IBISWorld

WHERE KNOWLEDGE IS POWER

Upgrade available: The increasing prevalence of software in daily activities will benefit the industry

IBISWorld Industry Report 51121

Software Publishing in the US

October 2017

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About this Industry

Industry Definition

Software publishers disseminate licenses to customers for the right to execute software on their own computers. Operators in this industry market and distribute software products and may also design the software, produce support materials and provide support services.

Main Activities

The primary activities of this industry are

- Developing software
- Publishing software
- Development video games
- Publishing video games
- Publishing cellular phone software
- Publishing computer software
- Developing firmware software
- Development middleware software

The major products and services in this industry are

- Application software publishing
- Technology consulting and training
- Custom application design and development
- Re-sale of computer hardware and software
- System software publishing
- All others

Similar Industries

33461 Recordable Media Manufacturing in the US
Operators in this industry carry out mass reproduction of computer software.

42343 Computer & Packaged Software Wholesaling in the US
Operators in this industry wholesale computers, computer peripherals, loaded computer boards and computer software.

44312 Computer Stores in the US
Operators in this industry retail new computers, computer peripherals and prepackaged computer software, among other products.

45321 Office Supply Stores in the US
Operators in this industry retail new stationery and office supplies, including new computers and accessories.

51821 Data Processing & Hosting Services in the US
Data-storage services are major buyers of software, and many software publishers are migrating their products toward this industry.

54151 IT Consulting in the US
Operators in this industry provide expertise in the field of information technologies.

About this Industry

Additional Resources

For additional information on this industry

www.theesa.com
The Entertainment Software Association

www.siia.net
The Software & Information Industry Association

www.bls.gov
US Bureau of Labor Statistics

www.census.gov
US Census Bureau

Industry at a Glance

Software Publishing in 2017

Key Statistics Snapshot

Revenue
$218.4bn

Annual Growth 12-17
3.4%

Annual Growth 17-22
2.9%

Profit
$81.7bn

Wages
$77.0bn

Businesses
6,720

Market Share

Microsoft Corporation 20.3%

International Business Machines Corp. 8.8%

Oracle Corp. 5.3%

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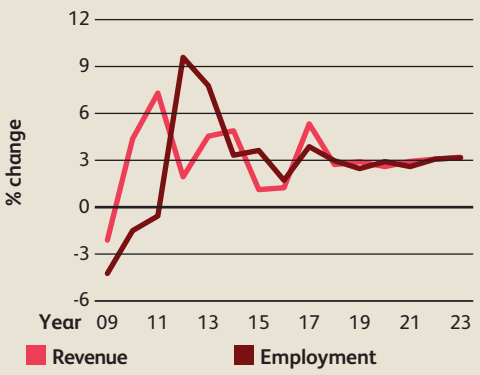
Key External Drivers

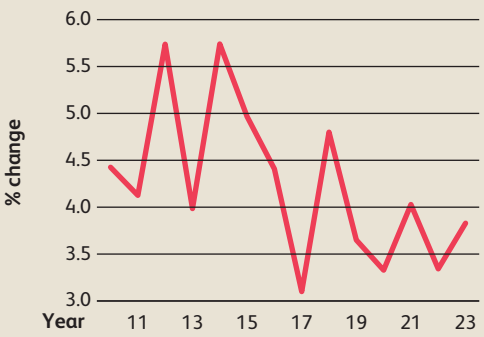
- Private investment in computers and software
- Number of mobile internet connections
- Corporate profit
- Per capita disposable income
- Percentage of households with at least one computer
- Investor uncertainty

p. 5

Revenue vs. employment growth

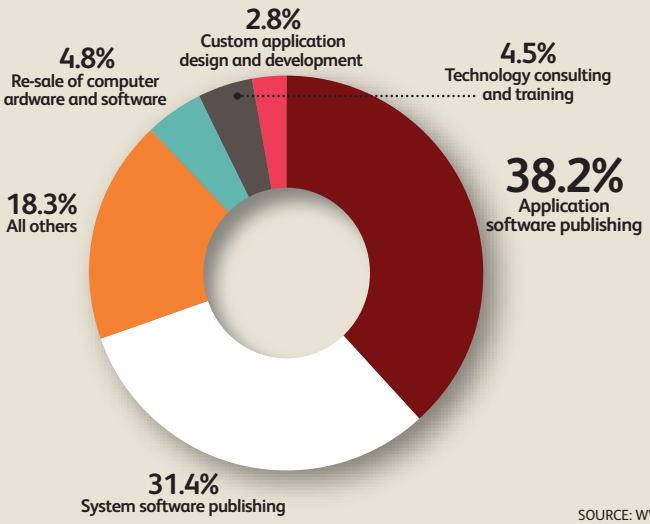


Private investment in computers and software



SOURCE: WWW.IBISWORLD.COM

Products and services segmentation (2017)



SOURCE: WWW.IBISWORLD.COM

Industry Structure

Life Cycle Stage	Growth	Regulation Level	Light
Revenue Volatility	Low	Technology Change	High
Capital Intensity	Low	Barriers to Entry	Medium
Industry Assistance	Low	Industry Globalization	High
Concentration Level	Low	Competition Level	High

FOR ADDITIONAL STATISTICS AND TIME SERIES SEE THE APPENDIX ON PAGE 36

Industry Performance

Executive Summary

The Software Publishing industry, which comprises companies that design, develop and publish software, grew over the five years to 2017, as businesses and consumers increased their investments in software, computers and video games. Strengthening corporate profit stimulated demand from businesses, while rising disposable incomes encouraged consumers to spend on software, including spending on discretionary downstream products such as video games. The rise of web-based solutions and the increasing popularity of mobile devices have triggered an explosion of mobile software applications. These changes have also generated reams of private and sensitive data, requiring more complex security software products as well as providing a new frontier for data analytics software. Over the five years to 2017, industry revenue is expected to rise at an annualized rate of 3.4%, including a 5.3% increase in 2017 to $218.4 billion.

The increasing popularity of mobile devices has triggered an explosion of mobile software applications

Software publishers remain profitable despite the increasing prevalence of software piracy, ongoing litigation and an expensive workforce. Over the past five years, publishers focused on strategic acquisitions and product development, with large software publishers eagerly buying smaller operators with specialties in growing niches. Additionally, industry operators are switching to a software-as-a service based sales model to stabilize cash flows. Many larger companies have already made or begun the transition to a SaaS model.

Over the five years to 2022, the growing prevalence of software in day-to-day activities and the rise of predictive analytics and artificial intelligence will benefit the industry. Technological advancements are expected to expand product offerings and the potential markets that are served by software publishers. Mobile computing devices are providing new platforms on which operators can compete. The rapid move toward "cloud computing" is opening a wider array of software possibilities for mobile phones and tablets that are no longer hampered by low storage capacities. Demand for security software to protect data is expected to rise, especially after high-profile cybercrimes gripped the nation in 2017. Connected cars, logistics, sensors and monitors, as well as smart appliances, are expected to enter the everyday lives of US consumers and businesses. New downstream markets are expected to spur growth, and revenue is expected to rise at an annualized rate of 2.8% to $251.3 billion over the five years to 2022.

Key External Drivers

Private investment in computers and software

Most software is purchased in conjunction with hardware, and software licenses often correspond with the number of computers on which the software is installed. As a result, there is a direct correlation between investment in computers and software-publishing revenue. Due primarily to rising demand from the business sector, investment in computers and software is expected to increase in 2017, representing a potential opportunity for the industry.

Number of mobile internet connections

As the number of mobile internet connections increases, so does the

Industry Performance

Key External Drivers continued

attractiveness of targeting mobile devices with viruses. This has become particularly true as an increasing amount of sensitive information is being stored on mobile devices (e.g. personal financial information). As this trend continues, consumers and businesses alike will increasingly demand mobile security software, benefiting the industry. The number of mobile internet connections is expected to increase in 2017.

Corporate profit

When corporate profit is high, companies are more likely to spend on capital goods such as software and related equipment. However, when profit shrinks, IT spending is one of the first expenditures to be cut. Corporate profit is expected to increase in 2017.

Per capita disposable income

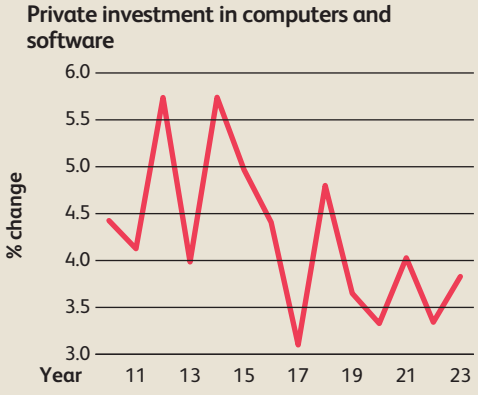
Some industry products, as well as downstream products that require software, are discretionary purchases for consumers. As per capital disposable incomes increases, consumers are more likely to purchase new software as well as expensive downstream items, such as video games. Per capita disposable income is expected to increase in 2017.

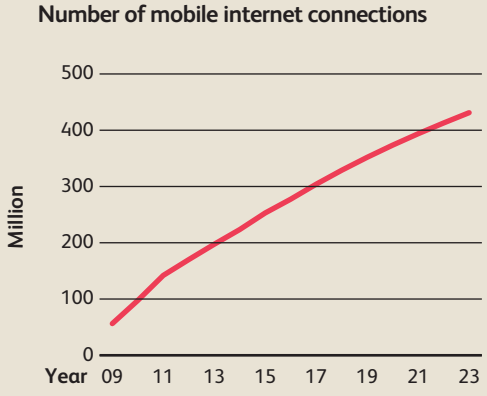
Percentage of households with at least one computer

A significant percentage of software is designed to run on personal computers (PCs). A higher rate of PC ownership translates to a larger market for software. As this percentage climbs higher, demand for software will increase. The percentage of households with at least one computer is expected to increase in 2017.

Investor uncertainty

Investor confidence is an important indication of whether or not a company will invest in new resources or tools. As investor confidence decreases and uncertainty increases, companies hold off on major investments. As software is a capital investment, increasing uncertainty could affect software sales. Although investor uncertainty is expected to decrease in 2017, over the five years to 2022, it is expected to increase significantly, representing a potential threat to the industry.



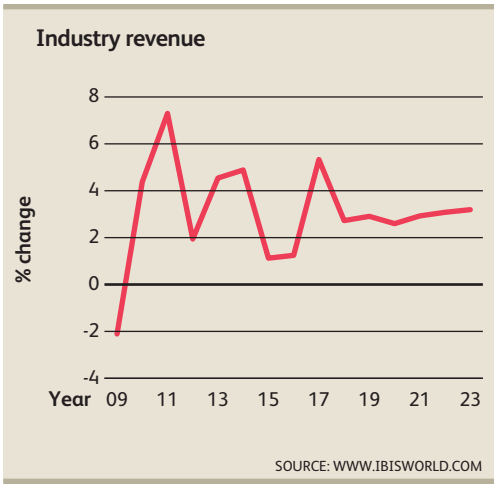


SOURCE: WWW.IBISWORLD.COM

Industry Performance

Current Performance

The Software Publishing industry has experienced solid growth over the five years to 2017, increasing at an annualized rate of 3.4%. Rapid advancement in complementary industries, primarily the Semiconductor and Circuit Manufacturing industry (IBISWorld report 33441a) and the Telecommunication Networking Equipment Manufacturing industry (IBISWorld report 33421), continue to open new avenues for software publishers. Additionally, the recovery in corporate profit renewed investment in computers and software, improving demand. Moreover, demand for video games, a discretionary, yet increasingly important market segment, became a source of growth in the latter part of the period. In 2017, revenue is expected to rise 5.3% to reach $218.4 billion. Growth will accelerate in 2017 as corporate profit increases, which will spur growth in private investment in computers and software.



