	197	447	454	2.003	44%
18	VULCAN MATERIALS CO	1400	USA	2,797	92	248	190	9.166	37%
19	UNOCAL CORP	1311	USA	5,224	180	504	330	6.615	36%
20	TALISMAN ENERGY INC	1311	CAN	2,767	106	315	332		34%
21	MARTIN MARIETTA	1400	USA	1,692	22	116	98	6.4	19%
22	MARATHON OIL CORP	2911	USA	27,214	174	1,029	536	28.166	17%
23	BARRICK GOLD CORP	1040	CAN	1,967	24	168	193		14%
24	PETROPLUS INTL NV	2911	NLD	4,857	7	55	34	0.958	13%
25	K & S AG	1400	DEU	2,135	75	567	98	10.511	13%
26	CONSOL ENERGY INC	1220	USA	2,178	7	66	12	6.074	11%
27	HELLENIC PETROLEUM SA	2911	GRC	3,418	15	164	33	4.522	9%
28	OMV AG	2911	AUT	6,692	43	531	301	5.828	8%
29	HUNTING PLC	2911	GBR	1,429	6	85	12	2.186	8%
30	BP PLC	2911	GBR	178,721	838	11,590	6,845	115.25	7%
31	FUCHS PETROLUB AG	2990	DEU	1,007	19	270	22	4.1	7%
32	COMPANIA DE	2911	CHL	3,547	18	407	402	8.367	4%
33	BANGCHAK PETROLEUM PCL	2911	THA	1,203	1	26	12		2%
34	MURPHY OIL CORP	2911	USA	3,967	2	258	98	4.01	1%
35	SHOWA SHELL SEKIYU KK	2911	JPN	12,964	-9	900	149	2.962	-1%
36	PLACER DOME INC	1040	CAN	1,209	-8	147	124	12	-5%
37	TONEN GENERAL SEKIYU CORP	2911	JPN	15,432	-45	446	68	2.851	-10%
38	GIANT INDUSTRIES INC	2911	USA	1,287	-20	159	-12	2.465	-13%
39	HUNTING PLC	2911	GBR	1,429	-11	85	12	2.186	-13%
40	COSMO OIL CO	2911	JPN	15,628	-144	1,016	28	5.96	-14%
41	CHEVRONTEXACO CORP	2911	USA	91,685	-783	4,746	1,132	53.014	-17%
42	ARCH COAL INC	1220	USA	1,518	-7	40	-3	3.75	-17%
43	NIPPON OIL CORP	2911	JPN	34,393	-392	2,183	265	13.882	-18%
44	SUNOCO INC	2911	USA	12,465	-112	622	-47	14	-18%
45	BJ SERVICES CO	1389	USA	1,866	-45	167	166	11.13	-27%
46	EOG RESOURCES INC	1311	USA	1,094	-54	196	87	1	-27%
47	NOBLE ENERGY INC	1311	USA	1,433	-66	198	18	0.624	-33%
48	JAPAN ENERGY CORP	2911	JPN	13,405	-216	637	1	10.914	-34%
49	PRECISION DRILLING	1381	CAN	1,069	-42	122	58	9.365	-34%

Pharmaceuticals & Chemicals Sector - 1

	PHARMACEUTICALS & CHEMICALS								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	SASOL	2800	ZAF	6,167	695	841	951	31.1	83%
2	MERCK & CO	2834	USA	51,790	6,244	8,864	7,150	77.3	70%
3	MYLAN LABORATORIES	2834	USA	1,269	183	260	272	2.45	70%
4	TEVA PHARMACEUTICALS	2834	ISR	2,519	253	406	410	8.99	62%
5	SANOFI-SYNTHELABO	2834	FRA	7,041	1,403	2,295	1,663	32.436	61%
6	WYETH	2834	USA	14,584	3,886	7,091	4,447	52.762	55%
7	GEORGIA GULF CORP	2810	USA	1,231	24	46	31	1.216	51%
8	FORMOSA PLASTICS	2800	TWN	1,902	70	137	286		51%
9	PFIZER INC	2834	USA	32,373	7,938	16,012	9,181	98	50%
10	GLAXOSMITHKLINE PLC	2834	GBR	31,870	5,766	12,081	5,912	106.166	48%
11	SIGMA-ALDRICH	2836	USA	1,207	169	356	187	5.94	47%
12	TAKEDA CHEMICAL	2834	JPN	8,592	1,571	3,445	2,232	14.547	46%
13	ABBOTT LABORATORIES	2834	USA	17,685	2,369	5,450	2,794	71.819	43%
14	LILLY (ELI) & CO	2834	USA	11,078	2,415	5,573	2,708	43.7	43%
15	CLOROX CO/DE	2842	USA	4,144	453	1,064	514		43%
16	DIAL CORPORATION	2840	USA	1,282	108	260	115	2.9	42%
17	COLGATE-PALMOLIVE CO	2844	USA	9,294	1,264	3,034	1,288	37.7	42%
18	PRAXAIR INC	2810	USA	5,128	322	820	548	25.01	39%
19	PROCTER & GAMBLE CO	2840	USA	43,373	4,965	13,009	5,186		38%
20	ASTRAZENECA PLC	2834	GBR	17,841	2,341	6,139	2,836	58.7	38%
21	HOECHST AG	2800	DEU	8,667	1,143	3,164	1,159	35.165	36%
22	FORMOSA CHEMICAL &	2800	TWN	2,514	50	140	318	7.33	36%
23	WATSON PHARMACEUTICALS INC	2834	USA	1,223	111	317	176	3.729	35%
24	JOHNSON & JOHNSON	2834	USA	36,298	5,525	16,173	6,597	108.3	34%
25	SCHERING AG	2834	DEU	4,748	695	2,075	820	26.245	34%
26	NOVARTIS AG	2834	CHE	20,890	2,606	8,100	4,713	72.877	32%
27	INTL FLAVORS &	2860	USA	1,809	142	449	176	5.728	32%
28	AIR PRODUCTS & CHEMICALS INC	2810	USA	5,401	254	821	525	17.2	31%
29	SCHERING-PLOUGH	2834	USA	10,180	1,553	5,106	1,974	30.5	30%
30	ALTANA AG	2834	DEU	2,466	221	734	307	9.853	30%
31	RECKITT BENCKISER PLC	2842	GBR	5,305	588	1,962	613	22.3	30%
32	DU PONT (E I) DE	2820	USA	24,134	1,186	3,963	1,841	79	30%
33	ENGELHARD CORP	2810	USA	3,754	97	350	171	6.65	28%
34	BRITISH VITA GROUP PLC	2821	GBR	1,343	66	246	128	8.614	27%
35	NOVO NORDISK A/S	2834	DNK	3,204	300	1,171	521	18.005	26%
36	SOLVAY SA	2810	BEL	7,811	317	1,270	356	31.193	25%
37	CHURCH & DWIGHT INC	2840	USA	1,047	50	204	67	2.256	24%
38	AVENTIS SA	2834	FRA	19,495	1,574	7,058	1,977	78.099	22%
39	AMOREPACIFIC CORP	2840	KOR	1,024	102	485	111	3.323	21%
40	BRISTOL MYERS SQUIBB	2834	USA	18,119	1,547	7,436	2,034	44	21%
41	IVAX CORP	2834	USA	1,197	70	364	119	8.36	19%
42	LUBRIZOL CORP	2860	USA	1,984	69	365	126	5.231	19%
43	ALBEMARLE CORP	2890	USA	1,011	24	128	75	3	19%
44	SINOPEC BEIJING	2821	HKG	1,141	12	64	25		18%
45	AVON PRODUCTS	2844	USA	6,228	546	2,980	535	45	18%
46	AMOREPACIFIC CORP	2840	KOR	1,024	87	485	111	3.323	18%
47	H LUNDBECK A/S	2834	DNK	1,207	79	461	161	5.129	17%
48	ONO PHARMACEUTICAL	2834	JPN	1,109	78	515	211	2.607	15%
49	AKZO NOBEL NV	2800	NLD	13,237	591	4,112	773	67.9	14%

