IT Workforce: A Review of Employment Trends

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Abstract

Today's IT job market has changed significantly from the explosive growth which occurred in the late 1990s. While a great deal of attention has been focused on dramatic reductions of IT jobs in several high profile industries, the overall IT employment experienced modest increases in 2003 and 2004. Current projections estimate a 3 percent annual increase in IT employment through the end of the decade.

Introduction

Information technology (IT) workers are employed by organizations both inside and outside of the information technology industry. Recent studies commissioned by the Information Technology Association of America (ITAA) estimate that approximately 10 million, or one in seven of all U.S. jobs, require technical skills, knowledge, and abilities to be classified as information technology workers. Furthermore these studies found that nine out of ten IT workers are found in banks, insurance companies and other non-IT industry organizations.
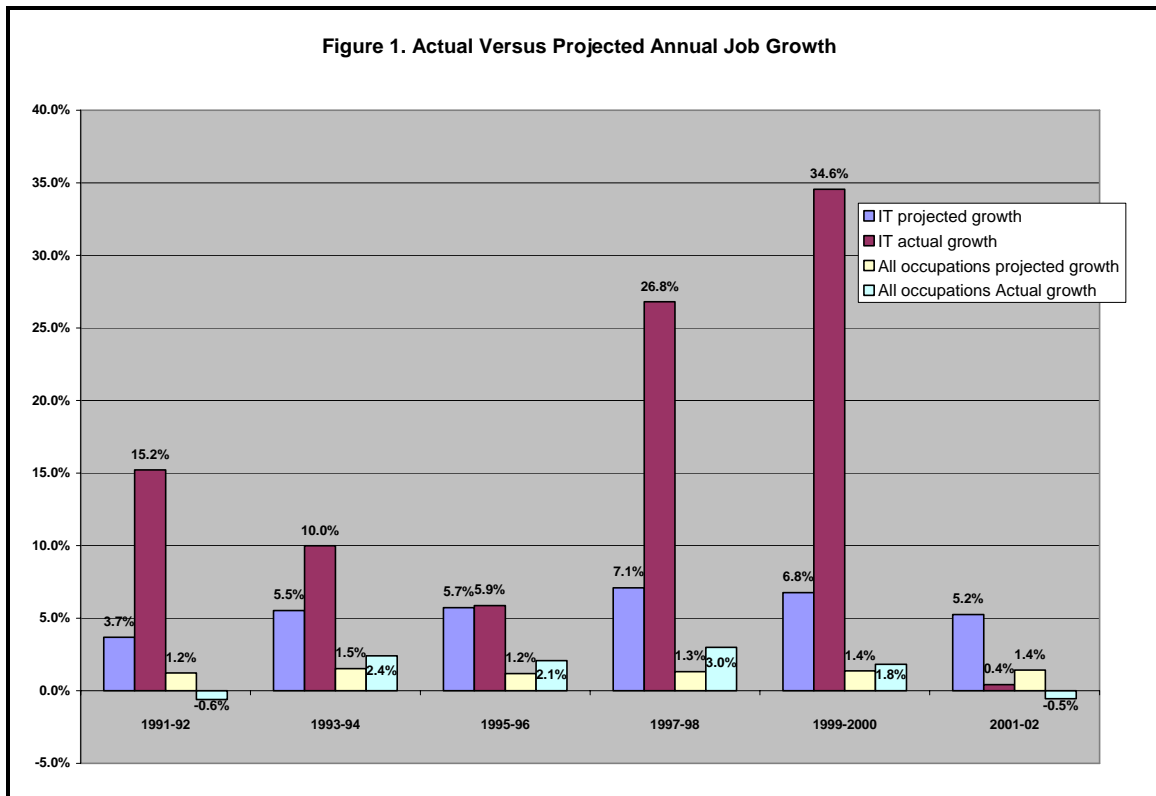
U.S. economic and workforce changes are nothing new. The dominate industries and occupations have shifted several times over the past century. At the beginning of the 20th century, over 40 percent of all workers were employed in agriculture. Today, less than 2 percent of the workforce is employed in agriculture. At the height of the manufacturing boom during World War II, nearly 40 percent of workers were employed in manufacturing industries (1). Today that number has fallen to almost 10 percent. According to the Bureau of Labor Statistics, in 1990 only 571 thousand workers were employed in "core" computer occupations such as programmers, system analysts, and computer scientists. By 2002, that number had increased five-fold to almost 3.0 million, while total U.S. employment for the same twelve year period increased by 17 percent.