Acquisitions and expansion

The Software Publishing industry has been a hotbed of mergers and acquisitions over the past five years. Large software companies have aggressively targeted innovative startups, particularly those with strategic patent portfolios. This has attracted many new startups to the industry that are keen to build a reputable company with the goal of selling it to an industry heavyweight. As a result of the increasing number of startups, the number of software publishing companies increased at an annualized rate of 3.1% over the five-year period to reach 6,720 operators. Enterprise growth boomed early in the period due to more companies entering the industry after the recession, which pushed up the five-year growth rate. Employment growth followed suit, rising over the period at an annualized rate of 4.0% to 484,229 workers.

Intellectual property remains a driving force behind industry acquisitions, with many large players keen to acquire the rights to promising innovations. For example, Microsoft uses its enormous cash reserves to purchase small specialty publishers in key competitive niches. In June 2016, Microsoft acquired professional social network, LinkedIn, for $26.2 billion in the largest acquisition in its history. According to Microsoft CEO Satya Nadella, this acquisition is aimed at bringing "together the professional cloud and the professional network," for example, by connecting Microsoft Office directly to LinkedIn so that attendees of meetings can better learn of each other's professional background. Similarly, sales teams using Microsoft's Dynamics CRM software can find potential customers from LinkedIn data.

Given the rapid rate of technological advancement, patents play a key role in this industry's frequent legal disputes. Small, innovative software publishers often find that competitors have copied elements of their products; however, diligent patent filings protect such companies from copyright infringement, frequently resulting in out-of-court settlements or the acquisition of the patent holder.

Industry Performance

New markets

Online security concerns, as well as increased consumer expectations for productivity and entertainment platforms, have led to an explosion of different types of niche software development. Such software includes online payment processing software, biometric scan software, online survey software, e-trading software, website creation software and motion capture software. As the number of broadband and mobile internet connections increase and web-enabled devices become increasingly essential in the everyday lives of US consumers and businesses, software revenue is expected to continue to increase.

Advancements in the semiconductor and telecommunications sectors are stimulating the development of new software markets. Faster semiconductor chips and wireless networks enable software publishers to explore new software capabilities and uses. For instance, Ford's Sync system, developed by Microsoft, enables users to receive directions and traffic alerts, send text messages and make phone calls while driving their cars. Likewise, Apple's iPhone and iPad tablet, in addition to similar products from other manufacturers, such as Google's Android, serve as external competition that bring internet-based content, original devices and sophisticated software to consumers' pockets. With these new platforms and settings, users are increasing their interaction with, and dependence on, software.

The rise of cloud computing, the delivery of IT and business processes as digital services and the explosion of data triggered by the rise of internet solutions and rapid adoption of mobile devices have stimulated demand for industry security products. Mobile applications, social networking sites, online banking, e-commerce and mobile commerce have rendered data increasingly personal, sensitive and vulnerable. Banking and financial services, healthcare, retail and telecommunication companies are constantly seeking more updated and secure solutions to protect their customers as well as their reputations. Recent data breaches among major US retailers and financial institutions have increased the urgency with which downstream industries seek security products.

Abundant profit

The Software Publishing industry has low barriers to entry and, therefore, a low market share concentration. The cost structures of industry operators vary significantly, as large, established companies with high profiles, patents and successful research and development (R&D) strategies tend to have higher profit margins than new entrants, which may operate at a loss as they try to gain traction for their products. Average industry profit margins for software publishers are estimated to vary significantly among industry players, especially when comparing a large company to newly-funded startup.

Software companies bolster their profit margins by practicing incremental development

While software piracy and ongoing litigation cut into industry profitability, industry products are hugely profitable once developed. Due to the highly skilled and increasingly specialized workforce required to develop software, wages have increased 5.7% over the past five years to $77.0 billion, estimated to account for 35.2% of revenue in 2017. Unlike nearly

Industry Performance

Abundant profit continued

all other consumer goods, software costs virtually nothing to reproduce. Since software that can be preinstalled on computers or transferred over the internet has become widespread, imports and exports of software products shipped in the form of physical media, such as CDs or DVDs, have decreased. Software companies further bolster their profit margins by practicing incremental development and charging for new products. For example, whenever Microsoft releases a new version of its flagship Office or Windows programs, the company charges businesses and consumers the full price of the software, even though the new version builds on the older one. However, this practice is changing as companies shift toward a subscription-based price model. Under a subscription model, businesses pay a monthly or yearly fee and are able to access the latest version of software when available.

Piracy threats

The availability of inexpensive and more powerful computers is turning consumers into proficient software users. Microsoft, publisher of the ubiquitous Windows operating system, continues to grow even as software pirates illicitly offer the company's software for free. While government regulators have made substantial efforts to stop piracy, increasingly sophisticated users consistently thwart their efforts. Concerned software publishers have kept piracy in check by using theft-resistant software architectures; for example, many programs now use an activation process that requires a connection between the user's computer and the software publisher, ensuring legitimate acquisition of software.

Publishers have kept piracy in check by using theft-resistant software architectures

Industry Performance

Industry Outlook

The Software Publishing industry is expected to continue growing over the five years to 2022. As private investment in computers and software continues to increase and the proportion of households with at least one computer surges to more than 90.0%, software license purchases will follow suit. Increases in government spending, growth in mobile internet connections and rising smartphone ownership rates will also support industry growth, especially with security software.

Strong corporate profit among downstream industries, such as healthcare and finance, and booming demand for security products and video games is expected to contribute to revenue growth. Consequently, industry revenue is forecast to increase an annualized 2.8% to $251.3 billion over the five years to 2022. Constantly improving technology and falling hardware prices will make computers, cell phones, video games and, ultimately, software more accessible to more people. Businesses will continue to use information technology to increase efficiency and security. For example, finance, insurance and healthcare companies are increasingly using security software, such as fraud detection, to protect the vast amounts of data they store. Competence in software programs is expected to become a prerequisite to employment in a wide range of industries.

Cloud computing and AI

While improving technology and falling hardware prices continue to bring the digital world to the masses, the landscape of the Software Publishing industry will change. Software publishers and technology companies are anticipating an accelerated move toward "cloud computing," whereby storage and computing tasks are handled by networked machines (often servers in a data center owned by the service provider). This technology will greatly expand software capabilities on platforms previously limited by the nature of their hardware but not connection speeds, such as mobile phones. Businesses and consumers alike have already embraced cloud-computing services, such as Google's Gmail and Salesforce's customer relationship management platform. This shift will favor the industry's major players, which have the resources to make the large-scale hardware purchases necessary to run cloud-computing services. This activity is expected to drive industry consolidation, limiting the growth of the number of industry operators to an annualized rate of 2.1% over the five years, to 7,444 enterprises in 2022. However, employment is anticipated to grow faster, increasing at an annualized rate of 2.8% to 556,073 individuals, as companies become larger and hire more highly skilled developers.

Rapid technological change and new emerging threats are expected to give rise to predictive analysis

Over the next five years, the number of mobile internet connections is expected to continue growing, albeit at a slower rate. According to Pew Research, as of January 2017 (latest available data), more than 90.0% of US adults had a cell phone and 77.0% had a smartphone. As smartphones continue infiltrating the mobile phone market and data plans become less expensive, the utility of the smartphone is expected to increase. For example, investment in smartphone-connected home technology is on the rise, as innovative new products enable

Industry Performance

Cloud computing and AI continued

consumers to control their home directly from their phone, including light fixtures and window curtains. The complex software needed for these products is expected to increase both industry revenue and investment in research and development. Additionally, the widespread nature of these software products, and the personal nature of the data they collect, is also expected to stimulate demand for security software needed to protect the data.

Rapid technological change and new emerging threats are expected to give rise to predictive analysis and artificial intelligence software. Predictive analysis extracts information from historical data sets to determine patterns and predict future outcomes. Businesses are expected to use such software solutions to maximize productivity of employees, predict what customers want, detect and prevent threats and measure the impact of social media on their products, among other uses. Artificial intelligence software is expected to further enhance productivity and security, processing natural language for virtual assistants and finding fraud patterns that users and vendors have not previously considered.

New business models

The traditional software publishing business model, in which publishers periodically release new software versions for customers to purchase, is being replaced by a host of alternative models. Subscription-based business models, known as SaaS, produce more stable cash flows than the traditional develop-and-release format. Furthermore, SaaS business models improve security by enabling software publishers to release incremental updates that install automatically. Traditional antivirus programs compromise security because users have to install updates themselves, which they often fail to do.

In some software product niches, open-source software (OSS) will become increasingly prevalent over the next five years. OSS software makes underlying programming code available to users so that they can read it, make changes and build new versions. OSS revenue growth will lag behind distribution growth of OSS because distribution of OSS is often free, resulting in an accentuated displacement of proprietary software. OSS, such as the Linux operating system, will threaten the viability of some proprietary software, such as Windows, but will also promote interoperability and new software developments. Greater use of OSS will help bring internet and software content into the living room, where interoperability is a major concern due to variations in equipment used.

> SaaS models produce more stable cash flows than the traditional develop-and-release format

Autonomous vehicles

After years of significant investment in research and development, software companies are beginning to develop revenue models for self-driving car projects. Alphabet Inc.'s Google, for example, has been working on a self-driving car since 2009, and recently branded it as a subsidiary, called Waymo LLC. Tesla Inc. has begun selling cars with some autonomous technology, while software giant Apple Inc., ride-hailing company Uber Technologies Inc. and

Industry Performance

Autonomous vehicles continued

startup nuTonomy, among a host of traditional automakers, are all investing significantly in the new technology. While significant progress has been made since Google's project commenced in 2009, significant hurdles remain, including universal regulatory approval and consumer acceptance.

Emerging competition

The industry's ongoing shift toward software delivered online has increased its competitiveness with traditional software publishing. Exports and imports in the form of physical media are expected to continue to decline as industry products are primarily transferred over the internet. Google, the largest search engine, already offers a free web-based alternative to Microsoft's Office productivity suite, Google Drive. Google derives the vast majority of its revenue from advertising and routinely offers products and services for free to bolster its advertising potential. The company will almost certainly expand its free software offerings, which will be detrimental to publishers of similar proprietary software. Amazon, an e-commerce company, is leveraging its assets with cloud-computing services. The company is billing their services as "utility computing," whereby customers can simply rent computing resources. This increased external competition is expected to put pressure on industry-wide revenue and profitability, but demand for new types of advanced software will even out the pressure and lead to a slight increase in the average industry profit margin. Additionally, the SaaS business model will shift revenue sources away from periodic spikes associated with new version launches toward more stable subscription revenue.