Pharmaceuticals & Chemicals Sector - 2

	PHARMACEUTICALS & CHEMICALS								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	CYTEC INDUSTRIES INC	2890	USA	1,346	28	198	79	4.25	14%
51	VALSPAR CORP	2851	USA	2,127	57	442	120	7.058	13%
52	KAO CORP	2840	JPN	7,107	390	3,160	513	19.807	12%
53	KING PHARMACEUTICALS	2834	USA	1,128	45	395	183	2.785	11%
54	AMERSHAM PLC	2835	GBR	2,310	133	1,212	268	10.051	11%
55	AMERSHAM PLC	2835	GBR	2,310	131	1,212	268	10.051	11%
56	ECOLAB INC	2842	USA	3,404	138	1,283	212	20.4	11%
57	BEIERSDORF AG	2844	DEU	4,483	235	2,229	268	18.183	11%
58	FMC CORP	2800	USA	1,853	30	306	69	5.5	10%
59	SCOTTS CO	2870	USA	1,803	39	412	101	3.411	10%
60	BOOTS GROUP PLC	2844	GBR	8,236	265	2,933	467	75.36	9%
61	RPM INTERNATIONAL INC	2851	USA	1,986	62	718	102	7.687	9%
62	HENKEL KGAA	2840	DEU	9,128	275	3,298	411	47.203	8%
63	CABOT CORP	2890	USA	1,557	21	267	105	4.5	8%
64	DAINICHISEIKA COL &	2860	JPN	1,075	11	134	23	3.355	8%
65	GRACE (W R) & CO	2810	USA	1,817	35	485	22	6.4	7%
66	ICL-ISRAEL CHEMICALS	2800	ISR	1,981	26	401	92	7.975	6%
67	YAMANOUCHI	2834	JPN	4,161	104	1,751	492	9.278	6%
68	BIOGEN INC	2836	USA	1,148	39	692	199	2.633	6%
69	FUJISAWA	2834	JPN	3,138	78	1,398	235	8.33	6%
70	YAMANOUCHI	2834	JPN	4,161	94	1,751	492	9.278	5%
71	ICI-IMPERIAL CHEM INDS	2800	GBR	9,202	131	2,532	269	36.66	5%
72	WELLA AG	2844	DEU	3,205	95	1,839	127	17.4	5%
73	JSR CORP	2820	JPN	2,030	20	387	90	4.303	5%
74	WELLA AG	2844	DEU	3,205	93	1,839	127	17.4	5%
75	TAISHO	2834	JPN	2,251	55	1,122	291	4.806	5%
76	CELANESE AG	2860	DEU	4,089	22	445	177	10.725	5%
77	FULLER (H. B.) CO	2891	USA	1,256	12	268	28	4.6	4%
78	KOBAYASHI PHARMACEUTICAL CO	2800	JPN	1,732	19	439	54	2.276	4%
79	FERRO CORP	2851	USA	1,528	11	276	34	7.481	4%
80	BOC GROUP PLC	2810	GBR	5,377	67	1,686	298	46.28	4%
81	SERONO SA	2836	CHE	1,423	16	513	321	4.616	3%
82	ALLERGAN INC	2834	USA	1,425	25	819	64	4.9	3%
83	MERCK KGAA	2834	DEU	7,065	64	2,185	192	34.504	3%
84	KOSE CORP	2844	JPN	1,268	22	840	57	4.836	3%
85	BAUSCH & LOMB INC	2834	USA	1,817	19	821	73	11.5	2%
86	SOLUTIA INC	2820	USA	2,241	7	317	-8	9.4	2%
87	TANABE SEIYAKU CO	2834	JPN	1,497	13	612	72	4.554	2%
88	SANKYO CO (PHARMACEUTCL)	2834	JPN	4,681	38	2,087	278	11.626	2%
89	LAUDER ESTEE COS INC	2844	USA	4,750	51	3,019	213	20.4	2%
90	EISAI CO	2834	JPN	3,833	25	2,262	337	7.433	1%
91	LION CORP	2840	JPN	2,469	11	1,138	47	5.483	1%
92	CROMPTON CORP	2820	USA	2,547	3	478	15	6.777	1%
93	NISSAN CHEMICAL	2800	JPN	1,247	1	273	33	2.529	0%
94	KANEBO	2844	JPN	4,257	4	1,692	4	14.141	0%
95	BURELLE SA	2820	FRA	1,754	0	195	10	10.661	0%
96	SIKA AG	2891	CHE	1,367	0	426	51	8.508	0%
97	KANEKA CORP	2821	JPN	3,058	-1	605	110	6.72	0%
98	CIBA SPECIALTY	2800	CHE	4,566	-3	804	262	19.007	0%
99	MITSUBISHI CHEMICAL	2860	JPN	15,503	-24	3,227	176	37.633	-1%

Professional Services Sector – 1

PROFESSIONAL SERVICES									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	RENTOKIL INITIAL PLC	7340	GBR	3,355	480	72	428	92.447	663%
2	RENT-A-CENTER INC	7359	USA	2,010	119	63	172	14.3	188%
3	MOODYS CORP	7320	USA	1,023	295	172	289	2.1	171%
4	EQUIFAX INC	7320	USA	1,109	177	250	191	5	71%
5	FIRST DATA CORP	7374	USA	7,636	799	1,283	1,238	29	62%
6	MISYS PLC	7373	GBR	1,592	120	211	70	6.662	57%
7	RICOH LEASING CO LTD	7377	JPN	1,784	27	67	50	0.605	40%
8	ORACLE CORP	7372	USA	9,475	1,238	3,693	2,307	40.65	34%
9	AUTOMATIC DATA	7374	USA	9,653	630	2,082	1,101	40	30%
10	DUN & BRADSTREET CORP	7320	USA	1,276	145	513	143	6.6	28%
11	REGIS CORP/MN	7200	USA	1,454	48	178	72	43	27%
12	SUNGARD DATA SYSTEMS	7372	USA	2,593	160	664	326	8.8	24%
13	DCC PLC	7370	IRL	2,100	47	240	80	3.685	20%
14	ELECTRONIC ARTS INC	7372	USA	2,482	165	864	317	4	19%
15	DCC PLC	7370	IRL	2,100	45	240	80	3.685	19%
16	ADVO INC	7331	USA	1,130	40	215	42	3.9	19%
17	SUMISHO LEASE CO LTD	7359	JPN	2,824	15	81	73	0.631	18%
18	PEROT SYSTEMS CORP	7373	USA	1,318	31	176	78	9.1	18%
19	ABM INDUSTRIES INC	7340	USA	2,182	26	175	47	62	15%
20	ELECTRONIC DATA	7370	USA	21,502	246	1,889	1,007	137	13%
21	DIAMOND LEASE CO LTD	7359	JPN	3,781	19	149	75	0.88	13%
22	INTL BUSINESS MACHINES CORP	7370	USA	81,186	2,359	21,703	5,334	315.889	11%
23	UNISYS CORP	7373	USA	5,607	112	1,265	223	36.4	9%
24	DAVIS SERVICE GROUP	7200	GBR	1,227	29	486	71	17.837	6%
25	MICROSOFT CORP	7372	USA	32,187	632	12,278	9,993		5%
26	SECOM CO LTD	7380	JPN	4,298	46	947	292	25.727	5%
27	CONVERGYS CORP	7389	USA	2,286	22	523	146	48.8	4%
28	MANPOWER INC/WI	7363	USA	10,611	24	1,676	113	21.4	1%
29	CENTRAL LEASING CO LTD	7359	JPN	2,877	1	100	14	0.948	1%
30	ADECCO SA	7363	CHE	16,169	1	2,458	228	29	0%
31	SYMANTEC CORP	7372	USA	1,407	-1	797	248	4.3	0%
32	SABRE HLDGS CORP -CL	7373	USA	2,043	-6	505	214	6.3	-1%
33	AEGIS GROUP PLC	7310	GBR	9,366	-13	659	21	7.478	-2%
34	KELLY SERVICES INC -CL A	7363	USA	4,323	-14	662	19	707	-2%
35	CSK CORP	7371	JPN	2,936	-7	334	89	9.987	-2%
37	CDI CORP	7363	USA	1,169	-6	284	4	18	-2%
38	OTSUKA SHOKAI CO LTD	7373	JPN	2,594	-19	485	19	7.46	-4%
39	DENTSU TEC INC	7311	JPN	1,120	-4	105	13		-4%
40	FSAS INC	7373	JPN	1,813	-13	286	41	5.126	-5%
41	CHUBB PLC	7380	GBR	2,256	-35	587	14	48.711	-6%
42	HITACHI INFORMATION	7370	JPN	1,347	-11	171	39	6.738	-7%
43	ROBERT HALF INTL INC	7363	USA	1,905	-51	710	2	186.9	-7%
44	KINTETSU WORLD EXPRESS INC	7389	JPN	1,614	-19	215	23	5.915	-9%
45	TOKYO LEASING CO LTD	7359	JPN	2,499	-18	142	20	0.999	-13%
46	RECRUIT COSMOS CO LTD	6552	JPN	1,474	-26	196	18	3.725	-13%
47	ITOCHU TECHNO-SCIENCE CORP	7370	JPN	2,369	-45	332	64	3.178	-14%
48	SAP AG	7372	DEU	7,008	-284	1,916	481	28.41	-15%
49	BMC SOFTWARE INC	7372	USA	1,327	-172	1,140	48	6.861	-15%
49	ZIONS BANCORPORATION	6020	USA	1,833	181	610	317	8.073	30%

