

Out of print: The industry struggles as printed media lose consumers to the web

IBISWorld Industry Report 32311 Printing in the US

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About this Industry

Industry Definition

Companies in this industry are primarily engaged in printing on paper, textile products, metal, glass, plastic and other materials, with the exception of fabric. The industry covers a variety of different printing processes, including lithographic,

gravure, screen, flexographic, digital and letterpress. This industry does not include publishers that also perform printing, nor does it include companies that perform prepress or postpress services without traditional printing.

Main Activities

The primary activities of this industry are

Commercial lithographic printing
 Commercial gravure printing
 Commercial flexographic printing
 Commercial screen printing
 Quick printing
 Digital printing
 Manifold business forms printing
 Book printing
 Blank book, loose-leaf binders and devices manufacturing

The major products and services in this industry are

Book printing
 Commercial flexographic printing
 Commercial gravure printing
 Commercial lithographic printing
 Commercial screen printing
 Digital printing
 Quick printing
 Other printing

Similar Industries

51111 Newspaper Publishing in the US

Publishers in this industry print their own newspapers.

51112 Magazine & Periodical Publishing in the US

Firms in this industry print their own periodicals.

51113 Book Publishing in the US

Companies in this industry produce books that are published and printed in the same establishment.

About this Industry

Additional Resources

For additional information on this industry

www.bls.gov

Bureau of Labor Statistics

www.printing.org

Printing Industries of America

www.magazine.org

The Association of Magazine Media

IBISWorld writes over 700 US industry reports, which are updated up to four times a year. To see all reports, go to www.ibisworld.com

Industry at a Glance

Printing in 2012

Key Statistics Snapshot

Revenue	Annual Growth 07-12	Annual Growth 12-17
\$76.6bn	-6.2%	-1.8%
Profit	Exports	Businesses
\$3.1bn	\$6.1bn	26,176

Market Share
 R.R. Donnelley & Sons Company
10.0%
 Quad/Graphics Inc. **4.1%**

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Revenue vs. employment growth



Print advertising expenditure



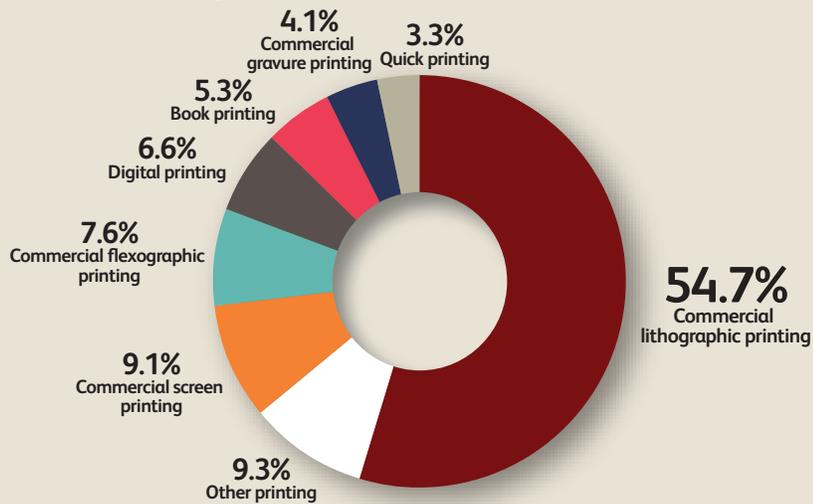
SOURCE: WWW.IBISWORLD.COM

Key External Drivers

Demand from newspaper, periodical, book and database publishers
 Print advertising expenditure
 Demand from retail trade
 Price of paper

p. 5

Products and services segmentation (2012)



SOURCE: WWW.IBISWORLD.COM

Industry Structure

Life Cycle Stage	Decline	Regulation Level	Light
Revenue Volatility	Medium	Technology Change	Medium
Capital Intensity	Medium	Barriers to Entry	Medium
Industry Assistance	None	Industry Globalization	Medium
Concentration Level	Low	Competition Level	High

FOR ADDITIONAL STATISTICS AND TIME SERIES SEE THE APPENDIX ON PAGE 35

Industry Performance

Executive Summary | Key External Drivers | Current Performance
Industry Outlook | Life Cycle Stage

Executive Summary

The Printing industry has contended with a variety of challenges over the past five years. Consumers are increasingly favoring digital alternatives, such as online media, over printed materials. For many media products, the printed word has proven to be too slow to produce and too costly to distribute. As a result, newer forms of media have been leeching away this industry's demand. With revenue declining at an average annual rate of 6.2% in the five years to 2012, the

consolidation. In the five years to 2012, the number of firms operating in this industry is expected to fall an average of 2.2% annually to 26,176. Industry consolidation has allowed the larger printers to adopt more efficient equipment while slashing employment and wages. These trends were exemplified when Quad/Graphics acquired World Color Press in July 2010. The company subsequently closed several plants and reduced its employee headcount by 2,200. Plant closures have caused industry employment to fall at an average of 4.5% annually to 463,904 employees in the five years to 2012.

Substitute forms of media will continue to attract consumers away from printers

Printing industry as a whole is in decline. In 2012, revenue is expected to continue declining, falling 2.0% during the year to an estimated \$76.6 billion.

Over the past five years, decreasing sales volumes and downward pressure on unit selling prices have hampered industry profit margins. Further crippling the industry, printing requires substantial capital investments in new technology to remain competitive, even at times of excess capacity. Such overcapacity has led to industry

The Printing industry is projected to continue its decline in the five years to 2017, though at a slower pace. Revenue is forecast to contract at an average rate of 1.8% per year and total \$69.9 billion in 2017. Substitutes to commercially printed material, such as online media and advertising, will continue to adversely affect industry activity. The industry will also continue to struggle as digital media replaces paper products. In order to adapt to declining demand, printers will diversify into cross-media products, including multimedia layout and design.

Key External Drivers

Demand from newspaper, periodical, book and database publishers

Magazine, newspaper, database and book publishers are primary users of printing services. Therefore, when these industries are enjoying favorable demand, and circulation volumes are rising, the Printing industry typically experiences a boost in revenue. This driver is expected to decrease slowly during 2012.

Print advertising expenditure

Print advertising expenditure includes spending on advertising in magazines

and newspapers. The demand for print advertising has been waning in favor of online advertising, a trend the recession exacerbated. When advertising spending declines, newspapers and magazines decrease their page output and consolidate operations, which negatively affects demand for the Printing industry. With the modest economic recovery, business spending on advertising has been on the upturn, favorably affecting the Printing industry. This driver is expected to increase during 2012, which is a potential opportunity for the industry.

Industry Performance

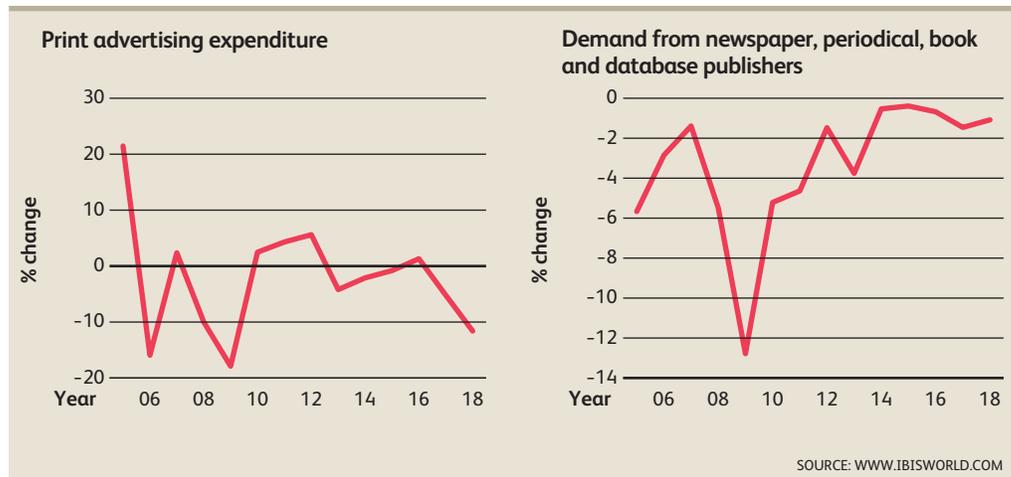
Key External Drivers continued

Demand from retail trade

Retailers are major users of printed products, such as labels, bags, direct mail and catalogs. Furthermore, trends in the retail trade affect the demand for other products with printed inputs, such as packaging. Therefore, when retail sales are rising strongly, this favorably affects the Printing industry. This driver is expected to increase during 2012.

Price of paper

Paper is one of the primary inputs the Printing industry requires. The cost of paper affects the demand for printed material. Large printing contracts usually have variance clauses that adjust printing prices when paper costs change. This driver is expected to increase over 2012, which is a potential threat to the industry.



Current Performance

The Printing industry has faced a variety of challenges over the past five years. The main obstacle has been the rise of digital media, which has slowly replaced traditional forms of advertising, challenging many of the industry's clients and fostering industry restructuring. Coupled with the recession's adverse effects on advertising and consumer spending, industry revenue declined considerably over the five-year period. In the five years to 2012, the Printing industry's revenue is expected to contract at an average annual rate of 6.2% to total \$76.6 billion. In 2012, industry revenue is expected to continue declining, falling 2.0% during the year, due to the continued transition towards digital media.

The number of magazine advertising pages is an important indicator of the

demand for the Printing industry. Unfortunately for industry operators, magazine advertising pages in the US market remained flat in 2007 before declining significantly in 2008 and 2009. Also, many companies reduced their marketing budgets following the recession. In 2008 and 2009, print advertising expenditure fell 10.0% and 17.9%, respectively. Profit margins have come under pressure over the past five years as well due to diminished volumes, rising input costs and pricing pressures. Over the five years to 2012, profit margins have fallen from 4.7% of revenue to 4.1%. Furthermore, industry operators have reported significant charges related to restructuring and goodwill impairments brought about by weaker demand and pricing pressures.

Industry Performance

The internet pinch

Advertising campaigns are increasingly transitioning from being product-centric to customer-centric. The rise of digital and social media has caused many advertisers to focus their efforts on nonprint advertising. As a result, the industry has suffered because printed newspapers, periodicals, directories, advertising materials, financial reports and business forms are quickly being replaced by online substitutes. The internet has dampened the demand for job printing activities (i.e. preprinted invoices and order forms) and traditional commercial printing, but some commercial printers do not compete with digital media directly. These sectors include packaging and security printing, which faced comparatively less decline.