Increased external competition is expected to put pressure on industry-wide revenue

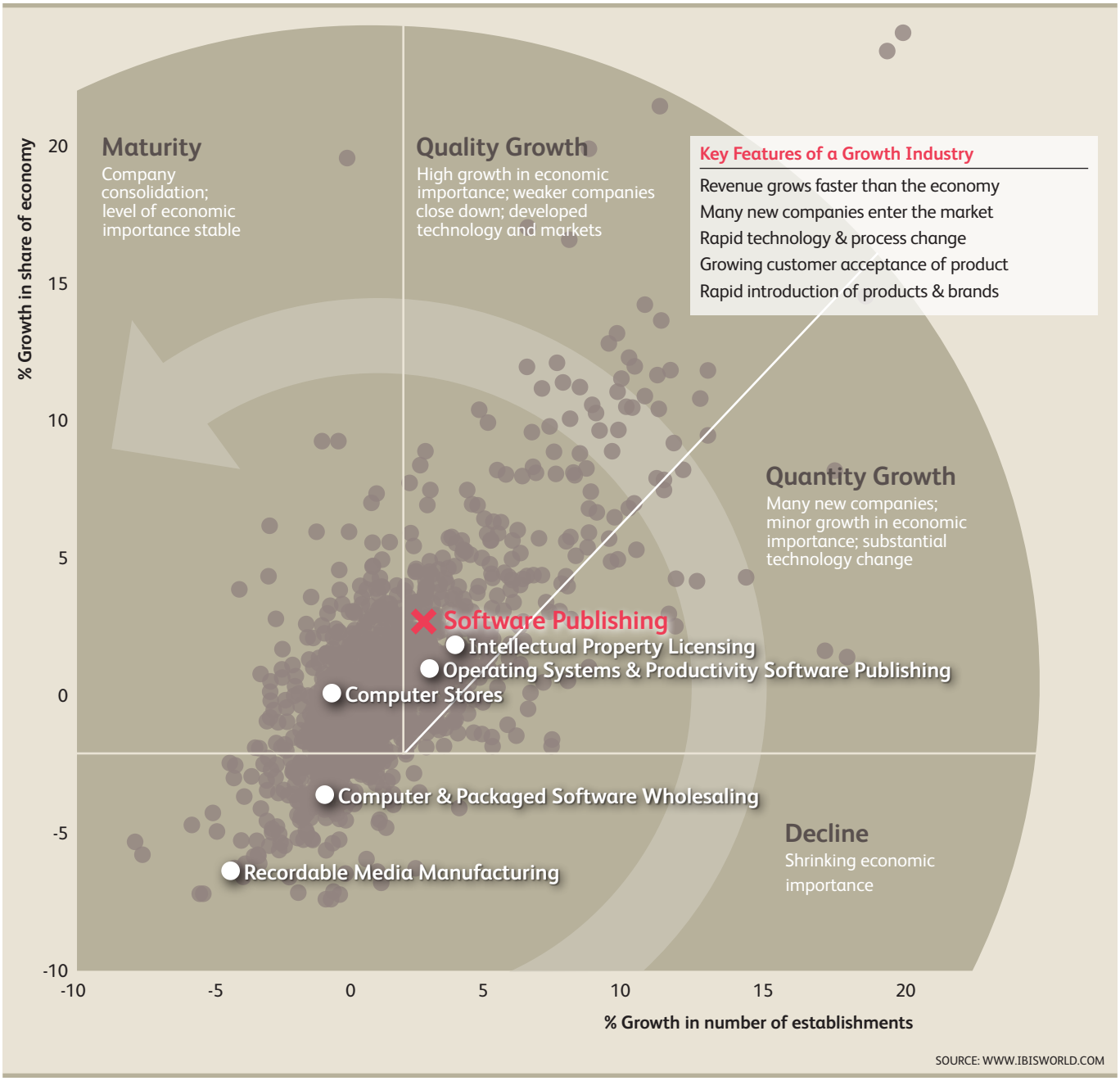
Industry Performance

Life Cycle Stage

There is rapid technological change in the information and communications technology sectors

There is growing demand for software from businesses, government and households

There is a high level of R&D spending in the industry



SOURCE: WWW.IBISWORLD.COM

Industry Performance

Industry Life Cycle

This industry is **Growing**

The Software Publishing industry is well into the growth phase of its life cycle. Over the 10 years to 2022, industry value-added (IVA) is expected to increase at an annualized rate of 3.9%. This rate is higher than GDP's growth at an annualized rate of 2.0% over the same period; however, IVA is expected to slow to 2.8% during the latter-half of the 10-year period indicating an industry in transition from growing to mature. While the personal computer spurred rapid growth for software publishers, technological advancement in semiconductor manufacturing and telecommunications have opened new markets for software. Cell phones have grown more powerful over the years, increasing the need for software designed for mobile phones. Additionally, consumers have thoroughly embraced computers and cell phones and the enhancements in entertainment and communications they bring. Businesses have been increasingly enthusiastic about computers and software, which they use to improve productivity, manage supply chains and design new products.

Software publishing is tied very strongly with semiconductor manufacturing, the telecommunications sector and computer manufacturing. Improvements in semiconductor manufacturing technology increase the capabilities of computers. To fully take advantage of these improvements, software publishers frequently need to develop new software. Similarly, increasing data-transfer speeds from telecommunications technologies provide for ever-increasing integration between computers over vast distances. These improvements are now enabling software publishers to offer software on a subscription basis. The SaaS model reduces revenue volatility because customers pay for software on a monthly or yearly basis and obtain access to the latest updates instead of purchasing new updates whenever they want. Continued technological development will enable users to interact with software on an array of internet-capable devices, with the bulk of computing handled remotely.

While faster computers and internet connections have enabled more powerful software, they are also lead to large-scale outsourcing of software development. Most of the major US software publishers have operations in countries like India, China or Finland, where they can take advantage of lower labor costs, more favorable regulations and a more diverse workforce. For now, these competitive pressures primarily serve to improve the productivity of US software publishers rather than driving businesses abroad.

Products & Markets

Supply Chain | Products & Services | Demand Determinants
Major Markets | International Trade | Business Locations

Supply Chain

KEY BUYING INDUSTRIES

31-33 **Manufacturing in the US**
The manufacturing sector is a major user of computer software, such as for inventory, debtor and financial management.

44312 **Computer Stores in the US**
Industry participants are engaged in retailing new computers, computer peripherals, and prepackaged computer software.

51 **Information in the US**
The information sector is a major user of computer software, such as for database and Internet solutions.

52 **Finance and Insurance in the US**
The finance and insurance sectors are major users of computer software, such as for storing, processing and accessing large volumes of data, and for electronic and Internet-based financial solutions.

62 **Healthcare and Social Assistance in the US**
The health care sector is a major user of computer software, such as for patient management, risk management, record keeping and telemedicine.

92 **Public Administration in the US**
Federal, state and local government are major users of computer software, such as for storing, processing and accessing large volumes of data.

KEY SELLING INDUSTRIES

3341 **Computer and Peripheral Equipment Manufacturing in the US**
Computers are used by computer programmers.

51121a **Operating Systems & Productivity Software Publishing in the US**
Software design requires an operating system and a development environment in which to program.

51821 **Data Processing & Hosting Services in the US**
Software publishers often distribute their product via data centers.

53311 **Intellectual Property Licensing in the US**
This industry depends heavily on the licensing and protection of its intellectual property.

Products & Services

Application software publishing

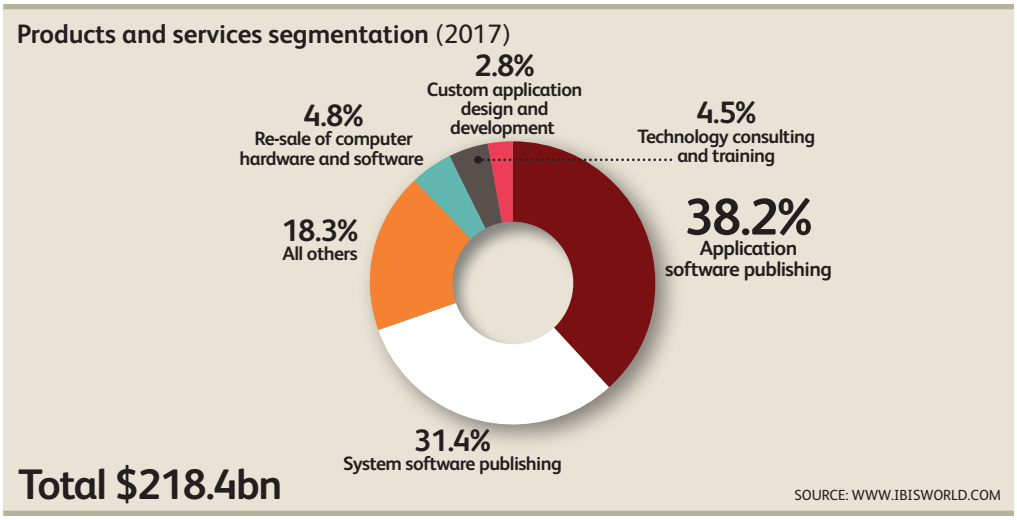
Applications are programs designed for the end-user to carry out specific tasks and include word processing, graphics generators, databases and games. This segment is expected to account for 38.2% of total industry revenue. General business productivity and home use applications make up 46.2% of the application software segment's revenue, and includes products such as Microsoft Office and Apple iWork. Other sources of revenue in this segment includes sales of cross-industry application software, utilities software and vertical market application software.

System software publishing

System software is designed to control the computer hardware and provides a platform for applications to be used on. This segment is expected to account for 31.3% of industry revenue. System software includes operating systems, network software, database management software and development tools and programming language software, among other systems software. Operating systems software, which manages the computer's processes, memory and hardware, account for roughly 30.6% of the segment's revenue. Network software

Products & Markets

Products & Services continued



accounts for 29.5% of the segment's revenue and is designed to set up, manage and monitor computer networks. Finally, sales of database software represent 24.1% of segment revenue.

Other

In addition to offering software, the industry obtains revenue for a variety of other services such as training, consulting, resale of computer hardware and software and custom application design and development. Custom application design and development are designed for specific organizations and users. These may include agriculture, aerospace & defense, education, healthcare, and transportation industries among others. More expensive than other types of software, custom software accommodates the customers' needs and may be designed in stages and permit changes and improvements.

Demand Determinants

Business demand

Businesses drive software demand. Over the past decade, the business world has thoroughly embraced computers, software and the productivity improvements they provide. Microsoft, the largest software publisher, experiences huge revenue gains when businesses upgrade their computers to a newer version of the Windows operating system or Microsoft Office, a productivity software suite. Business investment in software and related products varies in line with corporate profit and the publishers' update cycle; in economic downturns, businesses delay replacing existing PCs due to tight earnings, putting downward pressure on software publishers' revenue. Businesses may also delay upgrading to the newest version of software if the update is perceived as only marginally better, unreliable or if its adoption would require significant change to existing business processes. Requiring significant training for employees to use new types of software increases the opportunity costs for companies to use the software.

Consumer demand

Software publishers sell an array of software types to individuals. Consumers

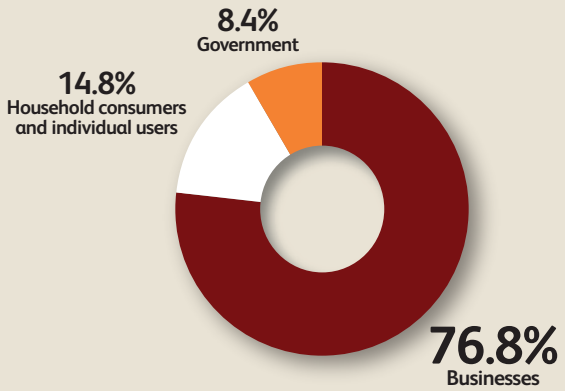
Products & Markets

Demand Determinants continued

with relatively high levels of leisure time (generally younger consumers and students) play a major role in video game software sales. Apart from the unique video game segment, most variation in personal software demand comes from PC sales; most new PCs come with preinstalled copies of an operating system and productivity suite, even if the buyer is replacing a PC that already had copies of the software. Personal users are far more likely than businesses to avoid purchasing software because of high prices. For pricier software, like Adobe's Creative Suite, piracy represents a growing impediment to increased revenue. Software piracy has exploded over the past decade with the introduction of peer-to-peer file-sharing networks, despite extensive international efforts to curtail the activity. Companies with online distribution models or subscription-based pricing are more resistant to software piracy.