Professional Services Sector – 2

PROFESSIONAL SERVICES									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	PEOPLESOFT INC	7372	USA	1,949	-179	973	183	8.293	-18%
51	COMPUTER SCIENCES	7370	USA	11,347	-137	717	440	90	-19%
52	ANGLO AMERICAN PLC	6792	GBR	15,145	-512	2,521	1,563	204	-20%
53	TIS INC	7370	JPN	1,352	-31	151	30	5.667	-21%
54	CADENCE DESIGN SYS INC	7372	USA	1,293	-184	863	72	5.175	-21%
55	SECURICOR PLC	7381	GBR	2,058	-80	363	-63	104.466	-22%
56	WANADOO	7370	FRA	1,961	-251	913	28	6.761	-28%
57	TITAN CORP	7373	USA	1,392	-52	189	-8	9.9	-28%
58	TELETECH HOLDINGS INC	7389	USA	1,017	-56	199	-5	28	-28%
59	COMPUWARE CORP	7372	USA	1,375	-170	598	103	9.356	-28%
60	EARTHLINK INC	7370	USA	1,357	-259	821	-148	5.106	-32%
61	INTUIT INC	7372	USA	1,358	-275	766	70	6.5	-36%
62	REUTERS GROUP PLC	7380	GBR	5,371	-749	1,889	-607	18.333	-40%
63	MPS GROUP INC	7363	USA	1,155	-102	249	-13	2	-41%
64	VOLT INFO SCIENCES INC	7363	USA	1,488	-31	75	-4	36	-42%
65	HITACHI SOFTWARE ENGINEERING	7370	JPN	1,790	-63	150	54	6.519	-42%
66	PRICELINE.COM INC	7370	USA	1,004	-66	154	-19	0.29	-43%
67	ASATSU INC	7310	JPN	2,991	-125	287	-29	2.74	-44%
68	NOVELL INC	7372	USA	1,134	-345	651	-103	6.524	-53%
69	FUJI SOFTWARE ABC INC	7370	JPN	1,093	-64	119	22	7.014	-53%
70	VERITAS SOFTWARE CO	7372	USA	1,507	-510	920	57	5.647	-56%
71	SPHERION CORP	7363	USA	2,116	-305	515	-273	4	-59%
72	SIEBEL SYSTEMS INC	7372	USA	1,635	-585	922	-36	5.909	-63%
73	KONAMI CORP	7372	JPN	2,083	-294	436	-234	4.313	-67%
74	CAP GEMINI SA	7371	FRA	6,662	-1,434	2,071	-486	52.683	-69%
75	UNITED RENTALS INC	7350	USA	2,821	-307	439	-109	12.937	-70%
76	SAFEGUARD SCIENTIFICS INC	7373	USA	1,661	-207	273	-129	4.614	-76%
78	CAPITALAND LTD	6552	SGP	2,035	-242	314	162	10.333	-77%
79	GETRONICS NV	7373	NLD	3,398	-414	504	-387	24.978	-82%
80	AMDOCS LTD	7372	GBR	1,614	-313	348	-5	9.4	-90%
81	EBAY INC	7370	USA	1,214	-601	630	250	4	-95%
82	ADVANCED SEMICON	7389	TWN	1,319	-170	166	5		-103%
83	GROUPE BULL	7373	FRA	1,431	-371	351	-518	8.351	-106%
84	LEVEL 3 COMMUN INC	7373	USA	3,148	-1,073	944	-1,113	6.275	-114%
85	HANOVER COMPRESSOR CO	7359	USA	1,010	-206	164	-75	4.7	-126%
86	EQUANT NV	7370	NLD	2,973	-926	707	-590	10.132	-131%
87	EQUANT NV	7370	NLD	2,973	-928	707	-590	10.132	-131%
88	LUCENT TECHNOLOGIES INC	7370	USA	12,321	-11,135	6,279	-11,826	47	-177%
89	CORDIANT COMMUNICATIONS GRP	7311	GBR	3,214	-384	204	-351	8.603	-188%
90	SERVICE CORP	7200	USA	2,272	-189	90	-101	21.088	-210%
91	HENDERSON LAND	6552	HKG	1,089	-577	131	276	6.6	-439%
92	DIMENSION DATA HLDGS PLC	7370	GBR	2,121	-2,695	416	-2,584	10.145	-649%
93	GENUITY INC	7370	USA	1,221	-3,935	575	-3,960	4.4	-684%
94	VERISIGN INC	7372	USA	1,222	-5,384	469	-4,961	3.2	-1149%

Publishing, Printing, Entertainment Sector

PUBLISHING, PRINTING, ENTERTAINMENT									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	GANNETT CO	2711	USA	6,422	702	1,019	1,160	51	69%
2	INTL GAME TECHNOLOGY	7990	USA	1,848	203	335	277	6.2	60%
3	RANK GROUP PLC	7819	GBR	2,200	172	319	205	21.862	54%
4	MCCLATCHY CO	2711	USA	1,082	92	191	131	9.332	48%
5	DELUXE CORP	2780	USA	1,284	212	502	214	6.195	42%
6	QUEBECOR WORLD INC - SUB VTG	2750	CAN	6,242	190	501	279		38%
7	DOW JONES & CO INC	2711	USA	1,559	199	560	202	6.816	36%
8	RANK GROUP PLC	7819	GBR	2,200	106	319	205	21.862	33%
9	HOLLYWOOD ENTMT	7841	USA	1,490	226	742	244	25.9	30%
10	HARRAHS	7990	USA	4,136	246	923	325	42	27%
11	MCGRAW-HILL	2731	USA	4,788	447	1,692	577	16.505	26%
12	WASHINGTON POST	2711	USA	2,584	153	664	216	11.6	23%
13	TRIBUNE CO	2711	USA	5,384	242	1,309	609	23.9	18%
14	NEW YORK TIMES CO	2711	USA	3,079	213	1,169	300	12.15	18%
15	MGM MIRAGE	7990	USA	4,020	128	706	293	43	18%
16	DONNELLEY (R R) & SONS CO	2750	USA	4,755	92	534	142	30	17%
17	BANTA CORP	2750	USA	1,366	33	195	44	8.3	17%
18	EMAP PLC	2721	GBR	1,496	78	469	133	5.329	17%
19	CANAL PLUS SA	4841	FRA	1,437	8	51	18	0.884	16%
20	MEREDITH CORP	2721	USA	1,080	64	407	91		16%
21	MANDALAY RESORT	7990	USA	2,354	56	441	117	26.8	13%
22	ISLE OF CAPRI CASINOS	7990	USA	1,066	28	271	46	11	10%
23	MOORE WALLACE INC	2761	CAN	2,038	46	460	73	11.8	10%
24	BOYD GAMING CORP	7990	USA	1,229	23	228	48	14.225	10%
25	BLOCKBUSTER INC	7841	USA	5,566	240	2,636	189	85.2	9%
26	SCHOLASTIC CORP	2731	USA	1,917	59	845	99	10.6	7%
27	STANDARD REGISTER CO	2761	USA	1,028	19	293	33	5.681	7%
28	TOPPAN FORMS CO	2780	JPN	1,571	15	276	63	6.342	6%
29	READERS DIGEST ASSN	2731	USA	2,369	48	1,237	91	5	4%
30	AMERICAN GREETINGS	2771	USA	1,996	22	861	121	32.6	3%
31	TRUMP HOTEL&CASINO	7990	USA	1,229	-17	263	-12	9.955	-7%
32	NIPPON TELEVISION	4833	JPN	2,762	-40	591	167	2.714	-7%
33	FUJI TELEVISION NETWORK INC	4833	JPN	3,524	-67	983	122	3.183	-7%
34	TOKYO BROADCASTING SYSTEM	4833	JPN	2,422	-53	553	87	2.76	-10%
35	BOWNE & CO INC	2750	USA	1,003	-27	269	0	8.4	-10%
36	NASPERS	4841	ZAF	1,056	-57	359	-39	10.706	-16%
37	NAMCO	7990	JPN	1,271	-41	221	34	3.902	-19%
38	TOPPAN PRINTING CO	2750	JPN	10,280	-272	1,215	239	33.292	-22%
39	CANWEST GLOBAL COM - NVTG	4833	CAN	1,458	-84	358	8		-23%
40	PRIMEDIA INC	2721	USA	1,588	-205	844	-326	5.1	-24%
41	MAIL-WELL INC	2750	USA	1,729	-69	264	-63	10.2	-26%
42	INDEPENDENT NEWS & MEDIA PLC	2711	IRL	1,239	-59	221	-39	11.055	-27%
43	DAI NIPPON PRINTING CO	2721	JPN	10,752	-352	1,266	236	35.182	-28%
44	UNITEDGLOBALCOM INC	4841	USA	1,515	-134	474	-1,258	10.5	-28%
45	TOHO CO (FILM)	7812	JPN	1,411	-88	310	68	4.147	-28%
46	CABLEVISION SYS CORP	4841	USA	4,003	-306	1,023	-561	21.075	-30%
47	ASAHI NATIONAL BROADCASTING	4833	JPN	1,717	-136	439	16	2.725	-31%
48	TRINITY MIRROR PLC	2711	GBR	1,641	-156	494	-29	11.458	-32%
49	ECHOSTAR COMMUN	4841	USA	4,821	-628	1,621	-882	15	-39%