There has been a shift toward shorter print runs (i.e. fewer than 1,000 copies)

Due to shorter print runs and tighter deadlines, US demand for digital printing is growing

and tighter deadlines, which has resulted in commercial printers increasingly investing in new technology and equipment to remain competitive. This factor has also increased the amount of revenue generated from digital printing, which is a small but rapidly-growing service offering for the industry. Digitization allows text-based content to be produced for various media from a single source. Furthermore, it enables printers to produce small print runs economically and offer customized printing, including for direct mail.

Diversification

The ability to access books and book catalogs on the internet has attracted search engines like Google and Yahoo. Americans are reading less printed media than they used to, and many publishers and printing companies are threatened by this development. Nevertheless, publishers are trying new business models to capitalize on the internet, such as introducing subscriptions for online newspaper content, thus reducing demand for the Printing industry. In response, printing companies have been forced

to do the same as downstream demand wanes.

As digital media continues to grow, commercial printers have diversified into outsourcing document processes. This involves delegating any task or process in the document life cycle, from creation through delivery. They are also diversifying from traditional print products into cross-media products, such as multimedia layout and design. In short, more commercial printers are transforming from manufacturing-focused to service-focused businesses.

Industry consolidation

The industry is experiencing significant consolidation. On July 2, 2010, major player Quad/Graphics Inc. completed its acquisition of World Color Press Inc., the second-largest provider of print, digital and related services in North America. Then, in August 2010, Quad/Graphics

announced a consolidation of its plants, which would cut 2,200 jobs. There has also been consolidation involving smaller companies and plants over the past five years. The printing industry continues to undergo consolidation because of overcapacity, which has led to negative

Industry Performance

Industry consolidation continued

pricing pressures. The reduced number of small operators creates the opportunity for larger operators to grow. As a result, market share concentration in this fragmented industry rose from

17.2% to 17.6% over the past five years. Over the five years to 2012, the number of industry firms has declined at an average rate of 2.2% annually to 26,176 companies.

Input costs

The Printing industry's input costs have increased in the five years to 2012 due to higher prices for materials, including ink and paper. Additionally, the more extensive use of color and client demands for faster turnaround times have increased costs. The increase in the price of paper and ink inputs primarily occurred in 2007 and 2008. Although prices for material inputs eased somewhat in 2009, a modest increase from 2010 to 2012 will mitigate declining revenue as printing companies pass costs

on to clients. During 2007, there was increased investment in state-of-the-art equipment because competitive pressures drove industry players to introduce equipment that provided greater efficiency and utility. In 2008 and 2009, the industry cut capital spending in response to falling revenue and capacity utilization. Since then, however, commercial printers have increased capital investment in digital printing and short-run print capabilities in order to remain competitive in the industry.

Industry Outlook

The Printing industry has undergone a decade of declining demand due to the rise of digital products and media. Over the next five years, this industry will continue to struggle as digital media replaces traditional paper products. As a result, over the five years to 2017, industry revenue is forecast to decrease at an average annual rate of 1.8% to total \$69.9 billion. During this period, profit margins are forecast to decline, mainly due to price pressures. While the forecast is not stellar and it is clear that the industry is in decline, revenue declines are expected to slow compared to the prior five-year period as economic conditions improve.

Over the next five years, Americans are expected to consume less printed media, diminishing the demand for printed books, magazines and directories. The rapid growth of digital media will have an adverse effect on the circulation and advertising volumes of printed media. Book publishers will



attempt to slow the decline by using new media to increase the visibility and attractiveness of books. Furthermore, book publishers will increasingly seek shorter print runs because of the ongoing advancement in digital technology. The technology of electronic books (e-books), which can be read on devices that include Amazon's Kindle

Industry Performance

Industry Outlook continued

and Apple's iPad, will continue to improve with further innovation and expected price reductions. This factor will also hamper industry growth over

the next five years. The continued adoption of tablet computers is expected to contribute to an industry revenue contraction of 1.3% in 2013.

E-commerce

Electronic transactions, the electronic distribution of documents and data and the online distribution and hosting of media content represent significant risks to most industry segments. Over the next five years, there will be a decline in demand for bank checks, business forms and directory printing due to the increasing use of substitute technologies, including e-commerce and the internet.

Online printing operators offer convenient services and are emerging as significant players in the short print-run space, where small businesses represent the major customer base. Websites can provide design templates and offer customers the ability to design documents interactively. Online operators are able to operate with a low cost structure, helped by savings

associated with having no physical storefront and streamlined website processes. They also have the opportunity to increase volumes by winning customers over large geographical areas, thereby reducing unit costs.

Online operators that grow and develop critical mass may be in a strong position to improve and expand product offerings. For example, some online providers offer mailing at bulk prices, creative services and marketing lists. These online operators will help grow the short print-run market by offering small businesses and households more convenience and a larger range of services at competitive prices. Large online providers will raise the bar for traditional print providers.

Trends and external factors

While the in-house printing operations of newspaper publishers are classified in the Newspaper Publishing industry (IBISWorld report 51111), an emerging trend of outsourcing newspaper printing will, if sustained, provide some hope for large operators. Transcontinental Inc., a Canada-based printing company, began producing the *San Francisco Chronicle* in mid-2009 as part of an outsourcing deal. Transcontinental stated that interest in its newspaper outsourcing model has increased since the company announced the *San Francisco Chronicle* contract. In some markets, increased competition from the printing operations of newspaper publishers will occur.

Over the next five years, improved digital printing devices and more

The rising availability of books online will hurt publishers and their printers through 2017

sophisticated workflow software will continue to promote shorter, digitally printed runs. Digital printing has low setup costs and can accommodate shorter runs, thus allowing for easier document updating, reducing warehousing costs and allowing for a greater number of unique documents. Alternative technologies, including the internet and other office printing equipment, will have a dampening effect on demand for

Industry Performance

Trends and external factors continued

traditional commercial and job printing activities. In order to grow despite falling demand, commercial printers will continue their attempts to move up the value chain. Commercial printers are anticipated to diversify from traditional print products into cross-media products such as multimedia layout and design.

Larger commercial printers are able to raise greater funds for investment and offer a more diverse range of value-added services. These factors will often provide larger operators with

competitive advantages. In the long term, consolidation of ownership will promote consolidation of print production capacity, but pricing competition will increase and profit margins will fall with declining demand. These trends will cause the number of firms operating in this industry to decrease as companies are acquired or leave the industry. In the five years to 2017, the number of industry enterprises is expected to fall 1.5% annually on average to 24,268 companies.

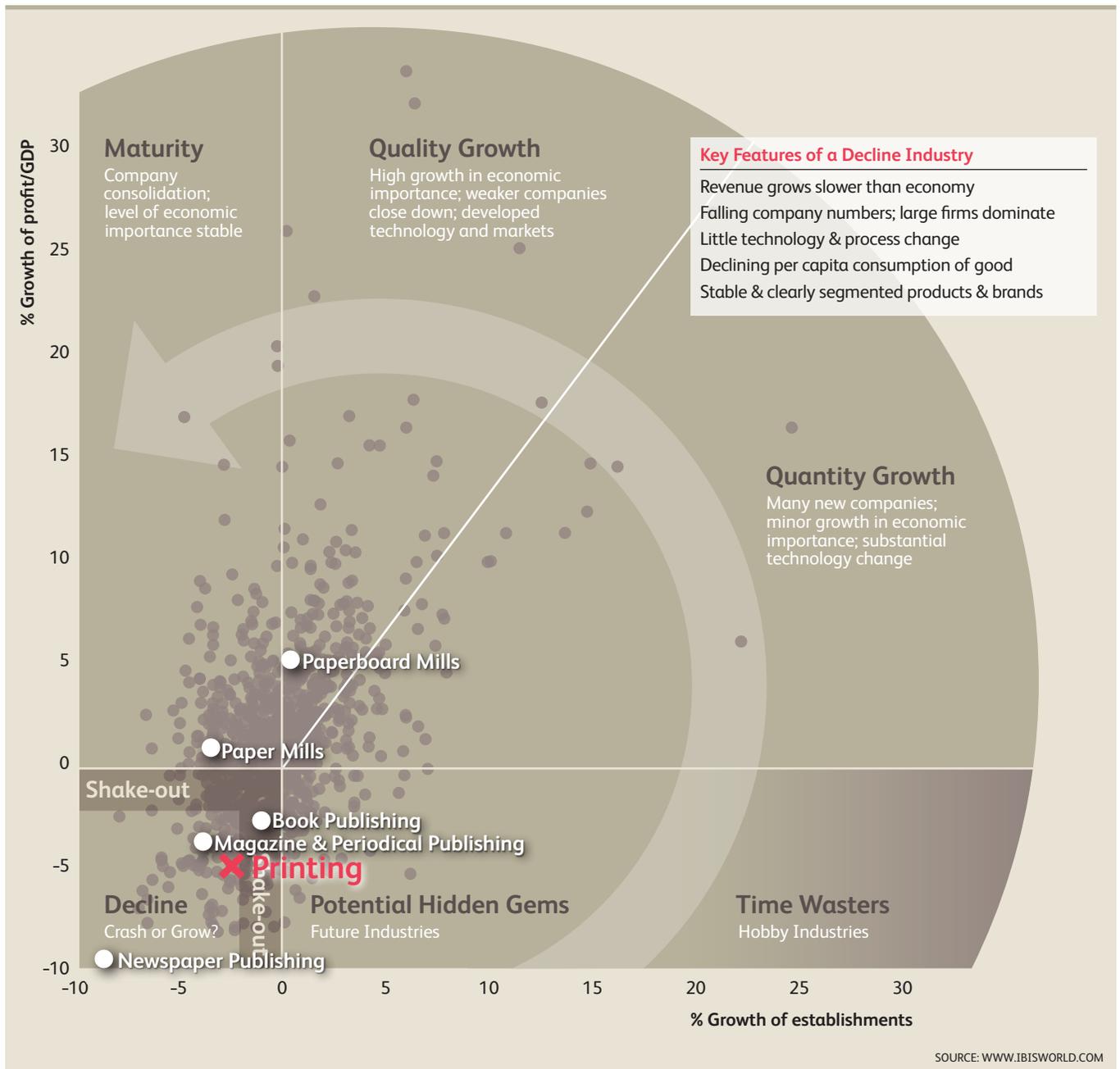
Industry Performance

Life Cycle Stage

The industry is declining as a share of the overall economy

The market is generally saturated, contributing to industry consolidation

There is slow technological change



Industry Performance

Industry Life Cycle

This industry is **Declining**

The Printing industry is in the decline stage of its industry life cycle. Over the 10 years to 2017, the industry's contribution to the overall economy, measured by industry value added (IVA), is expected to decline 2.9% annually on average, largely due to the increasing presence of digital media. On the other hand, GDP is projected to grow at an average annual rate of 1.9% over the same period, indicating that the industry is accounting for a smaller share of the US economy.

