

**AFFIRMING THE MOBILITY QUOTIENT:  
HOW WIRELESS CONNECTIVITY AND SERVICES  
ARE SHAPING WORKER PRODUCTIVITY**

An Economic Appraisal Sponsored by Cisco Systems, Incorporated  
*Executive Summary of Findings*  
February 2005

**CISCO SYSTEMS**



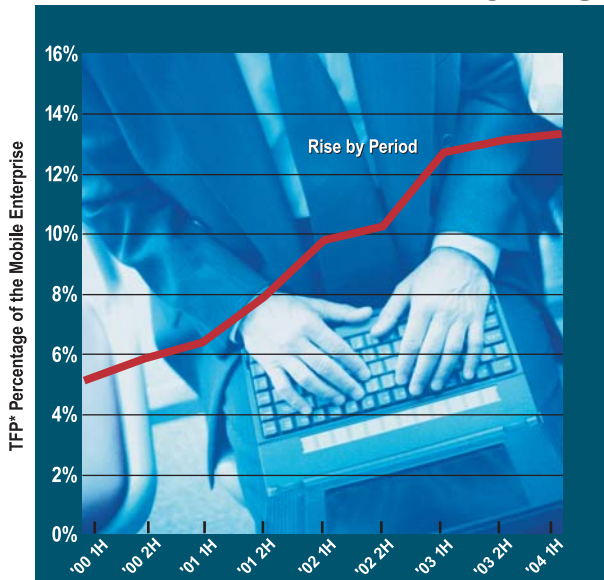
## EXECUTIVE OVERVIEW

Mobility in the past decade has brought about sweeping changes to the productivity of the global workforce as information becomes an increasingly vital link to job performance. Through the sponsorship of this research study by Cisco Systems, OMNI Consulting Group examined the fundamental shifts in worldwide macroeconomic and microeconomic forces that face enterprise business and technology decision makers regarding the adoption of wireless connectivity, devices, and services. More relevant than ever before, the study looks at improving productivity of workers who capitalize on leveraging this wireless advantage to optimize their output. This translated to greater efficiency and a source of competitive advantage with differentiation for enterprises that place strategic value on mobile data services to succeed.

Of the roughly 180,000 jobs being created monthly within the United States, approximately 8.3% of these come about as a direct result of mobile workforce transformation. At the macroeconomic view of labor, this means that positive job growth is inherently linked to workers capable of performing their role in a distinctly different sort of way. From the insurance claims representative to law enforcement personnel, mobility is changing the equation of getting more done in lesser amounts of time and at higher volumes than ever before.

Total Factor Productivity (TFP) is a new economic measurement that can be used to determine how well businesses utilize their capital, labor, and mobile technology resources to produce goods and services. Based on this study, the trend line of productivity demonstrates an overall TFP improvement of 13.4%—supporting the notion that employers can actually gain five additional hours per week of output from each of their workers simply by incorporating mobile data services and related technologies.

### Return on Investment of Mobility is High



A Rise in Total Factor Productivity (TFP) Reflects:

- Increased Investment in Mobile Data Technology
- Mobile Worker Usage of Data Services in Job Performance
- Better Efficiency in Labor Resources

\*TFP is an economic measurement of how well a business utilizes its capital, labor, and mobile technology resources to produce its goods and services.

Unlike general surveys of mobile users, we set forth to understand the quantitative differences between economic spending and the resultant utility—or business value—that can be achieved by modeling data that describes the interaction of people and their use of mobile technology in their jobs. The study itself applies a wide array of statistical sampling alongside a variety of econometric methods to determine just how quickly and why value is realized from investments in wireless data.

Our results came from analyzing real data of enterprise operations, mobile service operators, and those who directly use mobility in ways that solve information resource problems.

By virtue of economic modeling and statistical sampling, this research highlights the ways in which mobile services infrastructure is improving the GDP (gross domestic product) outlook for countries and changing the game plan for organizations worldwide. Our premise that mobility does, in fact, equal productivity presents a number of insights at both the macro and microeconomic levels. And as part of GDP estimates, this implies a widening in the respective size that electronic information and mobility shares in growing world economies.