Major Markets

Major market segmentation (2017)



Total $218.4bn

SOURCE: WWW.IBISWORLD.COM

Businesses

Businesses form the bulk of end customers for the Software Publishing industry, accounting for an estimated 76.8% of industry revenue. Businesses adopt operating systems and application software to boost productivity and cater to industry-specific environments, like computer-aided design and manufacturing. Virus prevention and protection from "hackers" are also areas in which businesses require continual upgrades in software to meet ever-changing threats to internal networks and websites. Some industries, including those in the health and finance sectors, have increased spending on software to improve systems in coping with regulatory and market changes.

Large businesses have increasingly resorted to "off-the-shelf" software, including enterprise resource planning software, customer relationship management software and database management software. A move toward networked workplaces has driven demand for networking software, as well as applications software.

Government and households

Government and household users are estimated to account for 8.4% and 14.8% of industry revenue, respectively. Governmental needs are similar to that of

Products & Markets

Major Markets continued

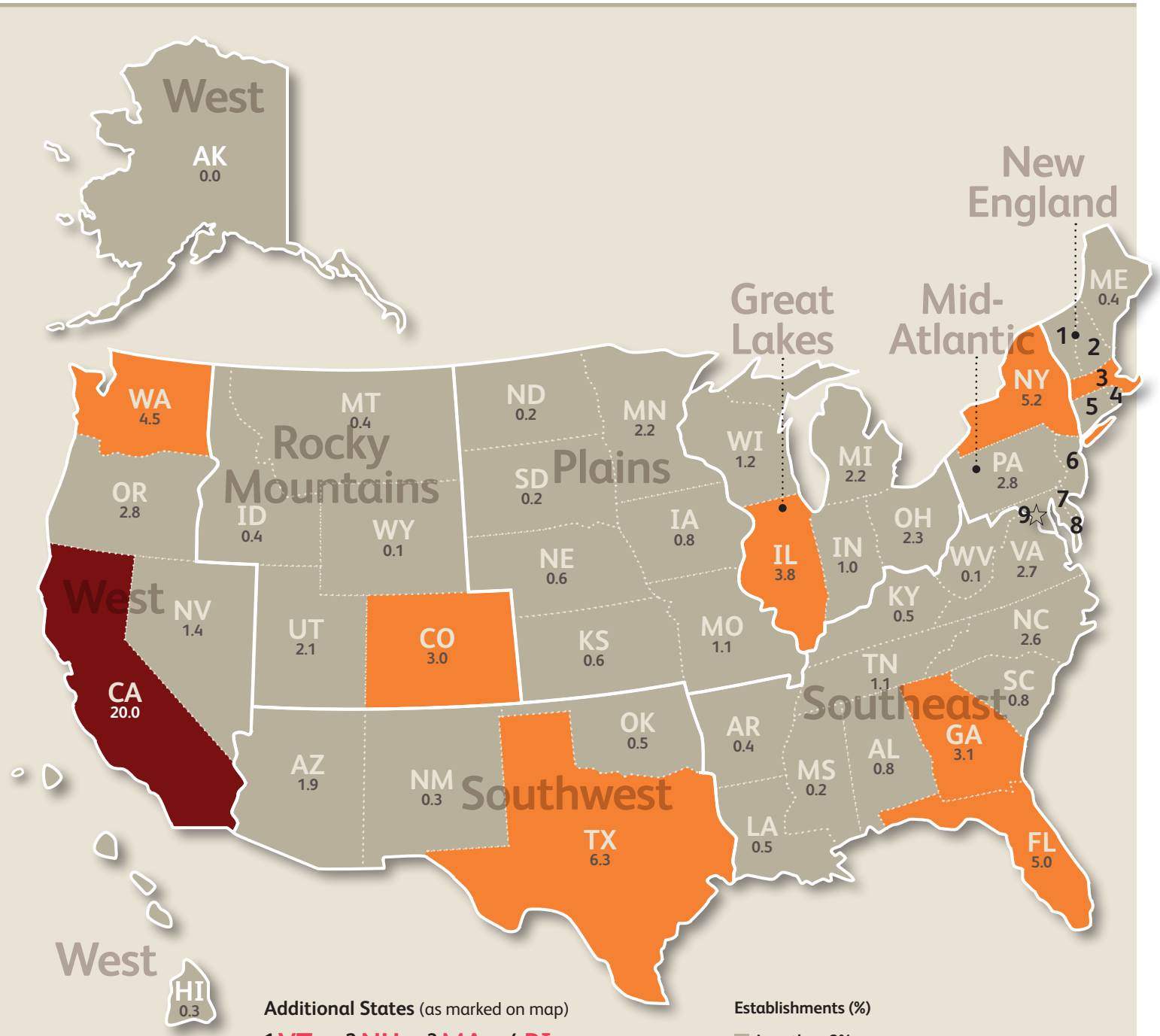
business, while the household market is more diverse, as purchases range from games and photo editing to educational, word-processing and spreadsheet software. As households have widely adopted mobile devices, including smartphone and tablets, gross and relative revenue from this consumer class have both decreased.

International Trade

In this report, trade figures only reflect the value of software products shipped in the form of physical media, like CDs; software that comes preinstalled on computers or is transferred over the internet is not included. Physical shipments of software have fallen rapidly to negligible levels over the past decade because transferring programs electronically is faster and more affordable. Moreover, all of the industry's major companies have operations abroad. In many instances, a software development team in another country collaborates with a team in the United States to deliver industry products worldwide.

Products & Markets

Business Locations 2017



SOURCE: WWW.IBISWORLD.COM

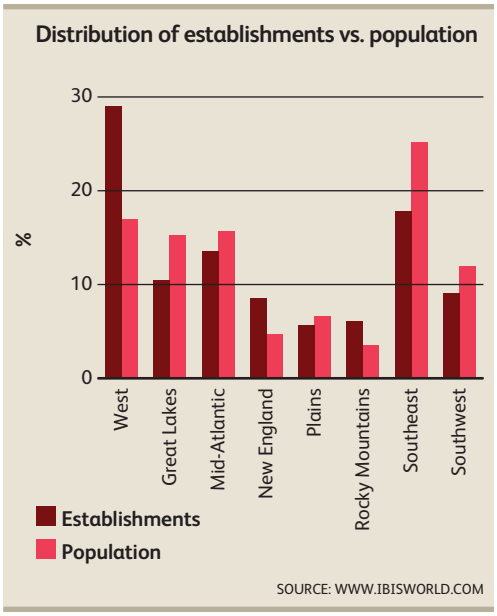
Products & Markets

Business Locations

The Software Publishing industry is technologically intensive and generally clustered geographically. Those employed at software companies are highly trained and often come from top universities. Therefore, companies with locations near the campuses of the best universities and in attractive locations are better positioned to compete for the best software programmers.

California accounts for 20.0% of industry establishments, making it the state with the most industry participants. California is home to the Silicon Valley region outside of San Francisco, where many multinational tech companies and startups alike are based out of. The state is awash with venture capital firms and some of the best technology universities in the world, including Stanford and the California Institute of Technology, making the state an attractive destination for tech companies.

Another west coast state that is influential in the software industry is Washington, where 13.5% of industry employees are employed, though only 4.5% of establishments are located there. This indicates that companies in Washington typically open significantly larger establishments than the national average. Amazon.com, Inc., for example, is located in Seattle, with Microsoft Corp. a short drive away, in Redmond, WA. Over on the east coast, Massachusetts is home to 6.5% the industry workforce and 4.9% of establishments, as well as several prestigious schools, including Harvard and the Massachusetts Institute of Technology. Finally, 6.3% of industry employees are based in Texas, where Dell Inc. is headquartered, 4.0% of employees work in Florida and 3.6% of employees call New York home.



Competitive Landscape

Market Share Concentration | Key Success Factors | Cost Structure Benchmarks
Basis of Competition | Barriers to Entry | Industry Globalization

Market Share Concentration

Level
Concentration in this industry is **Low**

The Software Publishing industry has a low to medium level of market share concentration, with the four largest companies accounting for 38.0% of industry revenue in 2017. Due to the varied nature of software, it is difficult for a single player to dominate the industry. Microsoft is the industry's largest player with 20.3% of the market in 2017. The size of Microsoft's market share is due to its leading role in the operating system, business analytics and video game software segments. Other players in this industry, however, focus on only one or two industry segments. As a result, their market share for software publishing is relatively small, resulting in a low market share concentration for the industry. However, concentration can vary by segment. For example, the Business Analytics and Enterprise Software Publishing industry (IBISWorld report 51121c) has a medium level of concentration.

Concentration for the software publishing industry has declined over the past five years. Although larger companies like Microsoft, Oracle and IBM have made a variety of acquisitions over the period, new companies still continue to enter the industry and take market share away from the top four companies. To survive, these new companies must offer innovative products, which helps to attract customers away from larger companies.

Key Success Factors

IBISWorld identifies 250 Key Success Factors for a business. The most important for this industry are:

Undertaking technical research and development

Software publishers must spend large sums of revenue on research and development to release more innovative products to a broader customer base.

Effective marketing

Successful software publishers must present their products in terms that are attractive to their customers' varying needs. A poor marketing campaign can easily result in the failure of an otherwise good product.

Having a high profile in the market

Products in this industry can require significant investments and often must be purchased before the customer has proof of their quality or effectiveness. Maintaining a high profile is a key to attracting customers in such an environment.

Access to the latest available and most efficient technology and techniques

The most successful software publishers must take great care to ensure developers use industry best practices including: systematic bug tracking, efficient coding and thorough stability testing.

Access to highly skilled workforce

Software publishers employ highly skilled software developers who possess a very specific skill set and a capacity for creativity. Software publishers frequently employ foreign nationals under the H1B visa program.

Protection of patents

Software publishers frequently amass patents. These patents help maintain competitive advantages and temporary monopolies on key products.

Competitive Landscape

Cost Structure Benchmarks

Profit

The Software Publishing industry has a low market share concentration and thus companies operating in the industry have extremely varied cost structures. Some industry operators generate profit margins (defined as earnings before interest and taxes) that are significantly higher than the industry average. For example, larger companies often earn stronger profit margins as the upfront cost of research and development becomes miniscule when software is mass distributed. For smaller companies that do not have comparable sales volume, research and development investments account for a higher percentage of revenue, driving profit down. Overall, IBISWorld estimates that the average industry profit margin will be 37.4% in 2017. Over the past five years, profit has increased, even as wages have increased.

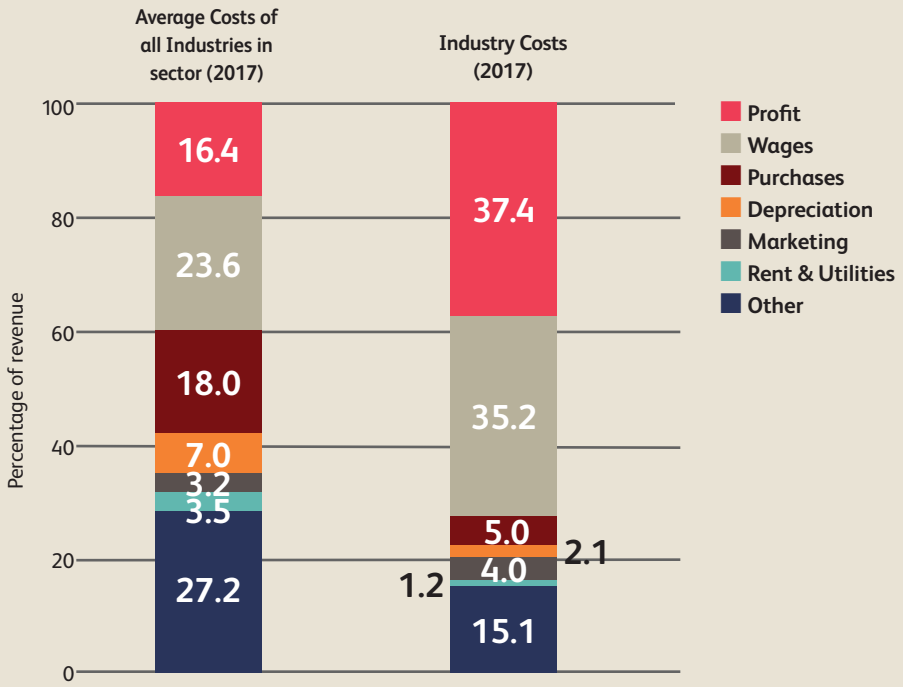
Wages

Wages account for the largest percentage of industry revenue. Producing a computer program requires programmers, marketers, managers and lawyers, among other staff. Wages account for 35.2% of revenue. Major companies compete for talented employees globally and offer competitive compensation and benefits. Due to rising demand for talented programmers, wages as a percentage of revenue have risen from 31.6% in 2012. Rising competition for skilled programmers has forced companies to compete more intensely for employees. Consequently, the average industry wage rose from $146,931 in 2012 to $158,954 in 2017.