Retail Sector - 1

RETAIL									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	CAREMARK RX INC	5912	USA	6,805	807	168	829	4.723	481%
2	TESCO PLC	5411	GBR	40,381	995	754	1,450	203.766	132%
3	DEBENHAMS PLC	5311	GBR	2,469	127	112	159	23.593	113%
4	FERRELLGAS PARTNERS -	5900	USA	1,035	60	57	60	5.073	105%
5	IWATAYA DEPARTMENT STORE CO	5311	JPN	1,154	251	268	252	1.229	94%
6	SIGNET GROUP PLC	5944	GBR	2,441	85	91	196	14.16	93%
7	SHOPRITE HLDGS	5411	ZAF	2,202	33	42	41	62.696	79%
8	OUTBACK STEAKHOUSE	5812	USA	2,362	70	90	161	59	78%
9	BRINKER INTL INC	5812	USA	2,887	92	121	153	90	76%
10	WENDY'S INTERNATIONAL	5812	USA	2,730	166	241	219	48	69%
11	BOB EVANS FARMS	5812	USA	1,091	64	98	75	40.446	66%
12	SHOPRITE HLDGS	5411	ZAF	2,202	26	42	41	62.696	63%
13	NEXT PLC	5651	GBR	3,343	325	540	319	38.674	60%
14	CYCLE & CARRIAGE	5500	SGP	1,359	67	112	129	1.774	60%
15	YUM BRANDS INC	5812	USA	7,757	562	962	583	244	58%
16	HERMES INTERNATIONAL	5600	FRA	1,098	168	382	181	4.943	44%
17	DARDEN RESTAURANTS	5812	USA	4,655	180	439	232		41%
18	WOOLWORTHS	5411	AUS	12,811	256	676	295		38%
19	DAIRY FARM INTL HOLDINGS	5411	BMU	3,354	335	890	343		38%
20	EON-EDARAN OTOMOB	5500	MYS	1,955	62	174	125	7.942	36%
21	ARCS CO	5411	JPN	1,262	75	216	102	1.862	35%
22	JARDINE STRATEGIC HLDGS	5411	BMU	3,806	285	958	379	39	30%
23	JACK IN THE BOX INC	5812	USA	1,966	62	218	83	44.1	28%
24	SAINSBURY (J) PLC	5411	GBR	26,958	301	1,067	702	174.5	28%
25	KEIO DENTETSU RAILWAY	5311	JPN	3,449	76	291	121	12.91	26%
26	ROSS STORES INC	5651	USA	3,531	144	572	201	22.511	25%
27	AUTOZONE INC	5531	USA	5,326	390	1,604	428	44.179	24%
28	H & M HENNES & MAURITZ AB	5651	SWE	4,632	392	1,619	579	25.674	24%
29	TJX COMPANIES INC	5651	USA	11,981	460	1,923	578	94	24%
30	ABERCROMBIE & FITCH	5651	USA	1,596	80	343	195	22	23%
31	TRAVIS PERKINS PLC	5211	GBR	2,130	102	446	138	8.497	23%
32	EL PUERTO DE	5311	MEX	1,840	121	542	135		22%
33	JARDINE MATHESON HLDGS	5411	BMU	7,398	359	1,706	352		21%
34	BJS WHOLESALE CLUB INC	5399	USA	5,860	85	407	146	17	21%
35	AMAZON.COM INC	5961	USA	3,933	181	881	-150	7.5	20%
36	EL PUERTO DE LIVERPOOL SA	5311	MEX	1,840	104	542	135		19%
37	DAIEI INC	5411	JPN	17,904	1,034	5,397	1,103	24.216	19%
38	MATALAN PLC	5399	GBR	1,566	91	501	133	15.741	18%
39	PIER 1 IMPORTS INC/DE	5700	USA	1,780	94	528	129	17.4	18%
40	AXFOOD AB	5411	SWE	3,418	57	363	65	8.312	16%
41	KOHLS CORP	5311	USA	9,120	289	1,857	643	75	16%
42	BED BATH & BEYOND INC	5700	USA	3,665	145	1,038	302	23	14%
43	SAFEWAY PLC	5411	GBR	13,361	299	2,219	260	85.316	13%
44	SEVEN-ELEVEN JAPAN CO	5412	JPN	3,455	170	1,276	675	5.061	13%
45	FAMILY DOLLAR STORES	5331	USA	4,163	121	977	217	39.4	12%
46	LOWES COS	5211	USA	26,491	600	4,859	1,471	153	12%
47	SHIMAMURA CO	5651	JPN	2,257	60	502	73	1.313	12%
48	SHINSEGAE CO	5311	KOR	5,379	81	682	195	8.59	12%
49	FAST RETAILING CO	5600	JPN	2,751	92	784	223	1.853	12%

Retail Sector - 2

RETAIL									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	HOME DEPOT INC	5211	USA	58,247	1,409	12,278	3,664	280	11%
51	WALGREEN CO	5912	USA	28,681	683	5,981	1,019	141	11%
52	SHERWIN-WILLIAMS CO	5200	USA	5,185	202	1,772	311	25.752	11%
53	WAL-MART STORES	5331	USA	244,524	4,658	41,043	8,039	1400	11%
54	RADIOSHACK CORP	5731	USA	4,577	192	1,694	263	39.1	11%
55	DOLLAR GENERAL CORP	5331	USA	6,100	145	1,290	265	53.5	11%
56	MCDONALDS CORP	5812	USA	15,406	192	1,713	992	413	11%
57	PINAULT- PRINTEMPS-	5311	FRA	25,879	449	4,020	1,502	108.423	11%
58	CAWACHI	5912	JPN	1,348	18	164	50	1.27	11%
59	KROGER CO	5411	USA	51,760	1,066	9,615	1,233	290	11%
60	TALBOTS INC	5621	USA	1,631	52	472	121	11	11%
61	SEARS ROEBUCK & CO	5311	USA	41,366	1,259	11,510	1,584	289	11%
62	DUANE READE INC	5912	USA	1,274	22	201	31	6	11%
63	AMERIGAS PARTNERS -LP	5900	USA	1,308	50	469	55	6.3	11%
64	AICHI TOYOTA MOTOR CO	5500	JPN	2,800	50	477	79	5.601	11%
65	WEIS MARKETS INC	5411	USA	1,999	47	448	59	19	11%
66	SHINSEGAE CO	5311	KOR	5,379	72	682	195	8.59	10%
67	T & S STORES PLC	5411	GBR	1,344	30	302	35	15.835	10%
68	MAY DEPARTMENT STORES CO	5311	USA	13,491	271	2,772	542	116	10%
69	SPORTS AUTHORITY INC-	5940	USA	1,432	36	375	60	10	10%
70	KONINKLIJKE VENDEX KBB	5311	NLD	4,530	125	1,316	194	43.9	10%
71	PAYLESS SHOESOURCE INC	5661	USA	2,878	64	697	106	30.1	9%
72	OMNICARE INC	5912	USA	2,633	38	411	126	9.5	9%
73	ALBERTO-CULVER CO	5990	USA	2,651	94	1,060	138	16.9	9%
74	PRESIDENT CHAIN STORE	5411	TWN	2,298	55	628	74	3.988	9%
75	YOSHINOYA D&C CO	5812	JPN	1,189	50	576	70	2.473	9%
76	AHOLD (KONINKLIJKE) NV	5411	NLD	59,619	881	10,508	997	270.739	8%
77	CKE RESTAURANTS INC	5812	USA	1,363	15	186	26	30	8%
78	ALBERTSONS INC	5411	USA	35,626	710	8,596	865	202	8%
79	CVS CORP	5912	USA	24,182	376	4,552	717	105	8%
80	STAPLES INC	5940	USA	11,596	177	2,259	446	57.816	8%
81	CARREFOUR	5411	FRA	64,972	809	10,610	1,313	386.762	8%
82	TOKYU DEPARTMENT STORE CO	5311	JPN	3,478	61	806	92	5.251	8%
83	FOOT LOCKER INC	5661	USA	4,509	69	921	162	40.151	8%
84	SUPERVALU INC	5411	USA	19,160	149	2,020	257	57.4	7%
85	WILLIAMS-SONOMA INC	5700	USA	2,361	54	749	124	32	7%
86	JO-ANN STORES INC	5940	USA	1,682	45	641	45	21.2	7%
87	PENDRAGON PLC	5500	GBR	2,818	22	330	36	6.487	7%
88	VALOR CO	5411	JPN	1,375	23	338	28		7%
89	GUITAR CENTER INC	5700	USA	1,101	16	237	25	5.003	7%
90	TARGET CORP	5331	USA	43,917	656	10,181	1,654	306	6%
91	C D BRAMALL PLC	5500	GBR	2,085	16	258	26	4.499	6%
92	RUDDICK CORP	5411	USA	2,644	40	646	52	17.635	6%
93	CONTROLADORA	5399	MEX	3,323	34	557	82	32.993	6%
94	CASEYS GENERAL STORES INC	5500	USA	1,830	18	291	40	14.388	6%
95	LOOKERS PLC	5500	GBR	1,187	8	129	13	2.851	6%
96	TRACTOR SUPPLY CO	5200	USA	1,210	15	250	39	6	6%
97	O REILLY AUTOMOTIVE INC	5531	USA	1,312	24	415	82	14.273	6%
98	CLAIRES STORES INC	5600	USA	1,002	20	351	78	16.325	6%
99	CBRL GROUP INC	5812	USA	2,067	69	1,240	92	60.897	6%