In the five years to 2012, the number of firms operating in this industry has declined at an annualized rate of 2.2% to 26,176 operators. Consolidation among larger firms, which tend to operate in the long print-run markets, has been significant. For example, Quad/Graphics acquired World Color Press in July 2010. Prior to its

acquisition, World Color Press was the second-largest provider of print, digital and related services in North America.

Commercial printing businesses must make substantial capital investments over time in new equipment and technology to remain competitive. However, technology in this industry tends to be influenced more by suppliers, such as equipment manufacturers, than by commercial printers. Some commercial printers have developed technology alliances with equipment manufacturers to collaborate on printing technology. Relatively recent innovations have focused on digital printing, which can offer customers convenience and potentially lower costs. By offering document management services, such as design work, some printers have also expanded vertically to capture a share of the print supply chain.

Products & Markets

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

Supply Chain

KEY BUYING INDUSTRIES

44-45	Retail Trade in the US Retailers are major users of printed catalogs and other direct mail.
51112	Magazine & Periodical Publishing in the US Many magazine and periodical publishers outsource printing.
51113	Book Publishing in the US Many book publishers outsource printing.
52	Finance and Insurance in the US The finance and insurance industries are major users and providers of printed stationery, brochures and reports.
54	Professional, Scientific and Technical Services in the US The professional, scientific and technical services industries are major users and providers of printed stationery, brochures and reports.

KEY SELLING INDUSTRIES

32212	Paper Mills in the US Paper mills supply paper to printers.
32213	Paperboard Mills in the US Cardboard mills supply cardboard to printers.
32312	Printing Services in the US Printing support services supply prepress and postpress services to printers.
32591	Ink Manufacturing in the US Ink is a major input in printing.
33411a	Computer Manufacturing in the US Printers are heavy users of computer equipment.
33411b	Computer Peripheral Manufacturing in the US Printers are heavy users of computer peripheral equipment.

Products & Services

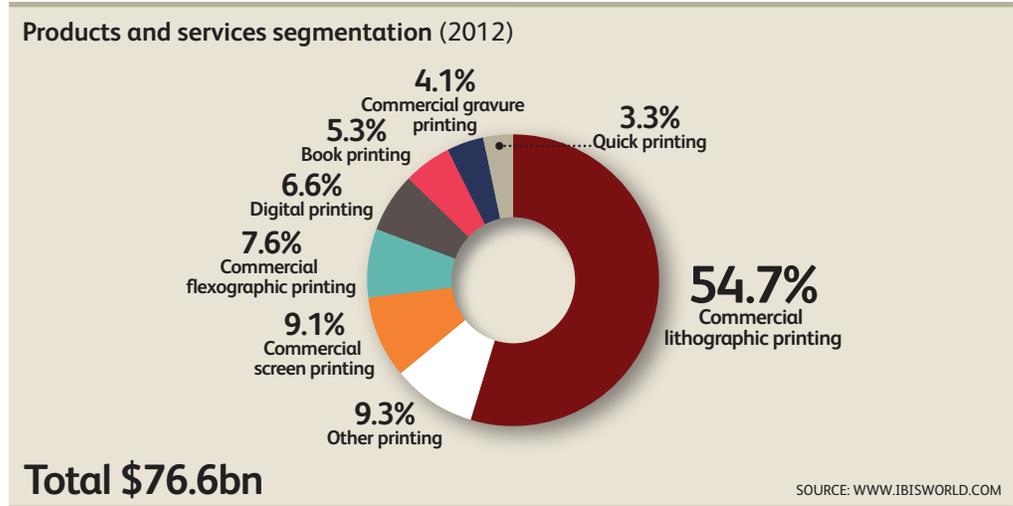
Commercial lithographic printing is the largest industry segment, accounting for an estimated 54.6% of industry revenue. Lithography is a printing process based on water's natural aversion to grease. A photographically prepared printing plate is treated chemically so that the image will accept ink and reject water. The major end uses of commercial lithographic printing include advertising (accounting for an estimated 28.5% of product revenue), magazines and periodicals (13.8%), catalogs and directories (9.2%), financial and legal printing (5.1%), and label and wrapper printing (4.6%). Although lithographic printing, which benefits from its low

operating costs, accounts for the largest share of revenue the segment's share of industry revenue has declined over the past five years due to strong competition from digital technology.

Gravure printing accounts for 4.1% of the industry's revenue. Gravure printing is a rotary printing process in which the image is etched into a metal plate attached to a cylinder. The cylinder is then rotated through a trough of printing ink, after which the etched surface is wiped clean by a blade, leaving the non-image area clean. The paper is then passed between two rollers and pressed against the etched cylinder, drawing the ink out by absorption. The

Products & Markets

Products & Services continued



major products produced by this process include advertising (about 28.4% of product revenue), catalogs and directories (22.5%), labels and wrappers (20.4%) and magazines and periodicals (17.8%). Revenue from gravure printing has declined over the past five years due to competition from high-speed offset printing. Furthermore, declining demand from newspaper advertising has also decreased its share of revenue during the period.

Other segments include flexographic printing, which is mainly used for labels and wrappers and involves a rotary letterpress process that prints from rubber or flexible plates and uses fast-drying inks; screen printing, which is mainly used to print on nonpaper surfaces, such as textiles; and quick printing, which is primarily a business-to-business service provided to small and

medium-sized firms. Given that flexographic printing is typically used for printing packaging materials, demand for flexographic printing held relatively stable over the past five years.

Over the past five years, growth in outsourcing and rising computer usage in the United States has led to an increase in digital printing. However, overall growth has varied among market segments. While there has been a strong increase in the value of shipments in the digital printing segment, there has been slow growth or decline in other segments. The manifold business form and blank book, loose-leaf binder manufacturing segments have declined significantly. Technological developments have slowed demand for commercial and job printing activities (i.e. printing invoices, order forms and business documents).

Demand Determinants

The main factors affecting demand include advertising expenditures, technological developments in the printing and media industries, the extent to which printing is outsourced to commercial printers and changing consumer tastes.

Fluctuations in consumer sentiment can also affect industry demand because consumer spending influences retail sales. In turn, changes in retail sales impact the demand for consumer products using printed labels and packaging.

Products & Markets

Demand Determinants continued

Similarly, business sentiment can impact industry demand because corporate profit is closely tied to advertising budgets. This is particularly important because print is a major advertising medium. Business activity can also influence demand from the business services and finance sectors, which use the industry for business forms, legal contracts and annual reports. Economic activity also impacts the rate of business formation; new businesses tend to have up-front stationery requirements.

Technological advancements in printing industry equipment and materials have produced new markets. Color offset printing has driven demand for color inserts in newspapers. Online printing provides convenience to some customers and drives demand for industry services. Computer technologies allow printers to provide additional value-added services (e.g. data management). New technologies affecting customers and end markets can also affect demand for some printing services. For example, there has been a fall in the use of bank checks due to new payment systems. There has also been decreased demand for commercially

printed business forms due in large part to individuals and business printing forms themselves from computers.

The level of printing outsourcing is largely affected by the quality, convenience and cost of in-house versus outsourced production. Falling prices and the improving quality of small printing machines makes small print runs more economical in an in-house setting. Changes in the structure of America's media industries also impacts commercial printers. Printers have benefited from some growing forms of advertising media, such as direct-to-home and point-of-sale distribution of retail catalogs and brochures and printed inserts in newspapers. On the other hand, printed news and advertising material is facing increasing competition from substitutes, such as the internet and TV.

Material costs also impact the demand for printed materials. For example, ink and paper price increases, which are usually passed on to printers' customers, can result in a decline in demand for some products, such as direct mail. Postal costs can also affect demand for printed publications, including direct mail and magazines.

Major Markets

The advertising market accounts for 31.0% of total printing demand. The market includes direct mail, inserts, catalogs, directories and screen-printed signs. Major customers in this market include retailers, wholesalers, household services firms and business services firms. This segment increased as a proportion of revenue following the recession as companies looked for cheaper ways to advertise. However, print advertising declined as digital media became more popular. Similarly, revenue from retailers, who use this industry to print catalogs, has declined

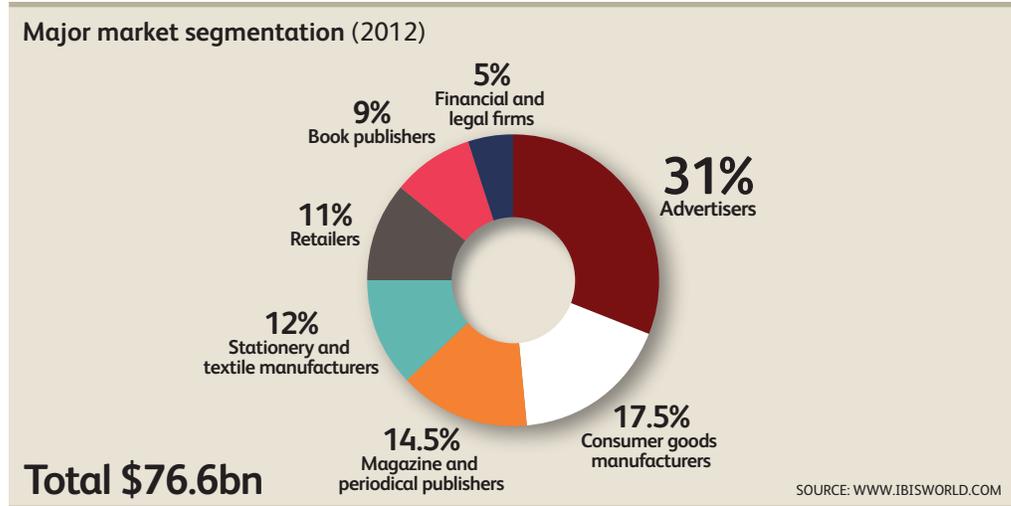
quickly as more consumers turn to the internet for online shopping.

Consumer goods manufacturers, which utilize commercial printers for labels and wrappings, are the next-largest market for printing companies. This market generates 17.5% of industry revenue and includes food, health product manufacturers and other companies. Similarly, textile manufacturers, which account for 4.5% of industry revenue, use this industry for screen printing.

Book, magazine and periodical publishers also utilize industry services to print their content. Book publishers

Products & Markets

Major Markets continued



generate 9.0% of industry revenue while magazine and periodical publishers account for 14.5%. Firms that specialize in these segments have been especially hard hit by the transition to digital media because more consumers are beginning to read online.