## MACROECONOMIC LESSONS IN A GLOBAL ECONOMY

We can all agree that technology and the effects of globalization have changed our way of conducting business in recent years. A key concept that most executives accept involves productivity increases being derived from implementing new technologies. These technology additions benefit the balance sheet and hence shareholder value.

A number of observations in the data point toward why this phenomenon is happening. Among the most significant conclusions, we recognized:

- Network convergence is bringing users of mobile IT applications and services closer
- Reliability of mobile performance is improving
- Decentralization of workforce operations
- Willingness to spend for mobility enhancement
- Ubiquity of wireless devices and services with expanded coverage

At the pinnacle of change, mobility is forging new ground because of the positive realization that companies can increase their capability to produce goods and services without adding costlier inputs. As the early adopters of mobile services in the late 1990's became mainstream users in 2004, we noted a substantial increase in value recognition at both corporate and individual levels.

In total, these groups are beginning to clearly differentiate themselves by using mobility as a strategic lever in adapting routine business processes to accomplish more through the execution of mobile technology. Mobility is finally delivering on its promise to enhance the worker's quality of life with the subsequent productivity gains reflected in larger payrolls and spending.

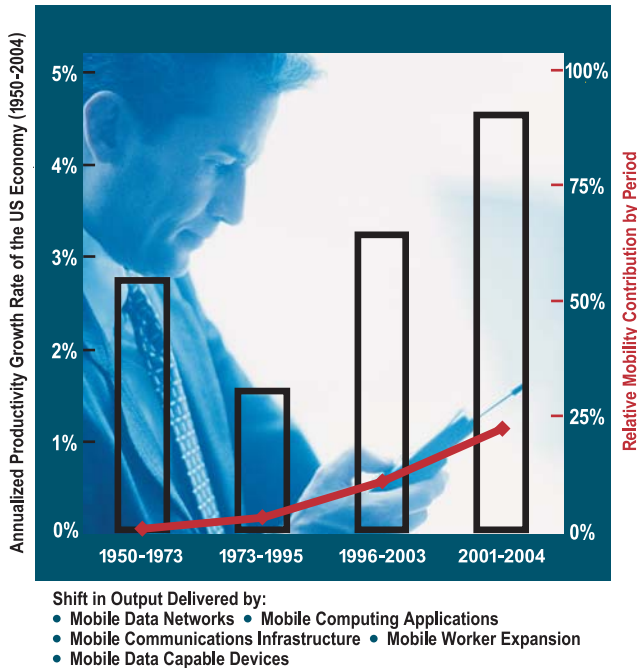
## Real GDP Growth: Mobility Equals Economic Productivity



Growth in GDP is Delivered by:

- Mobile Communications Infrastructure
- Mobile Worker Expansion
- Mobile Data Networks
- Mobile Computing Applications

## The Impact of Mobility on Economic Growth Rates



## DRILLING DEEPER INTO VERTICAL INDUSTRIES

Not every industry views and utilizes mobility in quite the same manner. Nor do those who use mobility gain the same benefits across a set of standardized measurements. This research study examines six different industries to gain a perspective on why mobility changed the productivity quotient. The key statistics from each of these vertical segments relate to how companies can choose to improve their operations by the primary factors in microeconomic circumstances.

### Insurance

Insurance services at the consumer level delegate claims management to field representatives that must gather information and adjust loss payouts according to a policy basis.

#### Key Performance Indicators include:

- Operational efficiency and field staffing of claims management
- Resolution and expiration of claim cases
- Optimization of information resources and handling accuracy

**Key Statistic:** Field claims representatives can improve case management workloads by handling 7.4 additional claims per week and improve payout ratios by an annual savings of 6.4% per adjuster. The workload of an adjuster

can increase moderately by avoiding the manual input, search, and gathering of data processing as part of the claim.

### Hospitality

Hospitality services run the full gamut of hotels, restaurants, and retail locations that provide managed access to patrons. More recently, our study reveals that business travelers have begun to show a distinct bias toward selecting establishments that offer broadband connectivity options—both wired and wireless.