Transportation & Automotive Sector - 1

	TRANSPORATION & AUTOMOTIVE								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	MALAYSIA INTL SHIPG CORP BHD	4412	MYS	1,430	247	143	345	6.659	172%
2	YAMATO TRANSPORT CO	4210	JPN	7,985	172	132	398	112.948	130%
3	CHINA MOTOR CO	3700	TWN	1,585	117	93	168	2.437	126%
4	TOYOTA AUTO BODY CO	3711	JPN	7,637	100	91	153	9.858	109%
5	KANTO AUTO WORKS	3711	JPN	4,789	68	63	87	6.726	107%
6	CARNIVAL CORP	4400	PAN	4,368	521	612	1,016	37.2	85%
7	PROTON PERUSAHAAN	3711	MYS	2,713	154	188	295		82%
8	YULON MOTOR CO	3711	TWN	1,218	69	93	158		74%
9	WINCANTON PLC	4731	GBR	1,544	28	39	31	16.632	73%
10	AMERICAN AXLE & MFG	3714	USA	3,480	127	180	176	12.2	70%
11	EXPEDITORS INTL WASH	4731	USA	2,297	59	84	113	8	70%
12	ALLIANT TECHSYSTEMS	3760	USA	2,172	129	199	129	12	65%
13	HYUNDAI MOBIS	3711	KOR	2,280	159	268	215	4.846	59%
14	THAI AIRWAYS INTERNATIONAL	4512	THA	2,365	163	290	236		56%
15	HYUNDAI MOBIS	3711	KOR	2,280	146	268	215	4.846	54%
16	HARLEY-DAVIDSON INC	3751	USA	4,302	315	639	580	9.3	49%
17	SSANGYONG MOTOR CO	3711	KOR	2,736	166	386	257	6.936	43%
18	ARRIVA PLC	4100	GBR	3,132	105	244	117	31.268	43%
19	POLARIS INDS INC	3790	USA	1,521	83	194	104	3.5	43%
20	RENAULT	3711	FRA	34,350	1,651	4,125	1,849	140.417	40%
21	THOR INDUSTRIES INC	3790	USA	1,245	30	75	51	5.384	40%
22	NISSAN MOTOR CO	3711	JPN	56,087	3,324	9,051	4,067	119.988	37%
23	DECOMA INTL INC	3714	CAN	2,057	56	161	93		35%
24	AUDI AG	3711	DEU	21,367	450	1,494	554	51.198	30%
25	NISSAN SHATAI CO	3711	JPN	4,667	32	115	54	6.105	27%
26	RENAULT	3711	FRA	34,350	1,029	4,125	1,849	140.417	25%
27	C H ROBINSON WORLDWIDE INC	4731	USA	3,294	77	323	96	3.814	24%
28	AISIN SEIKI CO	3714	JPN	11,565	207	902	394	44.132	23%
29	MONACO COACH CORP	3711	USA	1,223	20	87	45	5.79	23%
30	SHOWA CORP	3714	JPN	1,615	32	144	66	6.795	22%
31	SCANIA AB	3711	SWE	4,881	129	595	283	28.23	22%
32	CSX CORP	4011	USA	8,152	138	657	467	39.928	21%
33	BORG WARNER INC	3714	USA	2,731	63	304	150	14	21%
34	YUTAKA GIKEN CO	3714	JPN	1,135	12	60	25	2.201	21%
35	ARVINMERITOR INC	3714	USA	6,882	78	388	149	32	20%
36	OSHKOSH TRUCK CORP	3711	USA	1,744	28	143	60	6.1	20%
37	LANDSTAR SYSTEM INC	4213	USA	1,507	41	221	49	1.224	19%
38	TOYOTA MOTOR CORP	3711	JPN	131,863	3,452	18,658	7,759	264.096	19%
39	WEST JAPAN RAILWAY CO	4100	JPN	9,573	217	1,188	342	45.25	18%
40	EAST JAPAN RAILWAY CO	4011	JPN	21,073	643	3,784	805	78.76	17%
41	TOKAI RIKA CO	3714	JPN	2,004	33	194	62	8.14	17%
42	HOTAI MOTOR CO	3700	TWN	1,774	17	104	41		17%
43	DELPHI CORP	3714	USA	27,427	246	1,510	343	192	16%
44	CNF INC	4210	USA	4,762	73	462	114	26.2	16%
45	ALEXANDER & BALDWIN INC	4400	USA	1,081	17	107	46	2.025	16%
46	HONDA MOTOR CO	3711	JPN	65,474	2,320	15,375	3,504	126.9	15%
47	BBA GROUP PLC	4581	GBR	2,075	41	277	60	12.922	15%
48	ROYAL CARIBBEAN CRUISES	4400	LBR	3,434	58	431	351		13%
49	KIA MOTORS CORP	3711	KOR	10,252	270	2,038	358		13%
99	CBRL GROUP INC	5812	USA	2,067	69	1,240	92	60.897	6%