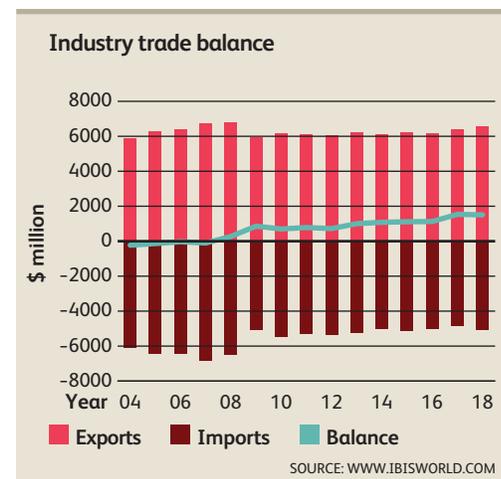
Other major customer segments include wholesalers and financial and business services. These companies often use quick printing and stationery products, which are covered in the Quick Printing industry (IBISWorld report 32311b).

International Trade

Level & Trend
Exports in the industry are **Medium and Steady**
Imports in the industry are **Medium and Decreasing**

Industry imports are estimated at \$5.4 billion in 2012, accounting for about 7.1% of domestic demand. The value of imports decreased an average 4.8% annually in the five years to 2012 due to weak demand conditions and the depreciating US dollar. The largest sources of imports include China (46.5%), Canada accounting for 16.0%, Mexico (8.8%) and the United Kingdom (6.1%). Book printing accounts for 37.2% of the value of imports; blank books, loose-leaf binders generate 18.1% of the total value of imports; and other commercial printing such catalogs, trade advertising materials, among others accounts for the remainder.

Exported industry products are valued at an estimated \$6.1 billion in 2012, representing about 7.9% of the industry's revenue. The value of



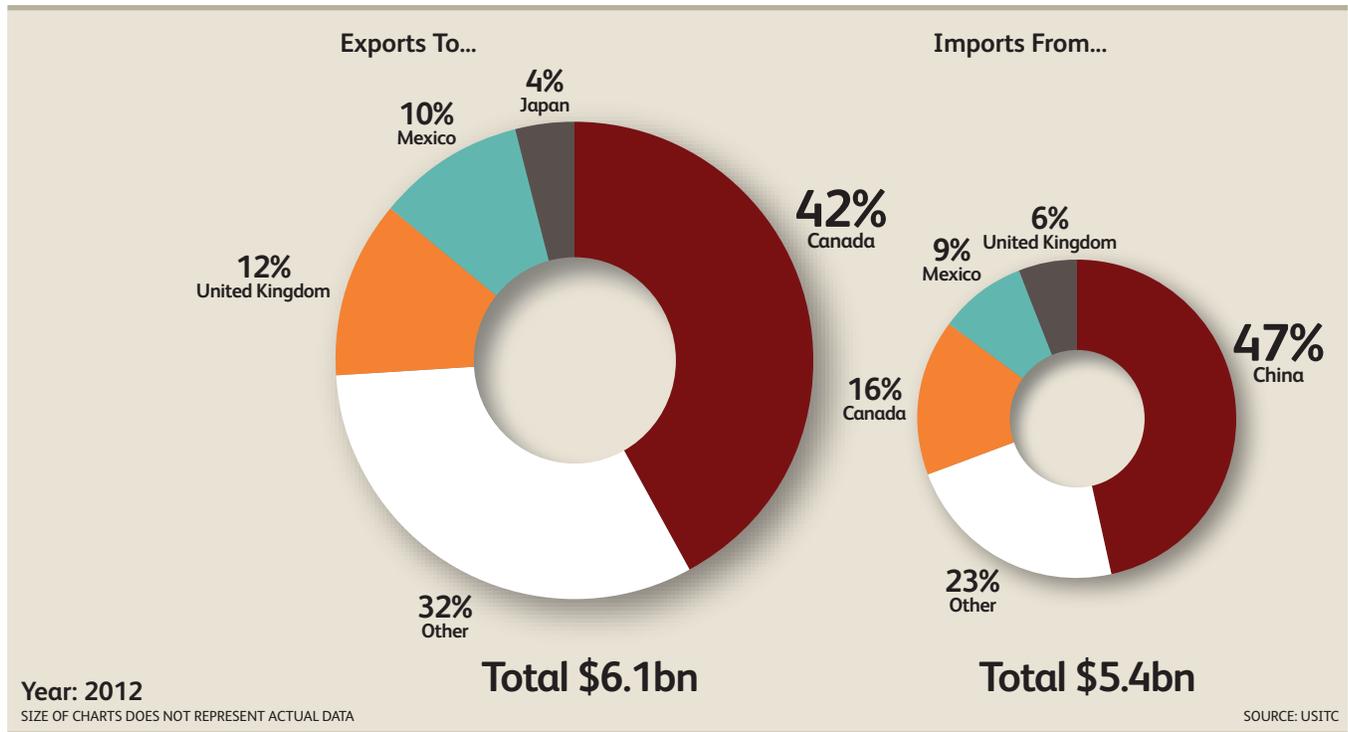
exported industry products is expected to decrease at an annualized rate of 2.1% in the five years to 2012. The major destinations of printing exports are Canada (42.2%), the United Kingdom

Products & Markets

International Trade continued

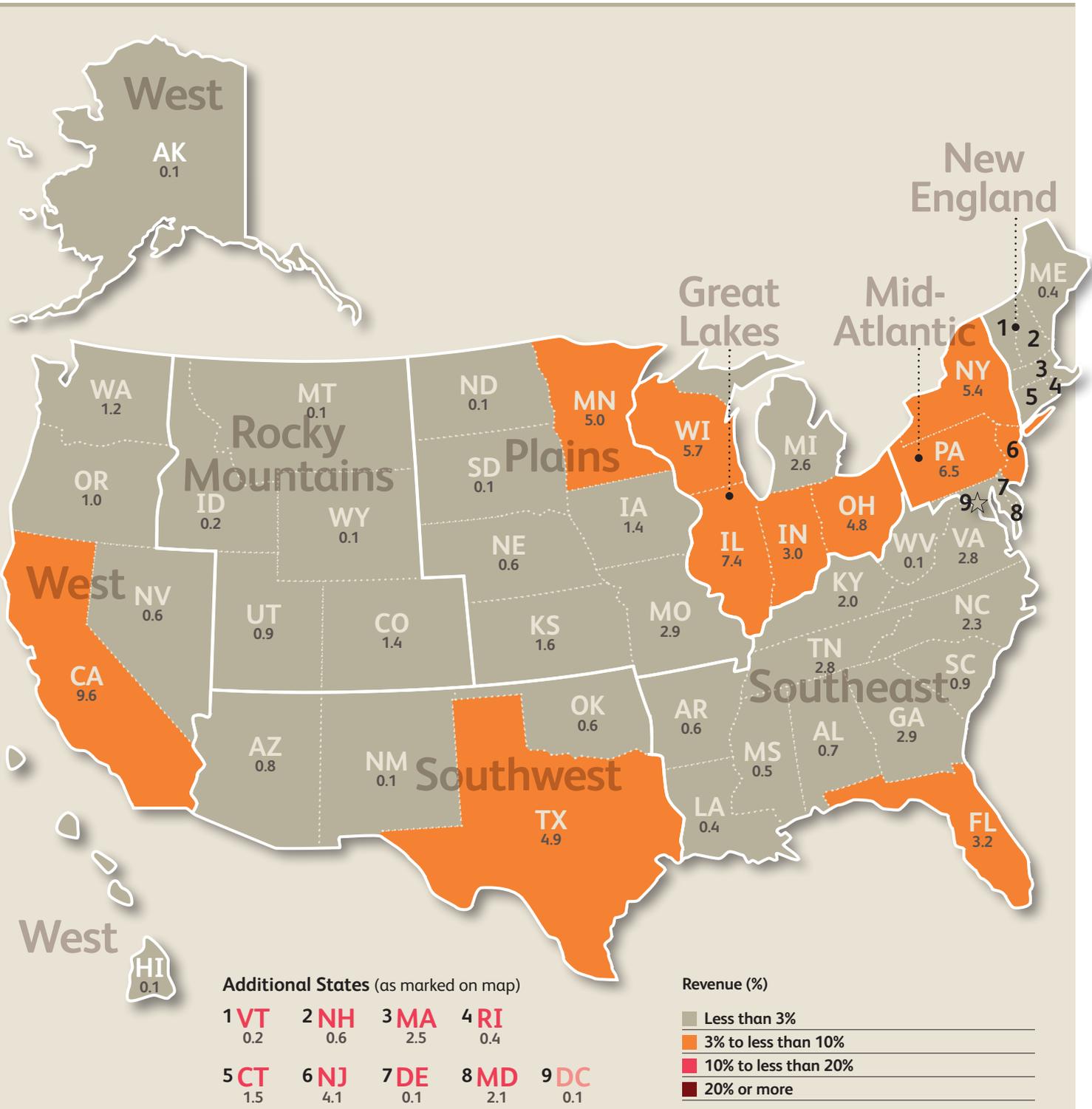
(12.2%) and Mexico (9.6%). Canada's neighboring status is the major reason for the significant level of trade.

Furthermore, some companies have production facilities in Canada, which are used to meet gaps in capacity.



Products & Markets

Business Locations 2012



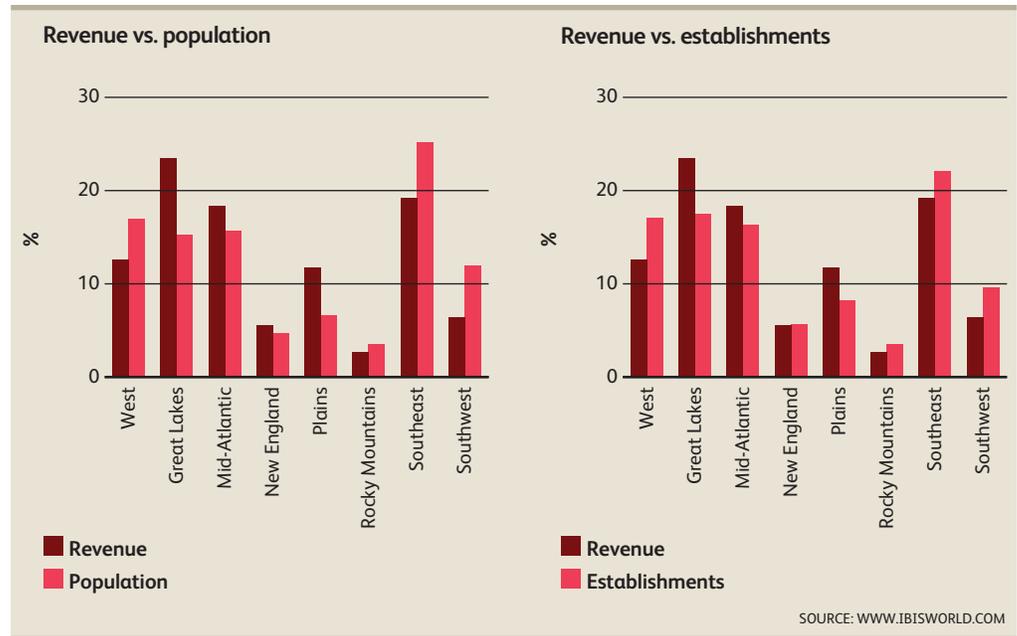
Products & Markets

Business Locations

Establishment locations are primarily distributed according to the national population. Larger establishments tend to operate in specific segments and are generally spread less evenly across the nation. The number of employees per establishment tends to be highest in book printing; blank book and loose-leaf binders; and manifold business form printing. In these segments, the major employing states are Pennsylvania, New York and Texas.