Today's job market for IT related occupations continues to be a source of uncertainty for both employers and job seekers. During the economic downturn from 2001 to 2002, total US employment has declined at an annual rate of 0.5 percent while computer related employment was essentially flat. Overseas outsourcing, productivity gains, and increased system reliability have weakened the demand for IT workers in the U.S. Over 22 percent of large IT companies have moved work offshore and another 15 percent are actively pursuing the opening of overseas operations.

IT Historical Employment Data

Changes in employment result from the relationships between population, the labor force, and the demand for specific goods and services. Using data from the Occupational Employment Statistics and the Current Employment Statistics the Bureau of Labor Statistics (BLS) forecasts employment figures for nearly 500 occupations.

Figure 1 shows Bureau of Labor Statistics projected and actual annual changes in employment levels for the overall U.S. workforce and the changes in employments levels for IT related occupations. For the entire decade, the actual job growth for IT related occupations exceeded the BLS projections. Beginning in the mid-1990's the growth of IT employment was fueled by the expansion of the Internet. Cutbacks in technology spending following large Y2K investments combined with a weakening economy resulted in very little growth in IT jobs in the 2001-2002 period. Over the 12 year period from 1991 to 2002 the number of IT workers increased at an average annual rate of 14.9 percent compared with an average annual rate of 1.4 percent for the overall U.S. workforce.

Figure 1. Actual Versus Projected Annual Job Growth

During the period of high growth from 1997 to 2000, IT related employment increased from approximately 1 million to almost 3 million. Four of the top ten fastest growing occupations included in the BLS's "Employment Outlook" were IT related. The mix of IT occupations has changed over this period. During the 1996-2002 period, the annual growth rate for the largest IT occupation, computer programmers and systems analysts, was only one half the annual growth rate of most other IT occupations. Systems support specialists and computer systems administrators were the fastest growing classification with an average annual growth rate of almost 31 percent.

Systems support and systems administration, database administration, and network and data communication analysts experienced extremely high growth rates

beginning in 1996 as more companies moved to develop Web sites and network their computers. As the year 2000 approached, the concerns about Y2K intensified growth for computer engineers, computer programmers, and system analysts occupations. Networking and data communications was the only classification to consistently achieve double digit growth rates throughout the period and the only classification to report significant growth during the 2001-2002 time period.
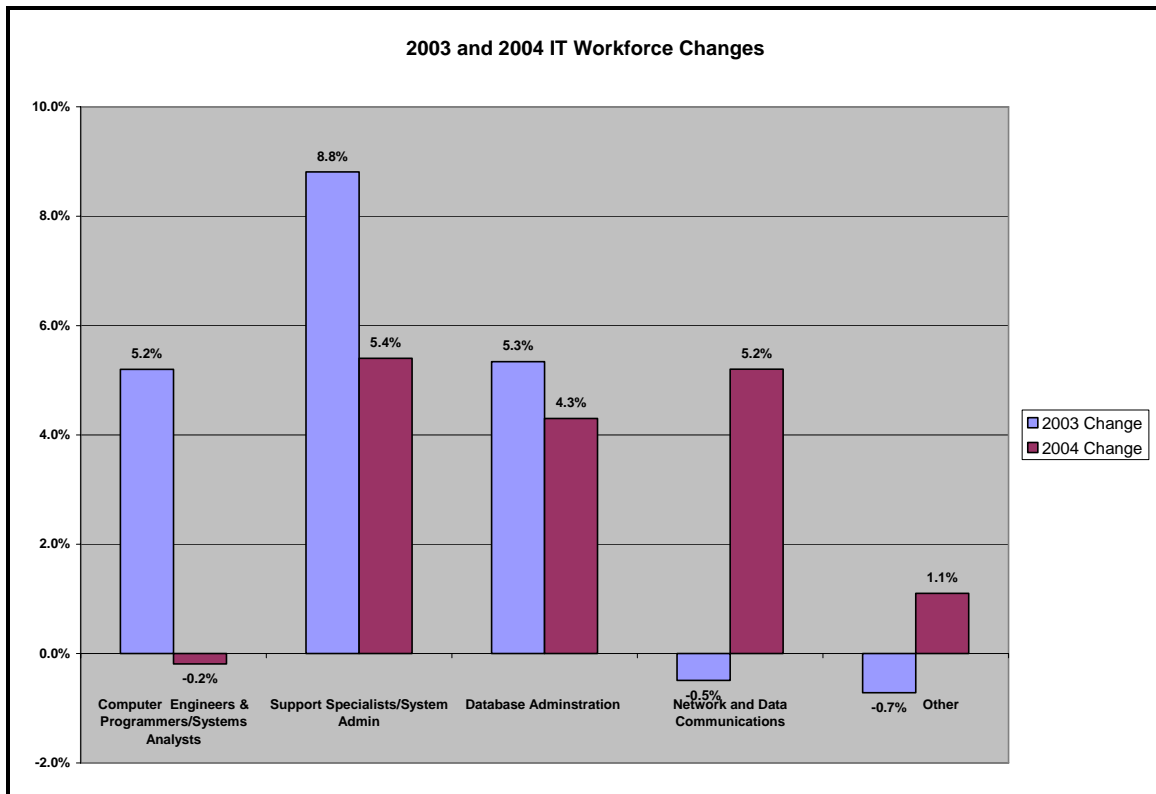
Table 1   1996 - 2002 BLS Actual Employment in thousands