Transportation & Automotive Sector – 2

	TRANSPORATION & AUTOMOTIVE								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	CENTRAL JAPAN RAILWAY CORP	4011	JPN	11,195	175	1,326	403	23.617	13%
51	KEIHIN ELECTRIC	4011	JPN	2,571	28	212	66	9.239	13%
52	JUNGHEINRICH AG	3537	DEU	1,395	33	278	51	9.234	12%
53	EATON CORP	3714	USA	7,209	155	1,358	281	48	11%
54	BRINKS CO	4731	USA	3,777	53	466	69	50	11%
55	DURA AUTOMOTIVE SYS	3714	USA	2,360	15	136	47	18.8	11%
56	SWIRE PACIFIC	4512	HKG	1,951	40	365	693		11%
57	BMW-BAYER MOTOREN	3711	DEU	39,971	494	4,635	1,910	94.71	11%
58	AUTOLIV INC	3714	USA	4,443	46	449	181	30.1	10%
59	TENNECO AUTOMOTIVE	3714	USA	3,459	39	405	31	20	10%
60	FEDEX CORP	4513	USA	22,487	293	3,182	830	190.918	9%
61	DENSO CORP	3714	JPN	19,160	153	1,697	912	89.38	9%
62	FEDERAL SIGNAL CORP	3711	USA	1,057	19	217	46	7.378	9%
63	SUMITOMO WIRING SYSTEMS	3714	JPN	2,535	23	294	31	17.896	8%
64	FEDERAL-MOGUL CORP	3714	USA	5,422	61	826	-211	47.7	7%
65	YAMAHA MOTOR CO	3751	JPN	8,322	126	1,742	210	32.066	7%
66	NISHI NIPPON RAILROAD	4100	JPN	2,569	13	178	52	14.391	7%
67	ASIANA AIRLINES INC	4512	KOR	2,061	27	406	112	6.929	7%
68	PEUGEOT SA	3711	FRA	51,621	422	7,800	1,598	198.6	5%
69	GENERAL MOTORS CORP	3711	USA	184,214	988	23,624	1,736	350	4%
70	VOLKSWAGEN AG	3711	DEU	82,195	370	9,184	2,443	324.892	4%
71	TOBU RAILWAY CO	4011	JPN	5,630	39	1,149	87	22.223	3%
72	YACHIYO INDUSTRY CO	3714	JPN	1,852	2	53	16	2.902	3%
73	DAIHATSU MOTOR CO	3711	JPN	7,964	46	1,451	121	27.566	3%
74	KAWASAKI KISEN KAISHA	4412	JPN	5,197	12	407	85	6.013	3%
75	CHINA AIRLINES	4512	TWN	2,116	6	195	91	8.086	3%
76	KANAGAWA CHUO KOTSU CO	4100	JPN	1,047	2	125	9	8.468	2%
77	IRON MOUNTAIN INC	4220	USA	1,318	6	332	67	11.8	2%
78	NACCO INDUSTRIES	3537	USA	2,548	7	352	50	12.2	2%
79	FUJI HEAVY INDUSTRIES	3711	JPN	11,272	38	2,369	275	27.478	2%
80	TOYODA GOSEI CO	3714	JPN	2,832	3	208	142	12.321	1%
81	MAZDA MOTOR CORP	3711	JPN	19,421	49	4,642	198	36.184	1%
82	DAIMLERCHRYSLER AG	3711	DEU	141,406	169	16,495	4,610	370.677	1%
83	HANJIN SHIPPING CO	4400	KOR	4,483	2	248	51	1.959	1%
84	SENKO CO	4210	JPN	1,376	0	56	14	5.93	1%
85	MITSUBISHI MOTORS CORP	3711	JPN	31,909	23	4,906	307	45.275	0%
86	MODINE MFG CO	3714	USA	1,092	0	221	34	7.4	0%
87	SEA CONTAINERS	4400	BMU	1,615	-1	231	43	15	-1%
88	HYUNDAI MOTOR CO	3711	KOR	30,868	-72	5,543	892	48.759	-1%
89	SUZUKI MOTOR CO	3711	JPN	16,553	-54	3,548	255	39.127	-2%
90	SHIMANO INC	3751	JPN	1,078	-4	221	65	5.399	-2%
91	TURK HAVA YOLLARI AO	4512	TUR	1,449	-7	354	7	11.242	-2%
92	NIPPON YUSEN KABUSHIKI KAISH	4400	JPN	10,261	-26	1,135	117	18.016	-2%
93	QANTAS AIRWAYS	4512	AUS	5,021	-15	607	224	31.632	-2%
94	LAN CHILE SA	4512	CHL	1,452	-12	453	31	10.173	-3%
95	STANLEY ELECTRIC CO	3714	JPN	1,941	-6	218	107	8.66	-3%
96	CIA SUDAMERICANA DE	4412	CHL	1,675	-6	222	37	5.15	-3%
97	MITSUI OSK LINES	4412	JPN	7,477	-18	593	121	7.161	-3%
98	SEA CONTAINERS	4400	BMU	1,615	-8	231	43	15	-3%
99	HUB GROUP INC	4731	USA	1,336	-5	139	1	1.405	-4%

Transportation & Automotive Sector – 3

	TRANSPORATION & AUTOMOTIVE								
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
100	NISSIN CORP	4400	JPN	1,540	-7	179	12	3.427	-4%
101	FUTABA INDUSTRIAL CO	3714	JPN	1,624	-5	87	80	3.812	-6%
102	TOKICO	3714	JPN	1,048	-7	113	32	4.402	-6%
103	NISSAN DIESEL MOTOR	3711	JPN	3,132	-32	518	-27	9.268	-6%
104	EGL INC	4731	USA	1,869	-40	645	9	8.7	-6%
105	H.I.S. CO	4700	JPN	1,863	-16	254	15	3.661	-6%
106	TOYOTA INDUSTRIES	3711	JPN	8,782	-59	918	180	25.03	-6%
107	KAYABA INDUSTRY CO	3714	JPN	1,705	-16	223	22	6.105	-7%
108	UNIPRES CORP	3714	JPN	1,246	-8	98	10	4.753	-8%
109	TOKYU CORP	4011	JPN	11,379	-132	1,524	28	31.32	-9%
110	KEISEI ELECTRIC	4100	JPN	1,944	-27	309	46	7.72	-9%
111	VALEO SA	3714	FRA	9,267	-56	603	128	69.1	-9%
112	MAN AG	3711	DEU	15,163	-163	1,755	139	75.054	-9%
113	HINO MOTORS	3711	JPN	6,984	-84	861	41	20.764	-10%
114	SANKYU INC	4210	JPN	2,628	-9	80	18	22.454	-12%
115	JAPAN AIR SYSTEM CO	4512	JPN	2,777	-47	397	-39	6.418	-12%
116	GATX CORP	4700	USA	1,274	-29	241	29	2.8	-12%
117	MYTRAVEL GROUP PLC	4700	GBR	6,438	-132	1,038	-88	25.217	-13%
118	SOUTHWEST AIRLINES	4512	USA	5,486	-148	1,072	241	33.705	-14%
119	JAPAN AIRLINES SYSTEM CORP	4512	JPN	12,883	-380	2,572	-294	46.075	-15%
120	DANA CORP	3714	USA	9,589	-127	823	58	63.1	-15%
121	NIPPON EXPRESS CO	4210	JPN	13,773	-86	545	192	65.16	-16%
122	TOYODA MACHINE WORKS	3714	JPN	1,654	-31	195	43	6.52	-16%
123	ALL NIPPON AIRWAYS CO	4512	JPN	9,987	-329	1,978	-232	28.907	-17%
124	FLEETWOOD	3716	USA	2,318	-82	454	-71	13	-18%
125	UNISIA JECS CORP	3714	JPN	1,597	-38	158	-17	7.659	-24%
126	HAYES LEMMERZ INTL INC	3714	USA	2,002	-30	124	-80	11.1	-24%
127	VARIG S/A	4512	BRA	2,608	-193	782	-207		-25%
128	SEIBU RAILWAY CO	4011	JPN	3,449	-32	129	9	16.118	-25%
129	FIRST CHOICE HOLIDAYS	4700	GBR	3,229	-76	298	39	13.796	-25%
130	VOLVO AB	3711	SWE	19,220	-626	2,298	144	70.546	-27%
131	AIRBORNE INC	4513	USA	3,344	-99	362	15	22.5	-27%
132	ATA HOLDINGS CORP	4512	USA	1,277	-162	588	-169	7.2	-28%
133	KAMIGUMI CO	4400	JPN	1,270	-29	104	73	3.961	-28%
134	SEINO TRANSPORTATION CO	4210	JPN	3,363	-80	228	112	21.275	-35%
135	HANJIN HEAVY INDUSTRIES CO	3730	KOR	1,400	-28	79	19	3.709	-36%
136	EVERGREEN MARINE CORP (TWN)	4412	TWN	1,612	-41	112	50		-36%
137	KOC HOLDING AS	3700	TUR	6,138	-407	1,115	-268	39.866	-37%
138	ALASKA AIR GROUP INC	4512	USA	2,224	-133	360	-67	14.943	-37%
139	AMERICA WEST HLDG CP	4512	USA	2,047	-193	512	-180	13.755	-38%
140	US AIRWAYS GROUP INC	4512	USA	6,977	-880	2,280	-1,663	37.1	-39%
141	KUONI REISEN AG	4700	CHE	2,410	-33	80	17	7.907	-42%
142	AKEBONO BRAKE INDUST CO	3714	JPN	1,040	-59	136	-52	4.408	-44%
143	TOFAS-TURK OTOMOBIL	3711	TUR	1,007	-40	91	-13	4.205	-44%
144	KINKI NIPPON RAILWAY CO	4011	JPN	10,707	-459	1,049	-415	38.851	-44%
145	HITACHI TRANSPORT SYSTEM	4210	JPN	2,092	-43	91	22	7.377	-47%
146	NANKAI ELECTRIC	4011	JPN	2,028	-38	77	13	8.894	-50%
147	VISTEON CORP	3714	USA	18,395	-430	865	-87	77	-50%
148	TRINITY INDUSTRIES	3743	USA	1,487	-92	163	-20	11.81	-57%
149	YML-YANG MING LINE	4412	TWN	1,551	-16	29	33		-57%