Purchases

Since the software industry does not create any tangible goods it incurs few purchase costs. Physical media itself is a

Sector vs. Industry Costs



SOURCE: WWW.IBISWORLD.COM

Competitive Landscape

Cost Structure Benchmarks continued

dying mode of distribution due to the internet, which has spurred the rise of downloadable media files. As a result, the industry sells licenses, which are legal agreements that enable a specific user (or several users) access to a particular piece of software. Companies also incur purchase costs to patent their products to keep other companies from using them. For example, in 2012 Microsoft purchased $1.0 billion worth of patents from AOL. Altogether, purchase costs account for 5.0% in 2017, up since 2012.

Other

Marketing, excluding wages for sales staff, accounts for 4.0% of revenue. Depreciation, which includes land, buildings, lease holdings, computer equipment and office furniture, constitutes only 2.1% of revenue. Rent and utilities are typically a small fraction of revenue for major operators, 1.2%, though they make up a larger part of costs for smaller publishers. All other costs are estimated at 15.1% of revenue.

Basis of Competition

Level & Trend
Competition in this industry is **High** and the trend is **Increasing**

Internal competition

Competition in the Software Publishing industry varies significantly depending on the target market for a particular piece of software. This industry can be segmented into more specific markets, including operating systems, database publishing and video game software (IBISWorld reports 51121a, 51121b and 51121e, respectively).

Companies that produce software, including operating systems software, video games and productivity tools, experience high competition. A major internal threat to revenue-generating companies is that of open-source software, where programmers contribute to create and distribute free programs. While such software can lack the polish (i.e. usability, attractiveness and stability) of professionally published programs, these programs can be updated more easily and often is more standards-compliant. While business and enterprise customers tend to stay away from this software, open-source programs are becoming more popular with consumers looking for free or low-cost alternatives to expensive software sold by the likes of Microsoft or Apple.

External competition

Cloud computing looms as an emerging source of competition. Cloud computing refers to massive clusters of servers designed to function as a single unit for the storage of large amounts of data. Users can then access this storage over the internet. Google, for instance, makes use of cloud technology to run its Google Docs application, which competes with some of Microsoft's services. Google Docs is accessed via internet browser, and the documents are stored remotely, in Google's "cloud." Such software most immediately presents a threat to companies providing productivity software, because cloud computing is low-intensity, computationally and does not require much more functionality than can be provided via internet browser. Furthermore, some companies, such as Oracle, are major providers of the hardware and software used to operate clouds, and stand to benefit tremendously from widespread adoption of the cloud. However, most individual users require more reliable access to their documents than their connections to the internet provide them. Until users have widespread redundancy in their network connections, most will prefer the familiarity of their locally installed word processors. At the enterprise

Competitive Landscape

Basis of Competition continued

level, however, industry operators will have the ability to collect and store all of their important business information in a single location with multiple offsite backups, and can be expected to spend heavily on this capability.

Barriers to Entry

Level & Trend
Barriers to Entry in this industry are **Medium** and **Steady**

The Software Publishing industry has moderate barriers to entry, though certain product segments have much stronger barriers than others. Patents on intellectual property are commonly used to limit competition, though in many cases companies are willing to license their patented technology. In certain product segments, particularly operating systems, network effects are a key factor protecting incumbent products; for example, the ubiquity of Microsoft's Windows operating system makes it extremely difficult for competing products to gain market share, even when the competing software is more technologically robust and given away for free.

Software publishers have historically been the targets of antitrust regulators. In 1998, the US Department of Justice brought charges against Microsoft for anticompetitive business practices that led to the dominance of Microsoft's Internet Explorer internet browser over competing programs. Microsoft had been bundling its internet browser with its immensely popular Windows operating system and forming restrictive licensing agreements with computer vendors. Software bundling remains a common competition-limiting practice, though large software publishers must be careful not to garner too much regulatory scrutiny. Companies looking to supply software to the government, particularly military contractors, must have that software approved through additional certification and accreditation processes.

Barriers to Entry checklist

Competition	High
Concentration	Low
Life Cycle Stage	Growth
Capital Intensity	Low
Technology Change	High
Regulation & Policy	Light
Industry Assistance	Low

SOURCE: WWW.IBISWORLD.COM

On an investment basis, there are few barriers to entry for software publishing start-ups. Many software companies began with a little more than a handful of computers and programmers. Scarcity of highly skilled, creative programmers is the most limiting factor for software publishers, leading to very high wages or stock-based compensation plans.

Industry Globalization

Level & Trend
Globalization in this industry is **High** and the trend is **Increasing**

Globalization is on the rise, as major players in the Software Publishing industry increasingly become multinational companies and control a large percentage of the worldwide software publishing market. Typically, sales to customers outside the United States can represent a significant share of revenue. For example, in 2017, 49.7% of Microsoft's revenue from sales outside the US, which is slightly lower than in 2016, but higher than in previous years. Additionally, many industry players have made acquisitions and formed collaborative alliances across national borders to achieve economies of scale and reach local markets. International trade flows do not reflect these trends because software is increasingly transferred digitally rather than by

Competitive Landscape

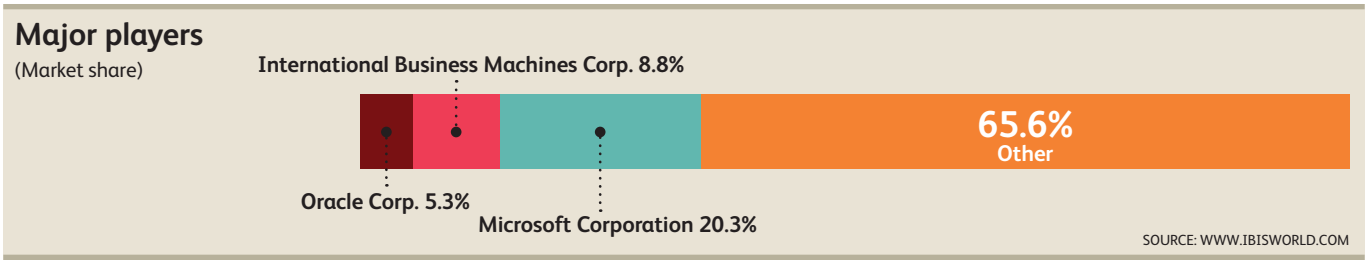
Industry Globalization continued

physical CD. Therefore, industry trade is almost negligible.

Companies can also outsource the production of code to low wage countries like India or China. This option can be attractive to startup companies who want to design software like mobile applications but do not have the coding knowledge to create the software or the budget to hire an in-house team.

Major Companies

Microsoft Corporation | International Business Machines Corp.
Oracle Corp. | Other Companies



Player Performance

Microsoft Corporation
Market share: 20.3 %

Industry Brand Names
Office 365
Dynamics ERP
Dynamics CRM

Microsoft Corporation is a US-based software publisher headquartered in Redmond, WA, and employs 124,000 people worldwide. Microsoft is most well known as the publisher of the Windows line of operating systems and also offers cross-device productivity applications, desktop and server management tools, video games, personal computers (PCs), tablets, intelligent devices and cloud-based solutions. The company has been transforming its current software applications into web-based services for businesses and consumers. Most software products are internally developed, but Microsoft also purchases technology, licenses intellectual property rights and supervises third-party development of specific products. Revenue also comes from original equipment manufacturers, which preinstall the equipment on the devices they sell. In fiscal 2017, the company generated $90.0 billion in revenue across all of its products.

Microsoft recently changed its operating segments and now operates in three divisions: productivity and business processes, intelligent cloud and personal computing. The industry-relevant productivity and business processes segment includes productivity, communication and information services for devices and platforms. The segment includes the company's Microsoft Office products for commercial customers and consumers, Skype, SharePoint and Dynamics products such as enterprise resource planning (ERP) and customer relationship management (CRM) products. The company's Intelligent Cloud segment, also industry-relevant, consists of public, private and hybrid server products and cloud services, while the more personal computing segment

Microsoft Corporation (US industry-relevant segment) - financial performance

Year**	Revenue ($ million)	(% change)	Operating Income ($ million)	(% change)
2012-13	$37,015.4	N/C	$8,192.0	N/C
2013-14	$38,599.9	4.3	$14,762.2	80.2
2014-15	$38,249.1	-0.9	$14,619.5	-1.0
2015-16	$38,992.0	1.9	$14,159.1	-3.1
2016-17	$39,154.5	0.4	$14,159.1	0.0
2017-18*	$44,288.6	13.1	$13,731.34	-3.0

*Estimates; **Year-end June

SOURCE: ANNUAL REPORT AND IBISWORLD

Major Companies

Player Performance continued

includes the company's Windows products, hardware devices, gaming products, such as Xbox hardware and Xbox live, and search advertising.

Over the period, Microsoft has made a series of industry relevant and irrelevant acquisitions. IBISWorld estimates that the company has acquired 54 companies over the past five years. Many of these acquisitions have focused on cloud and mobile products. For example, in September 2015, the company acquired cloud security company Adallom. Also in 2015, Microsoft purchased Mobile Data Labs, which makes a popular mileage tracking applications for deductions and reimbursements. It also bought the mobile business intelligence company Datazen in 2015. In 2016, Microsoft bought mobile app development company Xamarin. More recently, the company acquired the professional social network LinkedIn for $26.2 billion in the largest acquisition in its history. This acquisition is designed to integrate Microsoft software across professional online networks, for example, by integrating Microsoft products such as Office and Dynamics CRM software with LinkedIn data. Microsoft is also increasing focus on virtual and augmented reality (VR and AR, respectively) software and recently purchased AltspaceVR, a VR software company. In 2017, it is expected that the company will release a new line of VR-headsets, powered by Microsoft software and hardware developed by partners such as Samsung.

Financial performance

Microsoft's industry-relevant revenue is expected to increase at an annualized rate of 3.7% over the five years to 2017, to an estimated $44.3 billion in fiscal 2018. Operating income has increased at an annualized rate of 10.9% over the five years, rising to an expected $13.7 billion in fiscal 2018. Revenue growth has remained relatively constant over the period for the company. The only year of industry-relevant revenue decrease came in fiscal 2015, where revenue declined by less than one percent. Despite that decline, the company's relevant revenue rose in all other years.

Player Performance

International Business Machines Corp.
Market share: 8.8 %

International Business Machines Corporation (IBM) is a worldwide player in information technology, business and technology services, consulting services and information technology research. Headquartered in Armonk, NY, the business has 386,000 employees in offices throughout more than 170 countries. IBM's segments primarily consist of global technology services and global business services, collectively called global services, as well as software, systems hardware and global financing. Software consists primarily of middleware and operating systems software. Middleware software enables clients to integrate systems, processes and applications across a standard software platform. Operating systems are the software engines that run computers. In 2016, IBM reported revenue of $79.9 billion.