#### Key Performance Indicators include:

- Guest revenue yield per visit or stay
- Vacancy or loading factor per day
- Elasticity of patron and guest spending

**Key Statistic:** Across the range of options for broadband access, guests or service patrons are more likely to select a location with Internet access 7.2 times out of 10, when given a comparable hospitality solution. Travelers to hotel properties will spend equivocally 6.9% more per room night rate for suitably equipped broadband facilities. On an average US\$100 per night room, a guest will spend roughly \$7 more for an establishment with mobile high-speed connectivity than those without.

### Public Safety

Immediate access to mobile data is critical for the performance of law enforcement duties in the public safety sector.

#### Key Performance Indicators include:

- Increased retention of criminals at large
- Lowered officer and public servant injury
- Accuracy and expediency of information from central database resources

**Key Statistic:** Mobile data services resulted in approximately 3.7% more arrests for wanted persons during the period of 2003-2004. The application of mobile data terminals inside police vehicles aided in the statistical measure of arrested persons because of information links.

## Manufacturing and Logistics

The movement of goods and services within the economy requires a well-performing supply chain. Mobile data services in the warehouse environment help enhance the quality of logistics in getting products from one point to another while reducing errors.

### Key Performance Indicators include:

- Technical, operational, and economic efficiency improvements
- Quality of shipments reaching end destinations
- Accuracy of data concerning the movement of high value or volatile products

**Key Statistic:** Use of RFID wireless technology eliminates 6.0% of logistics errors within any given warehouse operation. Based on the initial design of RFID networks, a warehouse shipper operation can effectively reduce the errors of miscalculated shipments, improperly picked loads, and the inventory handling process.

## Healthcare and Pharmaceutical

Most pharmaceutical sales organizations employ field sales representatives to directly impact the demand fulfillment and marketing of prescription drug products. The individual field representative relies on access to physician networks and information pertinent to recommending certain solutions.

### Key Performance Indicators include:

- Prescription fulfillment rates by physicians and medical practice groups
- Adoption and conversion of sales leads
- Order fulfillment and demand planning for manufacturer operations

**Key Statistic:** Field sales representatives may achieve incremental physician briefings per week by an average increase of 8.3 visits due to mobile data and voice access. Depending on the size of a given sales territory, a single representative can maximize their time within a market at greater efficiency due to sales relationship and supply chain management applications.

## Financial Services

Markets fluctuate in real time as stocks, bonds, and other currencies move within trade circles. In order to place trade orders, financial services professionals have come to rely on data at their fingertips as they manage investment portfolios.

### Key Performance Indicators include:

- Execution of trade options to manage client wealth portfolios
- Profitability of fund and portfolio yields
- Data synchronization with field agents, brokers, and consultants

**Key Statistic:** Financial services agents can execute approximately 11.4% more trade options with wireless data services and achieve an average nominal improvement of 3.1% portfolio performance. Comparing two series of data on brokers with mobility against those without, the average volume of increased trade activity was marked, and the performance of the overall portfolio increased notably.

#### FOR FURTHER INFORMATION

A more extensive discussion of our analysis and findings may be found in the full-length abstract, “Affirming the Mobility Quotient: How Wireless Connectivity and Services are Shaping Worker Productivity.” Additional reading material and video footage can be downloaded at the Cisco Systems Webpage: <http://www.cisco.com/go/mobile>

#### ABOUT OMNI CONSULTING GROUP LLP AND THE AUTHOR



Founded in 1989, OMNI Consulting Group LLP is the premiere source for empirical knowledge behind today's fast moving technology marketplace. Frank J. Bernhard is an acclaimed technology economist and the managing principal of the Supply Chain and Telecommunications practice at OMNI Consulting Group LLP in Davis, California. His research focuses on emerging network technologies and the econometric models that explain market phenomena in past decades. Contact him via e-mail at [fbernhard@ocg-us.com](mailto:fbernhard@ocg-us.com).

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*This is Cisco on the move.*



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