Utilities Sector

UTILITIES									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	UNITED UTILITIES PLC	4931	GBR	2,906	336	253	430	13.802	133%
2	SCOTTISH & SOUTHERN	4911	GBR	6,288	689	575	690	9.474	120%
3	REPUBLIC SERVICES INC	4953	USA	2,365	112	239	240	12.7	47%
4	SCOTTISH POWER PLC	4911	GBR	8,157	563	1,528	746	13.825	37%
5	WASTE MANAGEMENT INC	4953	USA	11,142	515	1,503	823	53	34%
6	CHUBU ELECTRIC POWER CO INC	4911	JPN	17,873	565	1,668	875	25.331	34%
7	TOKYO ELECTRIC POWER	4911	JPN	40,403	1,196	4,287	1,357	52.322	28%
8	CHUGOKU ELECTRIC	4911	JPN	8,290	247	924	362	14.638	27%
9	KANSAI ELECTRIC POWER	4911	JPN	21,480	349	2,223	661	35.554	16%
10	HOKKAIDO ELECTRIC	4911	JPN	4,259	85	548	213	7.12	15%
11	TOHOKU ELECTRIC	4911	JPN	13,091	225	1,464	508	18.678	15%
12	OKINAWA ELECTRIC	4911	JPN	1,192	23	158	42	2.558	15%
13	CENTRICA PLC	4932	GBR	21,508	455	3,341	718	38.051	14%
14	HOKURIKU ELECTRIC POWER CO	4911	JPN	3,961	54	401	173	6.932	13%
15	KYUSHU ELECTRIC	4911	JPN	11,674	187	1,421	528	19.06	13%
16	SHIKOKU ELECTRIC POWER CO	4911	JPN	4,803	77	599	211	8.461	13%
17	TOKYO GAS CO	4932	JPN	9,262	265	2,704	486	15.673	10%
18	ALLIED WASTE INDS INC	4953	USA	5,517	46	485	225	29	9%
19	TOHO GAS CO	4923	JPN	2,576	44	831	79	4.889	5%
20	OSAKA GAS CO	4923	JPN	7,786	54	2,394	244	15.02	2%
21	SAIBU GAS CO	4923	JPN	1,077	-1	381	25	2.989	0%
22	TAKUMA CO	4950	JPN	1,325	-21	128	43	2.848	-17%
23	SCHNEIDER ELECTRIC SA	4911	FRA	8,565	-500	2,120	399	74.814	-24%
24	VA TECHNOLOGIE AG	4911	AUT	3,660	-152	496	-88	17.725	-31%
25	CPFL-CIA PAULISTA	4911	BRA	1,779	-173	141	-135	3.006	-123%
26	KEPCO-KOREA ELEC	4911	KOR	15,666	-1,022	807	1,266	16.148	-127%
27	WILLIAMS COS INC	4922	USA	5,608	-1,132	867	-502	7.3	-131%
28	ENERSIS SA	4911	CHL	3,613	-450	324	-293	10.994	-139%
29	CALPINE CORP	4991	USA	7,458	-571	315	49	3.353	-181%
30	VIVENDI UNIVERSAL SA	4941	FRA	54,971	-23,882	12,230	-22,027	0.335	-195%
31	CIA SANEAMENTO BASICO ESTADO	4941	BRA	1,332	-429	211	-230	18.505	-203%
32	ENDESA-EMPR NAC ELEC	4911	CHL	1,364	-207	53	2		-393%
33	AES CORP. (THE)	4991	USA	8,632	-2,536	112	-2,590	36	-2264%

Wholesale Sector - 1

WHOLESALE									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
1	TPV TECHNOLOGY	5045	BMU	1,506	35	63	51	6.562	56%
2	CARDINAL HEALTH INC	5122	USA	56,737	1,131	2,228	1,412		51%
3	PRIORITY HLTHCARE CP	5122	USA	1,200	31	65	44	0.715	48%
4	PETROBRAS	5172	BRA	6,763	191	462	239		41%
5	COFCO INTERNATIONAL	5150	BMU	1,425	33	87	52	3.72	38%
6	NOBLE GROUP	5110	BMU	2,960	25	67	30	0.7	37%
7	GRUPO CASA SABA SA DE	5122	MEX	1,740	42	118	43		35%
8	SYNTHES-STRATEC INC	5047	CHE	1,007	135	408	251	3.47	33%
9	UNIVERSAL CORP/VA	5150	USA	2,500	96	293	107	26	33%
10	DANKA BUSINESS	5040	GBR	1,628	174	538	179	10.87	32%
11	PATTERSON DENTAL CO	5047	USA	1,657	108	396	116	4.772	27%
12	LI & FUNG	5099	BMU	4,780	75	291	139	5.313	26%
13	AMERISOURCEBERGEN	5122	USA	45,235	314	1,221	345	13.7	26%
14	MCKESSON CORP	5122	USA	57,121	428	2,200	562	24.5	19%
15	FIRST PACIFIC CO	5000	BMU	1,892	48	261	40	44.82	18%
16	VARDY (REG) PLC	5010	GBR	1,988	37	209	33	4.571	18%
17	SYSCO CORP	5140	USA	26,140	661	3,837	778		17%
18	SLIGRO FOOD GROUP NV	5140	NLD	1,228	25	157	35	2.561	16%
19	DIMON INC	5190	USA	1,260	17	109	27	19.9	16%
20	FISHER SCIENTIFIC INTL	5040	USA	3,238	93	612	97	9.1	15%
21	SCHUITEMA NV	5140	NLD	2,817	34	223	37	5.561	15%
22	SCHEIN HENRY INC	5047	USA	2,825	90	599	118	6.9	15%
23	PREMIER FARNELL PLC	5065	GBR	1,152	51	350	63	4.994	15%
24	ALLIANCE UNICHEM PLC	5122	GBR	12,055	118	808	163	21.292	15%
25	GENUINE PARTS CO	5013	USA	8,259	265	1,886	368	30.7	14%
26	LG INTERNATIONAL CORP	5000	KOR	21,433	44	326	76	0.946	14%
27	OWENS & MINOR INC	5047	USA	3,960	37	304	47	2.968	12%
28	GRAINGER (W W) INC	5000	USA	4,644	131	1,207	235	15.236	11%
29	INCHCAPE PLC	5010	GBR	5,129	66	621	115	10.067	11%
30	FYFFES PLC	5140	IRL	1,414	19	187	42	2.436	10%
31	DAISYTEK INTL CORP	5110	USA	1,185	8	85	12	1.2	9%
32	ANDERSONS INC	5150	USA	1,076	12	139	13	2.958	9%
33	FYFFES PLC	5140	IRL	1,414	15	187	42	2.436	8%
34	TOYOTA TSUSHO CORP	5010	JPN	21,302	59	736	155	11.223	8%
35	NASH FINCH CO	5141	USA	3,875	25	347	31	10.621	7%
36	PREMIER FARNELL PLC	5065	GBR	1,152	25	350	63	4.994	7%
37	YAMAE HISANO CO	5141	JPN	1,984	10	140	16	1.497	7%
38	PERFORMANCE FOOD GROUP CO	5141	USA	4,438	41	595	66	10.2	7%
39	ATOL CO	5122	JPN	1,461	8	127	13		6%
40	CORNERSTONE PRPANE	5172	USA	4,206	9	151	-9	2.206	6%
41	FOODLAND ASSOCIATED	5141	AUS	2,447	20	350	54		6%
42	KAWASHO CORP	5051	JPN	9,501	19	344	30	5.026	6%
43	TOHO PHARMACEUTICAL	5122	JPN	3,912	14	261	26	3.332	5%
44	OSAKA UOICHIBA CO	5140	JPN	3,299	10	202	15		5%
45	TOKAN CO	5141	JPN	1,050	5	93	8	0.571	5%
46	YUASA TRADING CO	5099	JPN	3,330	11	222	21	1.976	5%
47	SUZUKEN CO	5122	JPN	8,708	34	762	131	8.423	4%
48	APPLIED INDUSTRIAL	5080	USA	1,447	13	335	15	4.508	4%
49	TOHO CO (WHOLESALE)	5140	JPN	1,237	8	213	14	1.773	4%