Over the past five years, IBM has expanded through numerous acquisitions. In 2015, the software segment completed acquisitions of eight privately held businesses: AlchemyAPI Inc., Blekko Inc., Explorys Inc., Phytel Inc., Compose Inc., StrongLoop Inc., Clearleap Inc. and IRIS Analytics. In 2014, the software segment acquired five privately held companies: Aspera Inc., Cloudant Inc., Silverpop Systems Inc., Cognea Group Pty LTD and CrossIdeas Srl. In 2017, the company acquired Agile 3 Solutions and XCC, both business productivity software developers.

Major Companies

Player Performance continued

Financial performance

IBM's industry-related revenue has increased at an annualized rate of 2.8% over the past five years, rising to an expected $19.3 billion in 2017. As corporate profit has rebounded, demand has increased for IBM software. Revenue results have been very steady since that time, though it is estimated that IBM will see a decrease in revenue in 2017, for the first time during the five-year period. However, the company's investments in security, mobile and cloud, as well as software as a service, have all been significant growth areas for IBM's software segment.

IBM Corporation (US industry relevant) - financial performance*

Year	Revenue ($ million)	(% change)	Net Income ($ million)	(% change)
2012	$16,834.1	N/C	$4,667.6	N/C
2013	$17,449.6	3.7	$5,277.1	13.1
2014	$17,498.8	0.3	$5,205.5	-1.4
2015	$20,699.9	18.3	$4,998.3	-4.0
2016	$20,766.5	0.3	$4,234.0	-15.3
2017	$19,304.6	-7.0	$3,935.9	-7.0

*Estimates

SOURCE: ANNUAL REPORT AND IBISWORLD

Player Performance

Oracle Corp.
Market share: 5.3 %

Industry Brand Names
PeopleSoft
Siebel
JD Edwards

Oracle Corporation, based in Redwood City, CA, employs 138,000 people worldwide and is a leading provider of enterprise software and cloud computing. The company offers database and middleware software, application software, cloud infrastructure, hardware systems and related services. Oracle was founded in 1977 by Larry Ellison as a vehicle through which to sell the

Oracle Corporation (US industry-relevant segment) - financial performance*

Year**	Revenue ($ million)	(% change)	Operating Income ($ million)	(% change)
2012-13	$9,804.93	N/C	$3,872.40	N/C
2013-14	$10,622.41	8.3	$4,096.05	5.8
2014-15	$10,668.24	0.4	$3,871.16	-5.5
2015-16	$10,474.96	-1.8	$3,563.75	-7.9
2016-17	$11,167.52	6.6	$3,762.17	5.6
2017-18	$11,530.71	3.3	$3,798.84	1.0

*Estimates; **Year-end May

SOURCE: ANNUAL REPORT AND IBISWORLD

Major Companies

Player Performance continued

relational-database software. In fiscal 2017, the company generated more than $37.8 billion in revenue across all of its product categories.

The company is currently divided into three categories: cloud and on-premise software; hardware; and services. The company's cloud and on-premise software segment can further be divided into cloud and on-premise software, infrastructure as a service (IaaS) and software license updates and product support. Cloud and on-premise software sells and delivers a variety of software, such as Oracle Applications, Oracle Database and Oracle Fusion Middleware. Oracle offers applications for handling human capital, enterprise resource planning (ERP), customer experience, supply chain and enterprise performance. The IaaS segment provides infrastructure cloud services, such as Oracle Managed Cloud Services. The software license updates and product support category sells software support contracts. Altogether, these segments account for roughly three-quarters of the company's total revenue over the five years to 2017.

Oracle has recently made some significant acquisitions, which have strengthened the company's competitive position, particularly within the applications marketplace. Acquisitions have also expanded Oracle's customer base and provided greater scope to its research and development activity. In 2016, the company purchased cloud workload company Ravello Systems, Machine learning company Crosswise and many others. In June 2014, the company entered into a merger agreement with MICROS Systems Inc., provider of integrated software, hardware and services solutions to the hospitality and retail industries. It also bought Responsys Inc., Tekelec Global Inc. and Acme Packet in 2013 and Taleo and RightNow in 2012.

Financial performance

Oracle's industry-related revenue is expected to grow at an annualized rate of 3.3% over the five years to 2017, to reach an expected $11.5 billion in fiscal 2018. Further, operating income is expected to increase to $3.8 billion. Much of this growth can be attributed to acquisitions and its large offering of cloud products. Over the period, the company has experienced rising demand for its cloud products, which has propelled the company's growth as more businesses transition to the cloud.

Other Companies

SAP SE

Estimated market share: 3.6 %

Founded in 1972, SAP SE is a German multinational software corporation that develops and publishes enterprise software applications with a focus on business analytics. SAP is headquartered in Walldorf, Germany. The company has roughly 84,000 employees in more than 180 countries and 300,000 customers worldwide. The company offers a range of software for asset management, manufacturing, service, commerce, marketing, supply chain, human resources and a variety of other areas.

SAP's recent company strategy has focused on increasing the range of its cloud services. In 2016, it acquired big data platform Altiscale and cloud analytics company Roambi. It also purchased Fedem Technology, a Norwegian internet of things (IoT) company, to enhance its cloud-based predictive maintenance product and service portfolio. In 2014, SAP acquired Fieldglass, a leading provider of cloud

Major Companies

Other Companies continued

software for vendor management systems. In 2013, it bought e-commerce software company hybris, as well as other acquisitions over the period. The company's acquisitions and its focus on cloud products have propelled its growth over the period. In 2017, IBISWorld expects the company to generate $7.8 billion in industry-relevant revenue.

Apple

Estimated market share: 2.7 %

Based in Cupertino, CA, Apple Inc. employs more than 116,000 workers and has offices and retail stores worldwide. The company designs, manufactures and markets computers, mobile communication devices and portable media players. While Apple is best known for its range of consumer computer products, the company also develops the iOS and macOS operating systems that are used to run these products. In fiscal 2015 to 2016 (latest annual data), the company earned total revenue of $215.6 billion, with 32.3% of revenue derived from sales within the United States. Apple's industry-relevant revenue is expected to grow at an annualized rate of 6.2% over the five years to 2017 to $6.0 billion.

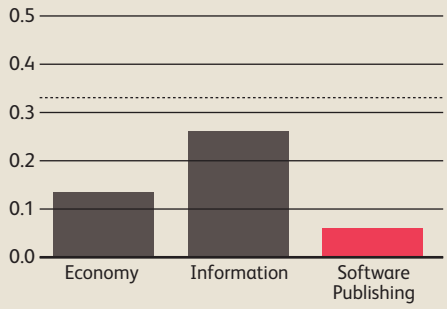
Operating Conditions

Capital Intensity | Technology & Systems | Revenue Volatility
Regulation & Policy | Industry Assistance

Capital Intensity

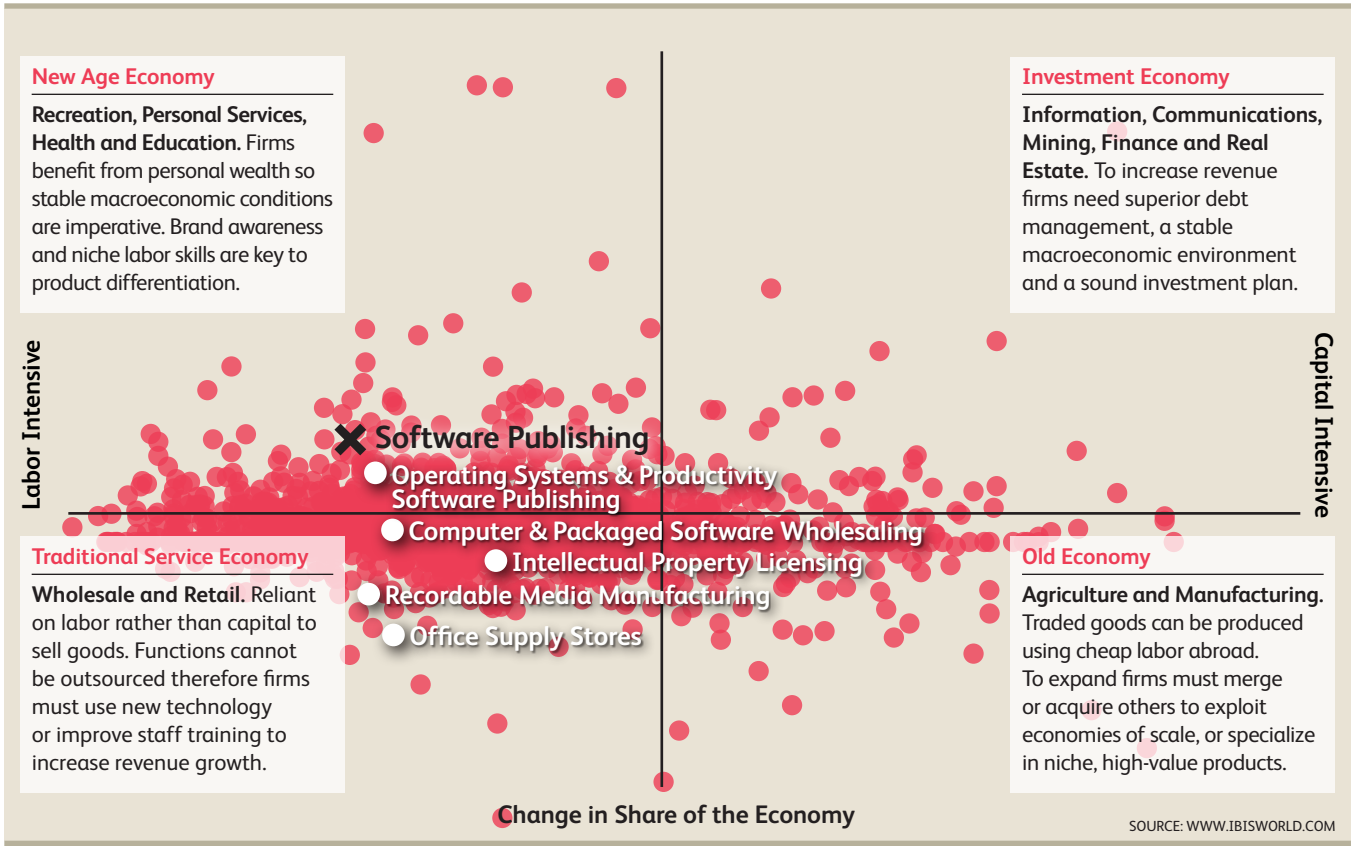
Level
The level of capital intensity is **Low**

The Software Publishing industry is highly labor-intensive; as a result, industry companies spend only $0.06 on capital investments for every $1.00 spent on labor. Most software companies require only limited capital goods, such as computers and office space. Software is an intangible product that requires highly skilled employees and a significant time investment. Companies rarely encode their software on discs themselves, preferring to outsource that activity or by selling via downloadable files through the internet.



Dotted line shows a high level of capital intensity
SOURCE: WWW.IBISWORLD.COM

Tools of the Trade: Growth Strategies for Success



SOURCE: WWW.IBISWORLD.COM

Operating Conditions

Technology & Systems

Level
The level of Technology Change is **High**

The software industry is highly competitive and characterized by rapid technological change, evolving industry standards and changes in customer expectations and standards. As a result, software companies typically make significant investments into research and development. The cost of up-front development, marketing and technical support for new software is initially high, but subsequent versions are generally much less expensive to develop.

There is an increasing trend among industry participants to provide application software as internet services. Consequently, software publishers are converting packaged software into a service that can be accessed via subscription through the internet. These internet services are a substitute for packaged software, converting software from a product to a service. They also enable companies to instantly update their software on all types of machines at the same time.