The regions accounting for the largest share of industry establishments are the Southeast and the Great Lakes. The

regions represent 22.1% and 17.5% of industry establishments, respectively. While the Southeast has more establishments than any other region, its share is proportional to the region's population. On the other hand, establishments in the Great Lakes employ 23.0% of industry workers, indicating establishments in the region are relatively large. The region is dominated by Illinois, which generates 7.4% of industry revenue. The state with the most activity nationally, however, is California. The state generates 9.6% of total industry revenue.



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 Printing industry is highly fragmented, with the four largest printing companies accounting for just 17.6% of the industry’s revenue. The majority of commercial printers in the United States are privately-owned and generate less than \$35 million in revenue on average. Furthermore, 70.0% of firms operating in this industry have fewer than 10 employees. Throughout the last three decades, there has been an increase in market share concentration due to mergers and acquisitions. One such acquisition occurred in July 2010, when Quad/Graphics acquired World Color Press, the second-largest provider of print, digital and related services in the Americas. In the five years to 2012, IBISWorld estimates that the number of industry firms has declined 2.2% annually on average to 26,176 companies. This industry is expected to continue consolidating due to

Enterprises by employment size

No. of employees	Percentage (%)
0-4	50.0
5-9	21.0
10-19	13.0
20-99	12.7
100-499	2.5
500+	0.8

Statistics of US Businesses
 SOURCE: US CENSUS BUREAU AND IBISWORLD

overcapacity and the rapid pace of technological change and digital media adoption. Furthermore, rising barriers to entry and increasingly strategic and complex relationships with customers will also contribute to industry consolidation over the next five years. IBISWorld estimates that the number of firms operating in this industry will fall at an annualized rate of 1.5% in the five years to 2017.

Key Success Factors

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

Having marketing expertise

Given a high level of competition, marketing expertise can be important. In small print-run markets, where it can be important to develop relationships with local business, franchise systems have developed.

Access to highly skilled workforce

Given the serious shortage of skilled tradespeople in the printing industry, firms that can ensure an adequate labor supply have a distinct market advantage.

Attractive product presentation

Product presentation, such as effective

use of design and color, is important. Good technical knowledge of printing processes increases enables printers to provide solutions and attractive products to clients.

Ability to control total supply on market

Local market dominance can ensure profit in the long run.

Ability to quickly adopt new technology

New technology can improve efficiency, reduce labor costs and improve product quality. Firms that maximize their utilization of state-of-the-art technologies enhance their competitiveness.

Cost Structure Benchmarks

The cost structures of firms in this industry vary on a variety of factors, including company size, types of clients served and the products offered. Cost

structures vary among industry segments; quick printing and digital printing have relatively high labor costs and low raw material costs. For book

Competitive Landscape

Cost Structure Benchmarks continued

products, where cost is paramount and there is a higher level of labor, some companies, such as World Color Press Inc., offer an integrated service between their US and Latin American book plants in order to reduce operating expenses.

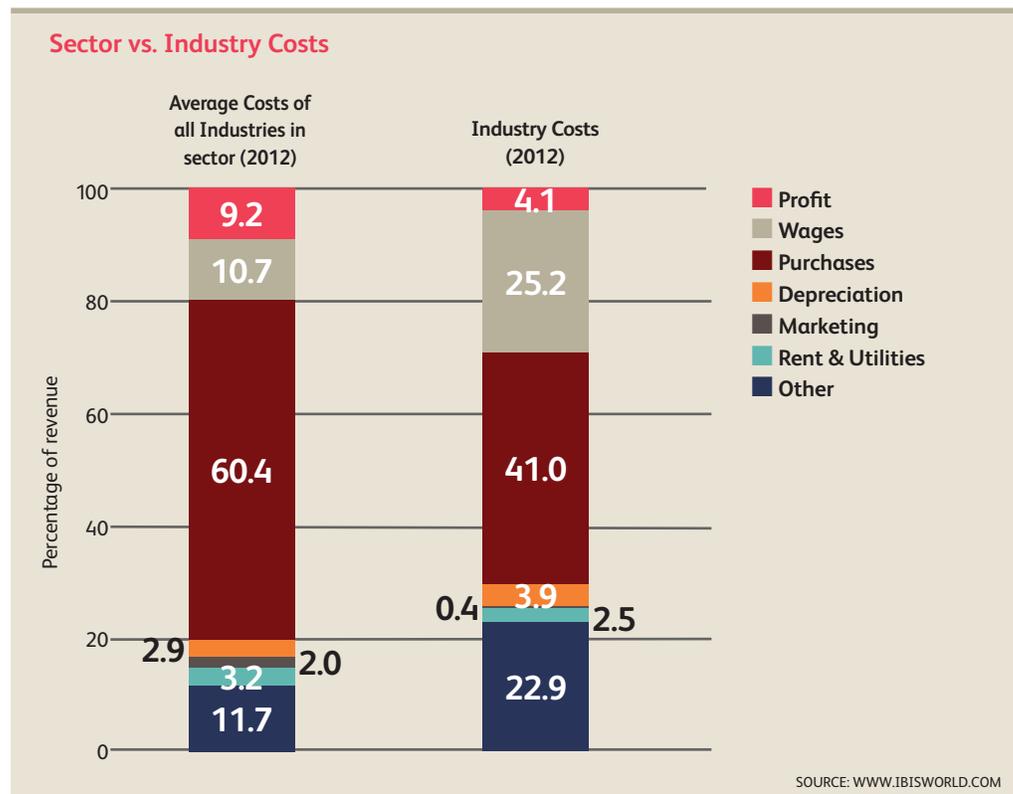
Profit

Profit margins are relatively low in the Printing industry but can vary by product segment and region. In 2012, IBISWorld estimates that industry profit margins will average 5.1%, measured by earnings before interest and taxes. During the past five years, overcapacity, severe competition and restructuring and impairment charges have adversely affected profit. Profit margins dipped in 2009 and 2010, influenced by very weak revenue resulting from weak economic conditions. Declining profit has also caused industry consolidation, with some firms being acquired or leaving the

industry altogether. The price of commercial printing services increased only marginally over the five-year period, rising on average 1.1% per year.

Purchases

Representing the industry's largest cost, materials are estimated at 41.0% of revenue in 2012. Purchases have increased marginally as a percentage of shipments value over the past five years due to an increase in materials prices. The primary materials used in this industry are paper, ink, film, offset plates, chemicals and cartons. Paper accounts for the majority of total material costs. The price of paper rose at an average annual rate of 2.3% over the five-year period. Typically, changes in the market price of paper do not significantly affect industry operators since they usually pass on paper price increases to their customers. However, given poor demand



Competitive Landscape

Cost Structure Benchmarks continued

conditions and heightened competition, industry operators have been unable to pass along the full cost increase, a factor that decreased industry profit margins.

The breakdown of material costs varies according to the type of product. For example, paper costs tend to make up a smaller percentage of total costs for high-quality color marketing and promotional material compared to low-color products (e.g. printed forms). Census Bureau data suggests that the cost of raw materials as a percentage of revenue ranged from 29.8% in the digital printing segment to 48.6% in the commercial gravure printing segment.

Wages

IBISWorld estimates that wages represent 25.2% of industry revenue in

2012, which is relatively high compared with the average 11.5% for all manufacturing industries; this is partly due to the labor-intensive nature of printing. Falling demand for printing has caused the number of industry employees to decline as printing companies consolidate operations. As a result, total industry wages have declined at an annualized rate of 5.3% in the five years to 2012.

Other costs

Industry operators have a variety of other costs, including rent and depreciation, which represent 2.1% and 3.9% of industry revenue, respectively. Other costs also include utilities, professional services, accounting, advertising, legal fees and software.

Basis of Competition

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

Price is a major competitive factor due, in many cases, to limited opportunities to differentiate in other ways. Prices have fallen significantly in recent years as a result of weak demand, excess industry capacity and a very competitive environment. The introduction of alternative technologies has reduced demand in some segments (such as for printed business documents and for long-run offset printing), accentuating overcapacity and price discounting.

There are limited ways to compete on the basis of print quality, as usually competitors are able to offer comparable print quality. Flexibility of end product can be attractive to some customers, particularly customers looking to establish a strong relationship with a printer. Response time, particularly for time-sensitive jobs, is a competitive factor. Scheduling and project management skills as well as the type of machines and systems affect response times.

Customers in most segments tend to use printing services that are relatively

close in proximity, although online printing services are reducing the importance of location. Printers typically services customers within a 100 to 300 mile radius of their plants. However, industry consolidation is resulting in larger players expanding their geographic presence.

Compatibility of systems enabling efficient file transfer (between customer and printer) can be important. A particular customer can have a range of printing requirements, including for short and long print runs, and the ability to meet these varying printing requirements consistently can affect a printer's competitiveness. Meeting market segment requirements is crucial. For example, some customers may require that highly sensitive documents (such as checks) be printed in high-security facilities.

Add-on services can increase the depth of a relationship with a customer while also providing the printer with a more diversified revenue base. Such services

Competitive Landscape

Basis of Competition continued

can include stock holding and warehousing, logistic services, databases and personalization (e.g. for direct mail), content creation, and digital content management. In some product segments (e.g. directories and catalogs and magazines), contracts with customers can run for a period of years, which can create temporary barriers for printers not party to such contracts.

There is competition among industry segments based on printing technology. For example, improved digital printing devices and more sophisticated workflow software are promoting shorter, digitally printed runs, which can impact demand for long-run offset printing services. Digital printing has

low setup costs and can accommodate shorter runs and also allows for lower warehousing costs.

Online operators are emerging as major competitors in the short print-run space because they typically have low cost structures and can build significant economies of scale. Vistaprint Limited, an online supplier of graphic design services and customized printed products to small businesses worldwide, has built significant volumes. This has helped the company drive down unit costs and fund capital investments, including on proprietary software programs and processes and on developing new services, such as mailing, marketing lists and creative services.