Wholesale Sector - 2

WHOLESALE									
Rank	Company Name	Primary SIC Code	Country of Incorporation	Revenue - in $M	Information Value-Added - in $M	Est. Transaction Costs - in $M	Income Before Extra Items - $M	Employees - in Thousands	Information Productivity - %
50	RYOSHOKU	5141	JPN	8,453	21	626	39	4.029	3%
51	CENTRAL GARDEN & PET	5190	USA	1,078	9	268	29	3.8	3%
52	ITOCHU-SHOKUHIN CO	5141	JPN	3,936	10	311	29	1.377	3%
53	AIRGAS INC	5084	USA	1,787	22	698	68	8.5	3%
54	WESCO INTL INC	5063	USA	3,326	14	494	23	5.4	3%
55	HUGHES SUPPLY INC	5070	USA	3,066	15	571	58	7.16	3%
56	METCASH TRADING	5140	AUS	2,982	6	237	30	4.156	3%
57	PALTAC CORP	5122	JPN	2,541	6	260	26	1.61	2%
58	TBC CORP	5010	USA	1,110	6	252	27	3.2	2%
59	DAISUI CO	5140	JPN	1,967	1	61	3	0.644	2%
60	HOKUYAKU INC	5122	JPN	1,167	2	85	8		2%
61	MITANI CORP	5030	JPN	2,172	3	175	7	2.311	2%
62	SIG PLC	5030	GBR	1,735	6	364	47	6.316	2%
63	KANEMATSU CORP	5051	JPN	6,891	7	423	18	3.761	2%
64	ELECTROCOMPONENTS	5065	GBR	1,150	7	449	93	5.028	1%
65	KATO SANGYO CO	5140	JPN	3,754	3	223	22	1.614	1%
66	SUMIKIN BUSSAN CORP	5051	JPN	6,753	5	442	12	4.027	1%
67	IKON OFFICE SOLUTIONS	5040	USA	4,828	18	1,595	150	33.2	1%
68	ASHLAND INC	5160	USA	7,611	11	1,185	129	24.3	1%
69	WATSCO INC	5070	USA	1,181	1	237	29	2.4	1%
70	COMPUCOM SYSTEMS INC	5045	USA	1,571	0	157	18	3.437	0%
71	SAN-MIC CHIYODA CORP	5110	JPN	1,386	0	65	3		0%
72	UNITED NATURAL FOODS INC	5140	USA	1,175	0	188	17	3	0%
73	UNITED STATIONERS INC	5110	USA	3,702	0	416	60	6	0%
74	HANDLEMAN CO	5099	USA	1,348	0	202	28		0%
75	KYOKUYO CO	5140	JPN	1,337	0	106	9	1.162	0%
76	AZWELL INC	5122	JPN	4,012	0	378	22	4.218	0%
77	PSS WORLD MEDICAL INC	5047	USA	1,178	-1	287	14	2.972	0%
78	HAGEMEYER NV	5063	NLD	7,887	-5	1,433	125	21.445	0%
79	MARUBENI CORP	5099	JPN	72,224	-38	2,839	249	24.829	-1%
80	UNIQ PLC	5140	GBR	1,527	-5	341	39	9.245	-1%
81	WORLD FUEL SERVICES CORP	5172	USA	1,547	-1	45	10	0.37	-2%
82	SHINSHO CORP	5050	JPN	3,789	-2	123	1		-2%
83	MITSUBISHI CORP	5099	JPN	109,476	-105	4,890	511	47.37	-2%
84	WOLSELEY PLC	5070	GBR	11,585	-56	2,499	419	37.136	-2%
85	IWATANI INTERNATIONAL	5172	JPN	4,484	-17	768	23	6.544	-2%
86	MARUICHI CO	5140	JPN	1,552	-4	176	2		-2%
87	WORLD CO	5130	JPN	1,912	-22	952	49	6.815	-2%
88	FLEMING COMPANIES INC	5141	USA	15,625	-22	926	27	23	-2%
89	KAGA ELECTRONICS CO	5045	JPN	1,341	-4	117	19	2.152	-3%
90	KURAYA SANSEIDO INC	5122	JPN	10,468	-27	860	41	7.78	-3%
91	SAN-AI OIL CO	5171	JPN	2,150	-8	208	6	1.746	-4%
92	HAPPINET CORP	5090	JPN	1,006	-4	109	6		-4%
93	RELIANCE STEEL &	5051	USA	1,745	-15	379	30	4.5	-4%
94	VITAL-NET INC	5122	JPN	1,984	-7	162	5	2.234	-5%
95	YAMAZEN CORP	5084	JPN	2,021	-12	227	4		-5%
96	SATORI ELECTRIC CO	5065	JPN	1,484	-5	92	7		-5%
97	PETRONAS DAGANGAN	5171	MYS	2,361	-9	153	39	1.3	-6%
98	HANWA CO	5051	JPN	5,610	-10	166	49	1.239	-6%
99	MEIWA CORP	5190	JPN	1,095	-4	61	-3	0.44	-6%

Author Biography:

PAUL A. STRASSMANN's (paul@strassmann.com and www.strassmann.com) career includes service as chief corporate information systems executive (1956-1978; 1990-93 and 2002-2003), vice-president of strategic planning for office automation (1978-1985) and information systems advisor (1986-date).

Mr. Strassmann is president of The Information Economics Press, Senior Advisor to the Science Applications International Corporation, professor at the School of Information Studies, Syracuse University and Faculty Fellow, University of North Texas. He serves on the Board of Editors of the Information Economics Journal, the Board of Directors of the Armed Forces Communications and Electronics Association and the Boards of Directors of Meta Software, and Trio Security corporations. His globally syndicated monthly columns about I.T. investments have appeared in the Computerworld magazine since 1994. Strassmann holds Registered U.S. Trademarks for Return-on-Management®, R-O-M®; Information Productivity® and Knowledge Capital®.

After serving as an advisor to the Deputy Secretary of Defense since 1990 he was appointed to a newly created position of Director of Defense. He was responsible for organizing and managing the corporate information management (CIM) program across the Department of Defense that included a major cost reduction and business re-engineering program of the defense information infrastructure. Strassmann had policy oversight for Defense Department's information technology expenditures. He is 1993 recipient of the Defense Medal for Distinguished Public Service, the Department's highest civilian recognition. In 2002 he was recalled to government service as the Acting Chief Information Officer of the National Aerospace and Space Administration, with responsibility and accountability for the computing and telecommunication information infrastructure. In 2003 he retired from government service after receiving the NASA Exceptional Service Medal for improving I.T. architecture, security and services.

Strassmann joined Xerox in 1969 as director of administration and information systems with worldwide responsibility for all internal Xerox computer activities. From 1972 to 1976 he served as founder and general manager of its Information Services Division supporting corporate computer operations, telecommunication, administrative services, software development and management consulting services. Introduced major innovations in global telecommunication management. From 1976 to 1978 he was corporate director responsible for worldwide computer, telecommunications and administrative functions. He was key contributor to shaping business Xerox strategy for office automation and developed new methods for evaluating the productivity of computer investments.

Until his retirement from Xerox he served as vice president of strategic planning for the Information Products Group, with responsibility for strategic investments, acquisitions and product plans involving the corporation's worldwide electronic businesses. Afterwards he became author, lecturer and consultant to firms such as AT&T, Citicorp, Digital Equipment, General Electric, General Motors, IBM, SAIC, Shell Oil, Sun Microsystems, Texas Instruments as well as Adjunct Professor at the U.S. Military Academy at West Point, and Visiting Professor at the University of Connecticut and the Imperial College, in London, England. His public involvement includes presentations to the Senate, the House of Representatives, Board of Governors of the Federal Reserve, the British House of Commons and the USSR Council of Ministers.

Prior to joining Xerox Strassmann held the job of Corporate Information Officer for the General Foods Corporation and afterwards as the Chief Information Systems executive for the Kraft Corporation from 1960 through 1969. He started working with computers in 1954 when he designed a method for scheduling toll collection personnel on the basis of punch card toll receipts. He earned an engineering degree from the Cooper Union, New York, and a master's degree in industrial management from the Massachusetts Institute of Technology, Cambridge. He is author of over 250 articles on information management and information worker productivity. His 1985 book Information Payoff–The Transformation of Work in the Electronic Age has attracted worldwide attention and was translated into a number of languages. His 1990 book, The Business Value of Computers, now translated into Japanese, covers research on the relation between information technology and profitability of firms. His 1993 book, The Politics of Information Management offers guidelines on organization of the information function for greatest effectiveness. A companion volume, The Irreverent Dictionary of Information Politics reflects on the inconsistencies in information management practices. His 1997 book, The Squandered Computer, offers specific recommendations on how to obtain better value from investments in information technologies and was Amazon.com #1 best selling book on information management in 1998. His latest book is on Information Productivity - Assessing the Information Management Costs of U.S. Industrial Corporations includes an information productivity ranking of U.S. firms. Strassmann has is now converting his publishing to web-based distribution of research studies. The first ten studies are now appearing on http://www.strassmann.com/iep/digital./

Strassmann was chairman of the committee on information workers for the White House conference on productivity and served on the Department of Defense Federal Advisory Board for Information Management and the Army Science Board. He is life member of the Data Processing Management Association, fellow of the British Computer Society, senior member of the Institute of Electrical and Electronic Engineers and member of the honorary engineering society Tau Beta Pi. He authored the code of conduct for data processing professionals; was recipient of the 1992 Award for Achievement by the Association for Federal Information Resource Management; the 1992 International Industry Award for advancing the adoption of Open Systems and the 1996 Excellence Award for Business Engineering. In 1997 he was named as one of the twelve most influential Chief Information Officers of the last decade by the CIO magazine. In 2000 he was cited by the Department of Defense for his pioneering work as one of the executives responsible for advancing the cause of U.S. information capabilities. Strassmann served in a guerilla combat unit of the Czechoslovak Army from 1944 to the end of war in 1945.