The internet has enabled the Software Publishing industry to operate more efficiently. Initially, software development was concentrated in one geographic area, followed by a lengthy process of distribution through a worldwide network of resellers. The internet has provided a cost-effective way for software publishers to reach customers and has contributed to increased sales for the Software Publishing industry.

Open-source software (OSS) has been growing as a share of the global software market. OSS (such as the Linux operating system) is a threat to some proprietary software, but will also promote interoperability and new software developments. However, the use of open-source code within proprietary products may subject users to certain obligations, such as offering their products that use open-source code for no cost.

The rising use of mobile devices, which include smartphones and tablets, have also had a significant impact on the industry. The increased use of mobile devices has spurred demand for new types of software, such as mobile applications and security software.

Software designed to test other software for bugs and security vulnerabilities is quietly gaining acceptance, and could one day dramatically reduce the costs associated with quality assurance. However, the labor involved in constructing such software makes it prohibitively expensive for most companies.

Revenue Volatility

Level
The level of Volatility is **Low**

The Software Publishing industry has had a low level of revenue volatility over the five years to 2017, fluctuating at an average rate of 2.2% per year in the period. Increasing use of technology in business and consumers' everyday lives has spurred demand over the period. Additionally, the increasing prevalence of subscription based software sales has smoothed out demand over the period.

The majority of industry revenue comes from software sold to businesses, normally on a subscription basis. Most businesses treat software spending as a capital expense, as software is seen as a productivity-enhancing tool. In times of increasing demand, businesses take advantage of available funds to invest in computer software and increase productivity. Conversely, many businesses do not view software spending as necessary in an environment of declining demand. Rebounding corporate profit after recessionary declines boosted demand early in the five-year period.

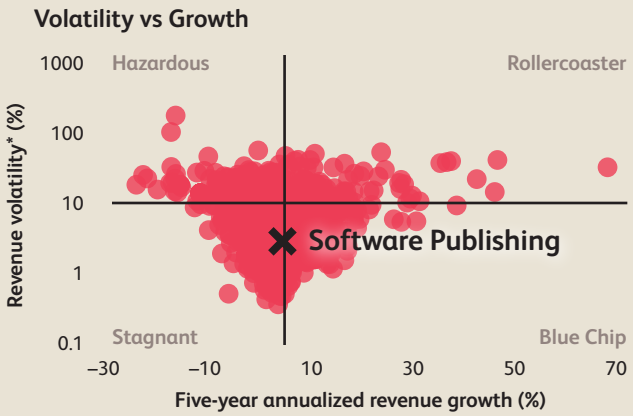
Operating Conditions

Revenue Volatility continued

Companies that primarily sell their products to consumers or businesses on a single license basis experience much more revenue volatility than business-oriented software companies. This is particularly true for software which is updated regularly and customarily bought in concordance with new hardware. In these cases, operators are exposed when consumer credit tightens and consumers reduce their debt levels, causing hardware sales to decline, and software sales and updates decline as a result.

A higher level of revenue volatility implies greater industry risk. Volatility can negatively affect long-term strategic decisions, such as the time frame for capital investment.

When a firm makes poor investment decisions it may face underutilized capacity if demand suddenly falls, or capacity constraints if it rises quickly.



* Axis is in logarithmic scale

SOURCE: WWW.IBISWORLD.COM

Regulation & Policy

Level & Trend
The level of Regulation is **Light** and the trend is **Increasing**

The future success of many software companies is highly dependent upon their proprietary technology, including their software and their source code for that software. Failure to protect such technology could lead to a loss of valuable assets and competitive advantage. Software companies protect their proprietary information through the use of patents, copyrights, trademarks, trade secret laws, confidentiality procedures and contractual provisions.

Congress has passed the Sherman Antitrust Act, the Clayton Act and the Robinson-Patman Act, along with various other regulations regarding unfair competition. In addition, states have enacted their own antitrust laws to ensure that the general public is provided with the best prices, quality and competition among businesses. In 2010, the Department of Justice (DOJ) filed a lawsuit against Oracle, claiming that between 1998 and 2006, the federal government did not receive the same discounts for services as the commercial sector. The case was ultimately settled for just under $199.5 million plus interest fees.

In 1994, the DOJ opened an investigation into whether Microsoft was abusing its monopoly on the PC operating system market. The investigation resulted in a settlement, in which Microsoft consented to not tying other Microsoft products to the sale of its Windows operating system. In 1998, the DOJ and the attorney generals of 20 states sued Microsoft for illegally thwarting competition. In 2001, the DOJ reached a proposed settlement, requiring Microsoft to share its application programming interfaces with third-party companies and appoint a panel of three people who would have full access to

Operating Conditions

Regulation & Policy continued

Microsoft's systems, records and source code for five years to ensure compliance. In 2004, a US Appeals Court approved the settlement, with Microsoft's obligation under the settlement, as originally drafted, expiring on November 12, 2007. Microsoft later agreed to a two-year extension of part of the final judgments dealing with communications protocol.

Federal copyright laws

US copyright laws protect copyright owners from the unauthorized reproduction, adaptation, performance, display or distribution of copyright protected works. The Fair Use Doctrine in US copyright law limits the extent to which a citizen may use a quote from copyrighted material depending on the nature of the use (including commercial purpose, nonprofit and educational).

The Copyright Term Extension Act of 1998 extended US copyright to 70 years beyond the life of the author. The Digital Millennium Copyright Act (DMCA) of 1998 criminalized some cases of copyright infringement and prohibits the manufacture and distribution of services designed for the sole purpose of undermining technology used to protect copyrighted works. The No Electronic Theft Act of 1997 permits criminal prosecution of individuals who commit computer program infringements, even when no monetary profit or commercial gain is derived from the activity.

International laws

In 1988, the United States became a signatory of the Berne Convention for the Protection of Literary and Artistic Works, which is administered by the World Intellectual Property Organization (WIPO). Items covered by this law include rules for the protection of works, including the right for the copyright owner to authorize reproduction, translation, communication and adaptation of their work.

The World Trade Organization's Agreement of Trade Related Aspects of Intellectual Property Rights sets minimum standards for many forms of intellectual property regulation. The agreement came into effect on January 1st, 1995.

Member states of the WIPO signed the WIPO Copyright Treaty in 1996. It provides additional protections for copyright deemed necessary due to advances in information technology since the formation of previous copyright treaties before it. The WIPO Copyright Treaty ensures computer programs are protected as literary works and the arrangement and selection of material in databases is protected.

Industry Assistance

Level & Trend
The level of Industry Assistance is **Low** and the trend is **Steady**

The Software Publishing industry does not receive a significant level of federal, state or local government assistance. Funding for new software companies generally comes from private sources; venture capital groups are a major source of seed funding for start-up software publishers. Industry can benefit from tax incentives designed to attract overall businesses to a specific area, including New York and Florida. For example, START-UP NY provides new and growing businesses the ability to operate tax free for 10 years if the company is located on or near an eligible university or college campus in New York state. Although programs like START-UP NY are not directly targeted at software companies, they can also benefit industry operators.

The Software and Information Industry Association is the principal trade association for the software and digital content industry. It provides services such as government relations,

Operating Conditions

Industry Assistance continued

business development, corporate education and intellectual property protection. The association's software division provides a forum for companies that develop the applications, services, infrastructure and tools that drive the software and services industry.

Key Statistics

Industry Data

	Revenue ($m)	Industry Value Added ($m)	Establish-ments	Enterprises	Employment	Exports	Imports	Wages ($m)	Domestic Demand	Number of mobile internet connections (Mil)
2008	165,275.0	112,606.9	8,097	5,695	386,406	--	--	53,394.4	N/A	26.5
2009	161,790.2	110,802.5	7,647	5,392	370,019	--	--	50,292.3	N/A	56.3
2010	168,870.9	116,005.1	7,462	5,286	364,463	--	--	53,295.4	N/A	97.5
2011	181,195.6	126,704.2	7,445	5,163	362,410	--	--	53,504.9	N/A	142.0
2012	184,709.0	127,740.3	8,302	5,773	397,145	--	--	58,353.3	N/A	170.1
2013	193,097.1	137,399.1	8,912	6,021	428,030	--	--	62,558.9	N/A	197.4
2014	202,530.6	145,449.9	9,185	6,343	442,246	--	--	67,747.7	N/A	223.5
2015	204,807.0	152,365.7	9,528	6,534	458,302	--	--	72,254.3	N/A	253.0
2016	207,355.0	154,442.7	9,641	6,608	466,177	--	--	73,517.3	N/A	277.5
2017	218,409.0	163,121.2	9,832	6,720	484,229	--	--	76,970.2	N/A	304.1
2018	224,361.7	167,432.7	10,026	6,847	498,628	--	--	79,430.6	N/A	328.8
2019	230,886.4	172,230.3	10,179	6,941	510,930	--	--	81,691.4	N/A	351.9
2020	236,882.2	176,576.8	10,401	7,092	525,812	--	--	84,231.3	N/A	373.5
2021	243,814.1	181,822.3	10,615	7,226	539,469	--	--	86,721.0	N/A	393.8
2022	251,323.2	187,451.8	10,931	7,444	556,073	--	--	89,657.6	N/A	412.9
Sector Rank	**2/85**	**1/85**	**13/85**	**12/85**	**2/85**	**N/A**	**N/A**	**1/85**	**N/A**	**N/A**
Economy Rank	**48/1908**	**16/1586**	**527/1908**	**571/1908**	**95/1908**	**N/A**	**N/A**	**21/1908**	**N/A**	**N/A**

Annual Change

	Revenue (%)	Industry Value Added (%)	Establish-ments (%)	Enterprises (%)	Employment (%)	Exports (%)	Imports (%)	Wages (%)	Domestic Demand (%)	Number of mobile internet connections (%)
2009	-2.1	-1.6	-5.6	-5.3	-4.2	N/A	N/A	-5.8	N/A	112.2
2010	4.4	4.7	-2.4	-2.0	-1.5	N/A	N/A	6.0	N/A	73.2
2011	7.3	9.2	-0.2	-2.3	-0.6	N/A	N/A	0.4	N/A	45.6
2012	1.9	0.8	11.5	11.8	9.6	N/A	N/A	9.1	N/A	19.8
2013	4.5	7.6	7.3	4.3	7.8	N/A	N/A	7.2	N/A	16.0
2014	4.9	5.9	3.1	5.3	3.3	N/A	N/A	8.3	N/A	13.2
2015	1.1	4.8	3.7	3.0	3.6	N/A	N/A	6.7	N/A	13.2
2016	1.2	1.4	1.2	1.1	1.7	N/A	N/A	1.7	N/A	9.7
2017	5.3	5.6	2.0	1.7	3.9	N/A	N/A	4.7	N/A	9.6
2018	2.7	2.6	2.0	1.9	3.0	N/A	N/A	3.2	N/A	8.1
2019	2.9	2.9	1.5	1.4	2.5	N/A	N/A	2.8	N/A	7.0
2020	2.6	2.5	2.2	2.2	2.9	N/A	N/A	3.1	N/A	6.1
2021	2.9	3.0	2.1	1.9	2.6	N/A	N/A	3.0	N/A	5.4
2022	3.1	3.1	3.0	3.0	3.1	N/A	N/A	3.4	N/A	4.9
Sector Rank	**27/85**	**30/85**	**46/85**	**49/85**	**38/85**	**N/A**	**N/A**	**34/85**	**N/A**	**N/A**
Economy Rank	**261/1908**	**245/1586**	**739/1908**	**778/1908**	**336/1908**	**N/A**	**N/A**	**300/1908**	**N/A**	**N/A**