Barriers to Entry

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

Overall, the Printing industry has medium barriers to entry. There is a large number of small firms in this industry and a low level of market share concentration, given that the top four companies in the industry account for less than 20.0% of revenue. Therefore, major companies exhibit little market power. The industry has a relatively low level of industry regulation; in general, printing companies face the same environmental regulations that apply to the majority of US manufacturers.

Barriers to entry, however, vary by industry segment and are relatively higher in the more capital-intensive segments. One of the most significant barriers to entry is capital investment in either offset or digital printing presses. Firms in capital-intensive segments usually deal with large customers, often on term contracts, and have large print capacities that can cost-effectively provide long print-runs. Consolidation is occurring in most of these segments, indicating that economies of scale and scope are increasing.

Barriers to Entry checklist	Level
Competition	High
Concentration	Low
Life Cycle Stage	Decline
Capital Intensity	Medium
Technology Change	Medium
Regulation & Policy	Light
Industry Assistance	None

SOURCE: WWW.IBISWORLD.COM

Barriers are relatively low in some segments, such as quick and digital printing. On the other hand, online printers are emerging as major competitors in the short print-run space, and online operators can build significant economies of scale. Vistaprint Limited, an online supplier of graphic design services and customized printed products to small-businesses worldwide, has built significant volumes. This has helped the company drive down unit costs and fund capital investments on proprietary software programs and processes, which can further drive down costs and promote growth.

Competitive Landscape

Industry Globalization

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

The Printing industry has a medium level of globalization. Industry imports and exports account for less than 10.0% of domestic consumption or industry revenue. The majority of printing companies operate on a local or regional basis; typically, customers are within a 100 to 300 radius of facilities in order to limit transportation costs and delivery time. However, some of the leading companies in the industry do have international operations,

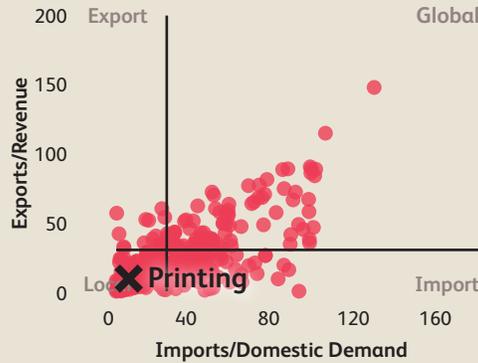
including R.R. Donnelley, which has operations throughout Asia, Europe, Latin America and Canada. Furthermore, Quad/Graphics, the second-largest company in the industry, has facilities in Europe and Latin America. Due to the rise of digital printing and decreasing domestic demand, industry globalization is expected to increase over the next five years as industry operators increasingly look abroad to tap new markets.

International trade is a major determinant of an industry's level of globalization.

Exports offer growth opportunities for firms. However there are legal, economic and political risks associated with dealing in foreign countries.

Import competition can bring a greater risk for companies as foreign producers satisfy domestic demand that local firms would otherwise supply.

Trade Globalization



Going Global: Printing 1998-2012



SOURCE: WWW.IBISWORLD.COM

Major Companies

R.R. Donnelley & Sons Company | Quad/Graphics Inc. | Other Companies

Major players

(Market share)

Quad/Graphics Inc. 4.1%



R.R. Donnelley & Sons Company 10.0%

SOURCE: WWW.IBISWORLD.COM

Player Performance

R.R. Donnelley & Sons Company

Market share: 10.0%

Founded more than 140 years ago, R.R. Donnelley & Sons Company is the world's largest full-service provider of print and related services. The company has more than 60,000 customers in a wide variety of private and public sectors. R.R. Donnelley, which is headquartered in Chicago, has about 58,000 employees. Although R.R. Donnelley has printing operations in Asia, Europe, Latin America and Canada, it generates about 76.1% of its revenue in the United States.

R.R. Donnelley has made a number of acquisitions in recent years, which has increased the company's overall market share. In March 2011, the company acquired Journalism Online, an online tool provider that allows consumers to purchase online subscriptions from publishers. R.R. Donnelley also bought LibreDigital Inc., a leading provider of digital content distribution. The acquisition is meant to expand the company's selection of digital content

creation. The company also acquired Ohio-based StratusGroup Inc. in November 2011, a paperboard packaging and pressure-sensitive label manufacturer. In 2010, the company acquired 8touches, an online provider of customized communications materials. Also in 2010, R.R. Donnelley acquired Nimblefish Technologies, a multichannel marketing service, and Bowne & Co. Inc., a marketing communications services provider. Additionally, in 2009, R.R. Donnelley acquired Prospectus Central, an e-delivery company; PROSA, a web printing company; and Pro Line Printing, a newspaper insert producer, in 2008.

The company has primarily made these acquisitions to increase the breadth of its products and services in the midst of an increasingly competitive operating environment. As a result, the products and services Donnelley offers are relatively diversified compared to other industry firms. Magazines, catalogs and

RR Donnelley & Sons (US Print segment) – financial performance

Year	Revenue		Operating Income	
	(\$ million)	(% change)	(\$ million)	(% change)
2007	8,601.9	N/C	823.8	N/C
2008	8,704.2	1.2	708.9	-13.9
2009	7,437.0	-14.6	489.2	-31.0
2010	7,532.2	1.3	638.9	30.6
2011	7,846.5	4.2	232.9	-63.5
2012*	7,681.7	-2.1	258.5	11.0

*Estimate

SOURCE: ANNUAL REPORT

Major Companies

Player Performance continued

retail inserts generate almost a quarter of the company's revenue, while books and directories account for about 16.5% of revenue. While these are Donnelly's largest segments, the company also offers commercial printing, direct mail, financial printing and labels. Furthermore, it provides a variety of other services, including logistics, call centers, print management, digital photography and database management.

Financial performance

Over the five years to 2012, the company's US printing segment revenue is expected to decline at an annualized rate of 2.2% to \$7.7 billion. This is still much stronger performance than the industry as a whole. Part of the reason for the company's success is its robust acquisition activity over the five-year period, which has allowed it to diversify its products and services to better compete in the industry. In 2011, the company's US print sales rose marginally

due to the acquisition of Bowne & Co., which increased net sales \$48.1 million. However, during the recession, the company faced sales volume declines for nearly all of its products, particularly for magazines, books, directories, catalogs and retail inserts. Furthermore, in 2012, revenue is expected to decline 2.1% as a result of ongoing pricing pressures and lower printing volumes.

Reduced sales volumes and input price pressures have caused operating income for the US printing segment to contract at an average 20.7% per year from 2007 to 2012. In response, the company embarked on an extensive restructuring plan to reduce costs. In 2010, operating income increased \$149.7 million, mainly due to lower restructuring and impairment costs and productivity initiatives. However, in 2011, higher restructuring and impairment charges, continued price pressures, and lower books and directories sales volumes decreased operating income.

Player Performance

Quad/Graphics Inc.
Market share: 4.1 %

Quad/Graphics Inc., founded in 1971, has its headquarters in Wisconsin. The company was the world's largest privately owned printer of magazines, books, catalogs and direct mail before it listed on the New York Stock Exchange in 2010.

In July 2010, Quad/Graphics Inc. completed its acquisition of World Color Press Inc., which was the second-largest provider of print, digital and related services in the Americas prior to the acquisition. Quad/Graphics is now the

Quad/Graphics Inc. (US print segment) – financial performance

Year	Revenue		Operating Income	
	(\$ million)	(% change)	(\$ million)	(% change)
2007	1,505.4	1.2	181.3	5.4
2008	1,665.5	10.6	128.1	-29.3
2009	1,321.9	-20.6	83.1	-35.1
2010	2,447.0	85.1	47.3	-43.1
2011	3,313.6	35.4	120.2	154.1
2012*	3,151.2	-4.9	105.2	-12.5

*Estimate

SOURCE: ANNUAL REPORT

Major Companies

Player Performance continued

second-largest commercial printer in the United States. The company's US revenue represents 87.8% of total company revenue. Quad/Graphics currently has 24,300 employees.

Prior to the World Color Press Inc. acquisition, Quad/Graphics had 10 plants in the United States, 9,800 domestic employees and annual revenue of \$1.8 billion. Although the company's revenue grew 89.6% to \$3.4 billion in 2010, this was the direct result of the World Color Press acquisition. By comparison, World Color and Quad/Graphics had aggregate unaudited revenue of \$5.1 billion in 2009. The transaction allowed Quad/Graphics to expand its geographic scope by entering the Canadian and Latin American markets. However, in 2012, Quad/Graphics sold its Canadian operations to Transcontinental, with the exception of its Vancouver facility. In exchange, Quad/Graphics acquired Transcontinental's Mexican assets and book printing operations.

In recent years, Quad/Graphics has focused on expanding its digital operations. In November 2011, Quad/Graphics increased its digital book production with a partnership with Penguin Group Inc. The agreement includes short-run and print-on-demand production of Penguin's US trade hardcover, trade paperback and mass-market books. During 2011, Quad/Graphics expanded its digital

book production capacity 500.0%. The company also recently acquired Williamson Printing Corporation, a commercial and specialty printer based in Dallas. The acquisition will expand the company's printing operations in the Dallas-Fort Worth area, which is home to one of the largest concentrations of corporate headquarters in the United States.

In January 2008, Quad/Graphics announced that it would reduce its production capacity to better match print demand, which had softened due to changes in the economy. Although no plants were closed, the company immediately shut down the equivalent of one plant's worth of production capacity by shutting down equipment at several plants. In August 2010, Quad/Graphics built on those plans when it announced a consolidation of plants; the company reduced its employee headcount by 2,200 people.

Financial performance

Over the five years to 2012, the company's US print revenue is estimated to have grown at an average annual rate of 17.9% to \$3.4 billion, primarily because of its acquisition of World Color Press. Revenue dipped during the recession because magazine publishers faced diminished advertising pages, catalog marketers reduced page counts and companies reduced print-based

World Color Press Inc. (North American segment) – financial performance

Year	Revenue (\$ million)	(% change)	Operating Income (\$ million)	(% change)
2005	4,881.1	N/C	330.9	N/C
2006	4,821.7	-1.2	192.8	-41.7
2007	4,373.7	-9.3	-1,864.0	-1,070.8
2008	3,723.0	-14.9	-469.8	-74.8

SOURCE: ANNUAL REPORT

Major Companies

Player Performance continued

advertising, particularly in the banking, insurance, credit card, real estate and nonprofit industries. Although demand conditions began to improve in 2010, the combined effects of overcapacity and intense competition have led to decreased printing volumes and lower pricing in 2012, resulting in an expected 4.9% revenue decrease during the year.

World Color Press Inc.