		Actual			Change
Occupational Classification	1996	1998	2000	2002	1996 to 2002
Computer engineers - Employment	215	299	697	675	460
Annual percentage change		18 %	53 %	-2 %	22 %
Programmers/systems analysts– Employment	505	617	1016	967	462
Annual percentage change		11 %	28 %	-2 %	12 %
Support specialists/systems admin– Employment[*]	148	429	735	758	610
Annual percentage change		70 %	31 %	2 %	31 %
Database administrators– Employment[*]	30	87	106	110	80
Annual percentage change		70 %	10 %	4 %	23 %
Network and data comm. – Employment[*]	34	97	119	186	152
Annual percentage change		69 %	11 %	25 %	23 %
All other - Employment	96	123	320	322	119
Annual percentage change		13 %	61 %	0 %	16 %
TOTAL - Computer related – Employment	1028	1652	2993	3018	1883
Annual percentage change		27 %	35 %	0 %	19 %

Recent IT Employment Trends

More current information regarding employment statistics for IT related occupations is available from the annual Information Technology Association of America (ITAA) survey. The information gathered in the ITAA survey uses a much broader base of defining Information Technology computer related workers based on the National Workforce Center for Emerging Technologies classification. The NWCET classification is based on a set of skill standards and provides a slightly different classification system from the Bureau of Labor Statistics. The ITAA survey reported that after a 5 percent decline of workers in computer related occupations during 2002, the overall individuals working in these occupations increased by 4 percent in 2003 and 2 percent in 2004. Figure 2 shows a small decline for computer engineers, programmers, and systems analysts in 2004 after a substantial increase of over 6 percent in 2003. Programming skills are still important and will remain an important part of the IT workforce. Both the support specialists and systems administration category and the database administration category experienced consistently high growth rates in 2003 and 2004 as companies invested in new hardware and software. Network administration and data communications rebounded from a small reduction in employment in 2003 to over 6 percent growth in 2004. Network and data communication employment should continue to increase with the introduction of wireless networks, the migration of voice to data

networks and the growing need of network security. All of these increases are positive news for the IT workforce, indicating that organizations are growing and need additional technical professionals to handle the increased workload.

2003 and 2004 IT Workforce Changes

Category	2003 Change	2004 Change
Computer Engineers & Programmers/Systems Analysts	5.2%	-0.2%
Support Specialists/System Admin	8.8%	5.4%
Database Adminstration	5.3%	4.3%
Network and Data Communications	-0.5%	5.2%
Other	-0.7%	1.1%

Conclusions

While most companies expect to maintain their current full-time staffing levels, there are signs that hiring for many IT occupations is once again on the upswing. While no one is predicting a return to the rapid growth of IT related occupations experienced in the late 1990s, there are some very positive signs that the IT workforce is "recovering" from the 2001 recession and the loss of job in dot.com and telecommunications companies. The most recent BLS projections for 2003 to 2012 forecasts an average annual increase of 3 percent for IT related occupations compared with an average annual increase of 1.4 percent for all occupations. A report by Forrester Research calls for a 3 percent annual growth rate through 2008. A recent national survey by Robert Half Technology reports that eleven percent of executives plan to add IT staff early next year and two percent anticipate cutbacks.

References

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