Key Ratios

	IVA/Revenue (%)	Imports/ Demand (%)	Exports/ Revenue (%)	Revenue per Employee ($'000)	Wages/Revenue (%)	Employees per Est.	Average Wage ($)	Share of the Economy (%)
2008	68.13	N/A	N/A	427.72	32.31	47.72	138,182.12	0.76
2009	68.49	N/A	N/A	437.25	31.08	48.39	135,918.16	0.77
2010	68.69	N/A	N/A	463.34	31.56	48.84	146,229.93	0.78
2011	69.93	N/A	N/A	499.97	29.53	48.68	147,636.38	0.84
2012	69.16	N/A	N/A	465.09	31.59	47.84	146,931.98	0.83
2013	71.16	N/A	N/A	451.13	32.40	48.03	146,155.41	0.88
2014	71.82	N/A	N/A	457.96	33.45	48.15	153,190.08	0.91
2015	74.39	N/A	N/A	446.88	35.28	48.10	157,656.52	0.93
2016	74.48	N/A	N/A	444.80	35.45	48.35	157,702.55	0.93
2017	74.69	N/A	N/A	451.04	35.24	49.25	158,954.13	0.96
2018	74.63	N/A	N/A	449.96	35.40	49.73	159,298.31	0.96
2019	74.60	N/A	N/A	451.89	35.38	50.19	159,887.66	0.97
2020	74.54	N/A	N/A	450.51	35.56	50.55	160,192.81	0.98
2021	74.57	N/A	N/A	451.95	35.57	50.82	160,752.52	0.99
2022	74.59	N/A	N/A	451.96	35.67	50.87	161,233.51	1.00
Sector Rank	**5/85**	**N/A**	**N/A**	**26/85**	**25/85**	**12/85**	**8/85**	**1/85**
Economy Rank	**30/1586**	**N/A**	**N/A**	**565/1908**	**324/1908**	**370/1908**	**27/1908**	**16/1586**

Figures are in inflation-adjusted 2017 dollars. Rank refers to 2017 data.

SOURCE: WWW.IBISWORLD.COM

Industry Financial Ratios

	Apr 2012 - Mar 2013	Apr 2013 - Mar 2014	Apr 2014 - Mar 2015	Apr 2015 - Mar 2016	Apr 2015 - Mar 2016 by company revenue: Small (<$10m)	Medium ($10-50m)	Large (>$50m)
Liquidity Ratios							
Current Ratio	1.2	1.3	1.2	1.1	2.1	1.1	1.0
Quick Ratio	1.1	1.0	1.0	0.9	1.8	0.9	0.9
Sales / Receivables (Trade Receivables Turnover)	6.3	6.3	6.5	6.7	9.4	6.6	6.5
Days' Receivables	57.9	57.9	56.2	54.5	38.8	55.3	56.2
Cost of Sales / Inventory (Inventory Turnover)	n/c	n/c	n/c	n/c	n/c	n/c	n/c
Days' Inventory	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Cost of Sales / Payables (Payables Turnover)	8.8	10.3	8.0	10.4	11.3	10.7	9.9
Days' Payables	41.5	35.4	45.6	35.1	32.3	34.1	36.9
Sales / Working Capital	15.8	15.4	19.1	44.4	9.5	45.8	-260.3
Coverage Ratios							
Earnings Before Interest & Taxes (EBIT) / Interest	2.9	3.8	2.4	n/a	6.6	0.3	-1.4
Net Profit + Dep., Depletion, Amort. / Current Maturities LT Debt	3.3	1.9	1.0	2.2	n/a	3.5	0.6
Leverage Ratios							
Fixed Assets / Net Worth	-24.3	0.9	-3.8	-1.7	0.2	-0.9	-0.2
Debt / Net Worth	-52.0	6.1	-14.4	-9.7	1.3	-9.1	-3.3
Tangible Net Worth	-9.7	-0.3	-11.0	-12.2	23.9	-11.9	-27.1
Operating Ratios							
Profit before Taxes / Net Worth, %	23.5	26.9	20.0	21.1	43.5	28.4	-1.5
Profit before Taxes / Total Assets, %	3.9	5.3	4.3	-1.2	7.8	-1.2	-4.9
Sales / Net Fixed Assets	21.6	25.7	25.2	25.8	42.6	25.3	21.0
Sales / Total Assets (Asset Turnover)	1.2	1.4	1.1	1.2	2.7	1.1	0.9
Cash Flow & Debt Service Ratios (% of sales)							
Cash from Trading	71.7	69.8	66.4	68.5	75.1	70.7	61.7
Cash after Operations	10.5	7.8	8.8	6.1	6.2	9.0	2.8
Net Cash after Operations	9.6	7.4	9.4	5.7	6.0	7.0	2.6
Cash after Debt Amortization	3.2	2.0	3.3	1.2	1.4	1.9	0.9
Debt Service P&I Coverage	2.9	3.0	2.5	1.8	4.1	2.8	1.0
Interest Coverage (Operating Cash)	5.4	8.9	5.6	3.3	7.6	8.9	2.0
Assets, %							
Cash & Equivalents	22.7	25.7	22.8	23.5	35.1	22.2	20.1
Trade Receivables (net)	22.3	26.0	22.5	21.9	28.4	20.8	20.3
Inventory	1.5	1.9	2.1	1.7	4.3	1.3	0.9
All Other Current Assets	6.5	6.0	5.2	5.3	3.0	6.8	4.9
Total Current Assets	53.0	59.6	52.6	52.4	70.8	51.1	46.1
Fixed Assets (net)	9.9	10.4	8.5	7.6	9.5	6.8	7.7
Intangibles (net)	29.5	21.5	30.0	31.5	6.5	33.8	39.4
All Other Non-Current Assets	7.6	8.5	8.9	8.5	13.3	8.3	6.8
Total Assets	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Assets ($m)	17,710.1	11,587.1	17,313.1	18,303.2	102.2	4,388.6	13,812.3
Liabilities, %							
Notes Payable-Short Term	4.0	4.1	4.9	4.0	9.9	3.6	2.0
Current Maturities L/T/D	3.2	3.0	2.4	2.5	2.1	2.6	2.6
Trade Payables	7.8	7.6	7.3	7.0	8.6	6.3	6.9
Income Taxes Payable	0.5	0.5	0.5	0.4	0.7	0.2	0.4
All Other Current Liabilities	27.6	31.3	29.7	31.8	30.8	33.6	30.5
Total Current Liabilities	43.2	46.5	44.8	45.7	52.1	46.2	42.5
Long Term Debt	24.0	19.7	21.9	21.0	7.1	18.6	29.0
Deferred Taxes	1.4	0.8	0.9	0.9	n/a	0.5	1.7
All Other Non-Current Liabilities	11.6	11.8	13.4	13.1	10.3	12.8	14.4
Net Worth	19.8	21.2	19.0	19.3	30.4	21.9	12.3
Total Liabilities & Net Worth ($m)	17,710.1	11,587.1	17,313.1	18,303.2	102.2	4,388.6	13,812.3
Maximum Number of Statements Used	265	215	273	266	46	107	113

Source: RMA Annual Statement Studies, rmahq.org. RMA data for all industries is derived directly from more than 260,000 statements of member financial institutions' borrowers and prospects.

Note: For a full description of the ratios refer to the Key Statistics chapter online.

rma THE RISK MANAGEMENT ASSOCIATION

Jargon & Glossary

Industry Jargon

APPLICATION SOFTWARE A computer program that functions with the purpose of supporting or improving the software user's work.

CLOUD COMPUTING A computing model in which storage and computing tasks are handled by networked machines (often servers in a data center owned by the service provider) rather than at the point of consumption.

ENTERPRISE SOFTWARE A type of software, also known as enterprise application software (EAS), that is intended to solve an enterprise problem, rather than a departmental problem.

OPEN-SOURCE SOFTWARE (OSS) Computer software distributed under a licensing arrangement and that enables computer codes to be shared, viewed and modified by other users and by organizations.

SOFTWARE AS A SERVICE (SAAS) A model of software deployment where a provider licenses an application to customers for use as a service on demand.

IBISWorld Glossary

BARRIERS TO ENTRY High barriers to entry mean that new companies struggle to enter an industry, while low barriers mean it is easy for new companies to enter an industry.

CAPITAL INTENSITY Compares the amount of money spent on capital (plant, machinery and equipment) with that spent on labor. IBISWorld uses the ratio of depreciation to wages as a proxy for capital intensity. High capital intensity is more than $0.333 of capital to $1 of labor; medium is $0.125 to $0.333 of capital to $1 of labor; low is less than $0.125 of capital for every $1 of labor.

CONSTANT PRICES The dollar figures in the Key Statistics table, including forecasts, are adjusted for inflation using the current year (i.e. year published) as the base year. This removes the impact of changes in the purchasing power of the dollar, leaving only the "real" growth or decline in industry metrics. The inflation adjustments in IBISWorld's reports are made using the US Bureau of Economic Analysis' implicit GDP price deflator.

DOMESTIC DEMAND Spending on industry goods and services within the United States, regardless of their country of origin. It is derived by adding imports to industry revenue, and then subtracting exports.

EMPLOYMENT The number of permanent, part-time, temporary and seasonal employees, working proprietors, partners, managers and executives within the industry.

ENTERPRISE A division that is separately managed and keeps management accounts. Each enterprise consists of one or more establishments that are under common ownership or control.

ESTABLISHMENT The smallest type of accounting unit within an enterprise, an establishment is a single physical location where business is conducted or where services or industrial operations are performed. Multiple establishments under common control make up an enterprise.

EXPORTS Total value of industry goods and services sold by US companies to customers abroad.

IMPORTS Total value of industry goods and services brought in from foreign countries to be sold in the United States.

INDUSTRY CONCENTRATION An indicator of the dominance of the top four players in an industry. Concentration is considered high if the top players account for more than 70% of industry revenue. Medium is 40% to 70% of industry revenue. Low is less than 40%.

INDUSTRY REVENUE The total sales of industry goods and services (exclusive of excise and sales tax); subsidies on production; all other operating income from outside the firm (such as commission income, repair and service income, and rent, leasing and hiring income); and capital work done by rental or lease. Receipts from interest royalties, dividends and the sale of fixed tangible assets are excluded.

INDUSTRY VALUE ADDED (IVA) The market value of goods and services produced by the industry minus the cost of goods and services used in production. IVA is also described as the industry's contribution to GDP, or profit plus wages and depreciation.

INTERNATIONAL TRADE The level of international trade is determined by ratios of exports to revenue and imports to domestic demand. For exports/revenue: low is less than 5%, medium is 5% to 20%, and high is more than 20%. Imports/domestic demand: low is less than 5%, medium is 5% to 35%, and high is more than 35%.

LIFE CYCLE All industries go through periods of growth, maturity and decline. IBISWorld determines an industry's life cycle by considering its growth rate (measured by IVA) compared with GDP; the growth rate of the number of establishments; the amount of change the industry's products are undergoing; the rate of technological change; and the level of customer acceptance of industry products and services.

Jargon & Glossary

IBISWorld Glossary continued

NONEMPLOYING ESTABLISHMENT Businesses with no paid employment or payroll, also known as nonemployers. These are mostly set up by self-employed individuals.

PROFIT IBISWorld uses earnings before interest and tax (EBIT) as an indicator of a company's profitability. It is calculated as revenue minus expenses, excluding interest and tax.

VOLATILITY The level of volatility is determined by averaging the absolute change in revenue in each of the past five years. Volatility levels: very high is more than ±20 %; high volatility is ±10 % to ±20 %; moderate volatility is ±3 % to ±10 %; and low volatility is less than ±3 %.

WAGES The gross total wages and salaries of all employees in the industry. The cost of benefits is also included in this figure.