Even before its acquisition, World Color Press Inc. (formerly Quebecor World Inc.) was one of the largest commercial printers in the world, with 87 printing

plants and related facilities globally. The company operated in the commercial print media segment in North America and Latin America. In early 2008, Quebecor World Inc. filed for creditor protection in Canada and the United States as a result of industry pressures, particularly in Europe, and the company's inability to raise new capital or complete the sale of its European operations. By July 2009, the company emerged from protection under the Companies' Creditors Arrangement Act in Canada and Chapter 11 of the US Bankruptcy Code.

Other Companies

Deluxe Corporation

Estimated market share: 1.9%

Deluxe Corporation, headquartered at Shoreview, MN, provides small businesses and financial institutions with personalized printed items (e.g. checks, forms, business cards, stationery, greeting cards, labels and retail packaging supplies), promotional products and merchandising materials, fraud prevention services and financial institution customer retention programs. Deluxe derives 94.1% of its revenue from the US market.

Deluxe's revenue has been adversely impacted by a decline in the use of checks, which account for two-thirds of the company's revenue. This has primarily been due to an increasing use of other payment methods, such as debit cards, and a decreased use of business forms. Because check usage is declining and financial institutions are consolidating, Deluxe has encountered pricing pressure when negotiating contracts with financial institution clients. Over the five years to 2012, the company's revenue is estimated to contract on average 2.1% annually. However, the acquisition of PsPrint, a web-to-print company, boosted its revenue growth in 2011.

Although the company's revenue increased in 2010, the growth was largely due to the low base in the preceding years. In 2009, Deluxe's revenue declined 8.5%: the financial services segment's revenue was down 7.8%, and the direct checks segment's revenue was down 13.2%. As a result of poor performance, Deluxe has announced a number of strategies that aim to grow revenue and increase operating margin, including consolidating brands, leveraging cross-selling opportunities and pursuing aggressive cost reduction. The company is expected to generate an estimated \$1.4 billion in revenue in 2012, giving it an estimated market share of 1.9%.

Vertis Communications

Estimated market share: 1.6%

Vertis Communications is a privately held company based in Baltimore with production and sales offices throughout the United States. Vertis serves local, regional, national and international companies across diverse industries. The company's products and services include consumer and media research, media planning and placement, creative services, digital media production, advertising insert programs, fully

Major Companies

Other Companies continued

integrated direct marketing programs, circulation-building newspaper products and e-marketing.

In 2008, Vertis expanded its operations with the purchase of ACG Holdings Inc., a printer of newspaper inserts, TV listings, local newspapers, comics and other publications. In order to restructure for the acquisition, Vertis voluntarily filed for Chapter 11 bankruptcy protection in July 2008 and emerged in October 2008. The financial restructuring enabled the company to reduce debt by \$1.0 billion. Vertis has recently fallen on hard times despite the acquisition, which increased revenue 22.0% in 2008. The company had a history of net losses mainly due to large interest payments on long-term debt. In 2010, the company filed for its second bankruptcy, citing high debt obligations. Vertis emerged from bankruptcy in December 2010. In 2011, the company sold its subsidiary, Craig Adhesives & Coatings, to Royal Adhesives & Sealants. Craig is a supplier of ultraviolet light-cured and water-based adhesives and coatings to the printing and graphic arts markets. In 2012, Vertis has estimated revenue of \$1.2 billion, giving the company a 1.6% market share.

Consolidated Graphics Inc.

Estimated market share: 1.4%

Headquartered in Houston, Consolidated Graphics Inc. is a commercial printer primarily using offset lithography to produce images on paper. It is one of the nation's largest sheet-fed and half-web commercial printing companies. The company has 70 print businesses in 27 states, one Canadian province and the Czech Republic. Consolidated Graphics serves over 20,000 customers and has 5,487 employees.

Consolidated Graphics' commercial printing services consist of traditional printing services, which include electronic prepress, printing, finishing,

storage and delivery of printed documents; fulfillment and mailing services; and e-commerce solutions.

In the five years to 2012, Consolidated Graphics' revenue is estimated to grow at an annualized rate of 0.8% to \$1.0 billion. Sales growth over this five-year period came mainly from acquisitions. Consolidated Graphics has a strategy of acquiring small and medium-size printing companies. In 2010, the company paid \$5.5 million to acquire the remaining interest in a consolidated subsidiary. In 2008, the company acquired three businesses, including PBM Graphics, a leading commercial printing and packaging company. Two businesses were acquired for about \$62.4 million in fiscal 2007. However, as a result of decreased printing demand in 2012, revenue decreased 0.8% during the fiscal year, only partially offset by the acquisition of one printing business.

Cenveo Inc.

Estimated market share: 1.0%

Cenveo Inc. is the leading printer of envelopes in the United States and Canada and a leading general commercial printer in several major US markets. The company is the successor of Mail-Well Inc., whose roots date back to 1921 and was reincorporated as Cenveo in 1997. The company has operations spanning the United States, Canada, Latin America and Asia. Cenveo employs an estimated 8,400 people worldwide and is headquartered in Stamford, CT.

Cenveo operates two business segments: the envelopes, forms and labels segment and the commercial printing segment. The commercial printing segment has 36 manufacturing facilities. Through this segment, the company prints annual reports, car brochures, brand marketing collateral, specialty packaging and general commercial printing. The company has made a number of prominent

Major Companies

Other Companies continued

acquisitions over the five years to 2012.

In 2007, the company made four strategic acquisitions to enhance its existing operations, including Printegra in February, Cadmus in March, Color Graphics in July and Commercial Envelope in August. Cadmus and Color Graphics were integrated into the commercial printing segment of the company, while Printegra and Commercial Envelope were adopted into the envelope and business form manufacturing operations.

In 2009, Cenvo announced that it was buying major competitor Nashua Corporation for \$49.7 million; Nashua was a prominent manufacturer, converter and marketer of labels and specialty

papers with annual revenue of about \$265.0 million. In 2010, the company also acquired MeadWestvaco's Envelope Product Group, which had about \$250.0 million in revenue. Also in 2010, Cenvo acquired Toronto-based Clix Direct Marketing Services in order to expand its Canadian operations. The company also acquired Glyph International, a provider of content solutions to publishers, and Gilbreth, a manufacturer of shrink sleeves, which expanded Cenvo's packaging operations. Over the five years to 2012, revenue from the company's commercial printing operations is estimated to have declined at an average annual rate of 7.2% to an estimated \$791.4 million in 2012.

Operating Conditions

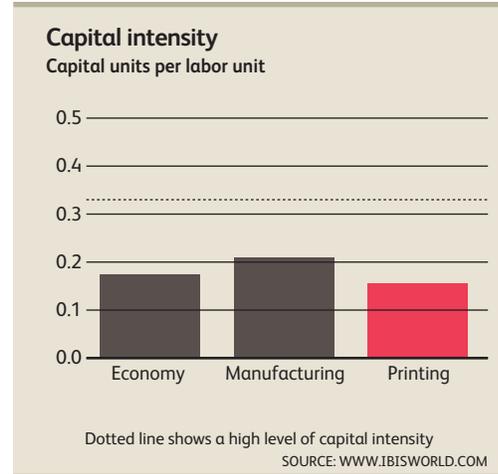
Capital Intensity | Technology & Systems | Revenue Volatility
 Regulation & Policy | Industry Assistance

Capital Intensity

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

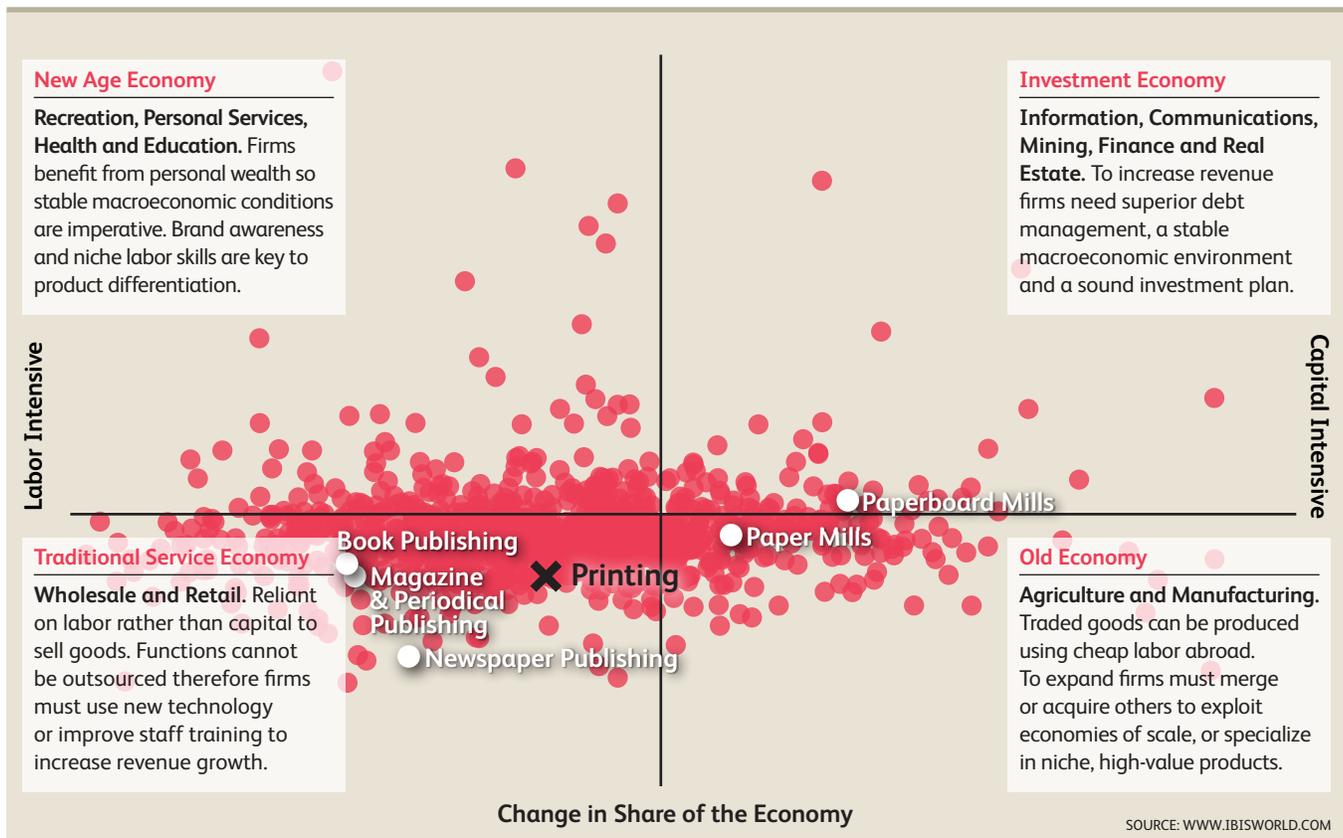
The Printing industry has a moderate degree of capital intensity. IBISWorld estimates that the average firm in the Printing industry spends \$0.16 on capital investment for every dollar spent on labor. The majority of capital expenditures center on purchasing printing presses and other machinery, while just 5.0% of expenditures are for buildings and structures.

Labor costs are estimated to represent 25.2% of revenue in 2012, which is high compared to the average of 11.6% for all manufacturing industries. This is due in part to the level of technical expertise required for working a printing press. Average compensation per employee in the printing industry is about 20.0% lower than the overall average in the



manufacturing sector, and revenue per employee is about 55.0% to 60.0% lower than the overall manufacturing sector.

Tools of the Trade: Growth Strategies for Success



New Age Economy
 Recreation, Personal Services, Health and Education. Firms benefit from personal wealth so stable macroeconomic conditions are imperative. Brand awareness and niche labor skills are key to product differentiation.

Investment Economy
 Information, Communications, Mining, Finance and Real Estate. To increase revenue firms need superior debt management, a stable macroeconomic environment and a sound investment plan.

Traditional Service Economy
 Wholesale and Retail. Reliant on labor rather than capital to sell goods. Functions cannot be outsourced therefore firms must use new technology or improve staff training to increase revenue growth.

Old Economy
 Agriculture and Manufacturing. Traded goods can be produced using cheap labor abroad. To expand firms must merge or acquire others to exploit economies of scale, or specialize in niche, high-value products.

Book Publishing
 Magazine & Periodical Publishing
 Newspaper Publishing
Printing

Paper Mills
 Paperboard Mills

Change in Share of the Economy

SOURCE: WWW.IBISWORLD.COM

Operating Conditions

Capital Intensity continued

Industry players have stated that technological changes have increased capital requirements in this industry. However, capacity levels and industry

growth prospects assessments also impact capital spending. Industry activity has contracted in recent years, limiting the capital expenditures of industry operators.

Technology & Systems

Level

The level of Technology Change is **Medium**

Technological developments have mainly focused on printing equipment, printing technologies and, more recently, the internet. For many years, hot metal typeset formed the basis of the printing process. Computer typeset was introduced in the 1970s. In the 1990s, technology rapidly shifted to what is known as computer-to-plate printing or digital printing.

Advances in computer-based prepress equipment, such as electronic prepress, allow for faster and more precise manipulation of images and text prior to printing. Similarly, recent advances in photo imaging technology have greatly increased the quality of the final image produced in the printing process. These advances have increased the capital requirements for maintaining technologically advanced equipment.

Web-fed offset printing machines, which have computer-assisted heat-set technology, are capable of economically printing large production runs (e.g. magazines), thus replacing imports and gravure printing processes. Other equipment innovations include computerized composing equipment (e.g. desktop publishing), photo-typesetting equipment and electronic or laser color scanners in the area of typesetting and graphic composition. In the area of product finishing, fully automated and computerized guillotines, collators, folders, binders and laminating

equipment have become integrated with printing machinery.

In the area of thermal printing, which is used in labeling, betting and lottery tickets and facsimile machines, the image is formed through the application of heat to special paper coated with heat-sensitive chemicals. This is instead of the conventional or impact method of printing, where the image is formed through the application of ink and pressure. In the new method, a series of pulses that control small electrodes on the thermal print head generate heat and form the image. Thermal printing is cheaper, smaller and quieter than impact printing and requires little maintenance because its components are electronic and chemical rather than mechanical.

Printers can now create a document in one location, transfer it via the internet and then print it at another location, which has reduced storage and transport costs and made more timely delivery possible. Online printing operators offer convenient services and are emerging as significant players in the short print-run space, where small businesses represent the major customer base. Websites can provide design templates and offer customers the ability to design documents interactively. Printers are moving into other ancillary services, including data asset management, fulfillment and inventory management, design services and e-commerce services.

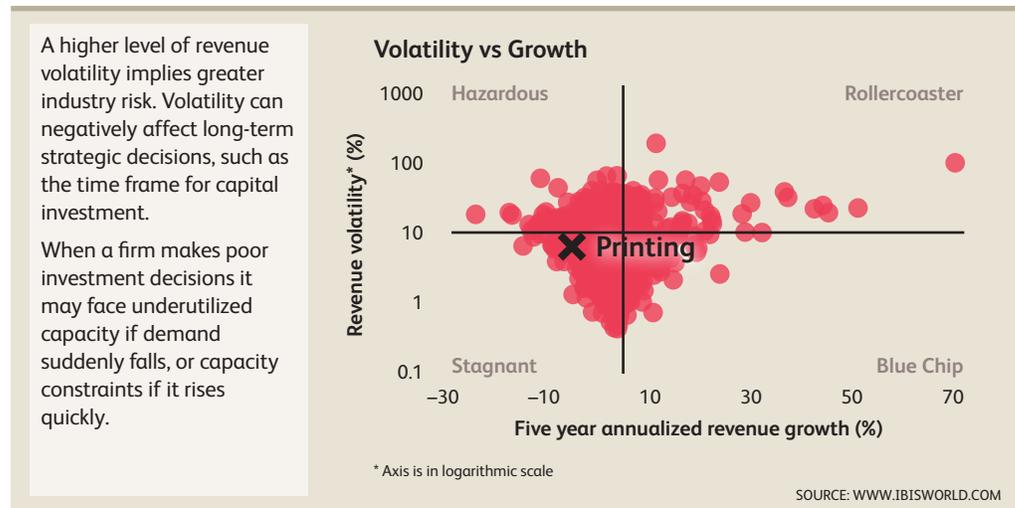
Operating Conditions

Revenue Volatility

Level
The level of
Volatility is **Medium**

The Printing industry has a moderate level of revenue volatility. During the five years to 2012, year-on-year revenue changes averaged 7.1% during the period. The price of commercial printing exhibited a low level of volatility, rising on average 1.1% over the same period, although industry prices did decrease slightly during the recession. The rapid decline in print-based advertising,

however, reduced sales volumes significantly for the industry, resulting in heightened revenue volatility over the five-year period. The industry is also experiencing a long-term decline due to changing consumer tastes. There has been a declining preference for printed material in lieu of digital mediums, a factor that has heightened revenue volatility.



Regulation & Policy

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

There are few regulations that specifically pertain to this industry. Some industry players, such as printers of bank checks, are subject to regulations implementing the privacy and information security requirements of the federal financial modernization law known as the Gramm-Leach-Bliley Act and other federal and state laws on the same subject. Industry players are subject to federal, state and local environmental laws and regulations, including those relating to air emissions, waste generation, handling, management and disposal and remediation of contaminated sites.

In October 2003, Congress instituted a federal “Do Not Call” program, which had a positive effect on demand for printed

advertising and direct mail; businesses shifted promotional spending from telemarketing to direct mail to reach their prospective customers.

According to Printing Industries of America (PIA), printers should be wary of copyright infringements. PIA suggests that, when in doubt, printers should do their own research or assist the customer in tracking down questionable works. It also recommends that printers include a release in their contracts and ensure that the customers understand the significance and the consequences for the printer and the customer if a copyright violation charge is brought. PIA’s government advocacy agenda focuses on issues related to labor and

Operating Conditions

Regulation & Policy continued

employee benefits, including healthcare reform and tax, postal, environmental and energy policies. PIA is devoting its

legislative and political capital to achieve legislative successes on these key industry issues.

Industry Assistance

Level & Trend
The level of
Industry Assistance
is **None** and the
trend is **Steady**

There is little government assistance for industry operators. There are no protective tariffs on imported industry products nor are there government subsidies.

Key Statistics

Industry Data

	Revenue (\$m)	Industry Value Added (\$m)	Establishments	Enterprises	Employment	Exports (\$m)	Imports (\$m)	Wages (\$m)	Domestic Demand (\$m)	Print Advertising Expenditure (\$b)
2003	106,920.1	62,960.4	32,870	31,361	642,793	5,710.5	5,723.0	27,998.9	106,932.6	46.6
2004	105,104.6	62,036.5	32,360	30,887	620,726	5,861.0	6,090.7	27,255.1	105,334.3	51.6
2005	105,553.2	61,551.0	31,559	30,152	606,109	6,280.1	6,416.1	26,479.2	105,689.2	62.7
2006	105,531.6	61,216.3	30,772	29,346	591,496	6,423.3	6,453.2	25,971.7	105,561.5	52.7
2007	105,709.9	58,797.1	30,698	29,262	583,410	6,738.8	6,843.3	25,381.1	105,814.4	54.0
2008	99,468.4	57,414.6	30,230	28,833	580,377	6,790.6	6,518.7	24,686.3	99,196.5	48.6
2009	82,543.7	48,384.4	28,254	26,980	511,233	5,962.0	5,101.7	20,684.4	81,683.4	39.9
2010	78,389.3	48,679.5	27,689	26,413	475,244	6,196.2	5,496.6	19,914.1	77,689.7	40.9
2011	78,154.1	48,193.0	27,578	26,229	468,590	6,091.1	5,308.6	19,695.1	77,371.6	42.6
2012	76,591.0	47,320.1	27,027	26,176	463,904	6,072.8	5,351.1	19,281.5	75,869.3	45.0
2013	75,595.4	46,489.4	26,567	25,626	458,338	6,230.7	5,228.0	19,185.1	74,592.7	43.1
2014	73,327.5	45,990.0	26,487	25,268	450,546	6,099.9	5,018.9	18,974.0	72,246.5	42.2
2015	72,740.9	44,951.4	26,223	25,116	449,194	6,240.2	5,129.3	18,556.6	71,630.0	41.9
2016	71,358.8	44,546.8	25,934	24,865	444,702	6,159.1	5,031.9	18,315.4	70,231.6	42.4
2017	69,931.6	44,012.2	25,338	24,268	434,474	6,411.6	4,875.9	17,949.0	68,395.9	40.2
Sector Rank	15/195	4/195	1/195	1/195	2/195	44/183	67/183	3/195	16/183	N/A
Economy Rank	115/706	52/706	174/705	152/705	80/706	53/226	75/226	78/706	20/226	N/A

Annual Change

	Revenue (%)	Industry Value Added (%)	Establishments (%)	Enterprises (%)	Employment (%)	Exports (%)	Imports (%)	Wages (%)	Domestic Demand (%)	Print Advertising Expenditure (%)
2004	-1.7	-1.5	-1.6	-1.5	-3.4	2.6	6.4	-2.7	-1.5	10.8
2005	0.4	-0.8	-2.5	-2.4	-2.4	7.2	5.3	-2.8	0.3	21.5
2006	0.0	-0.5	-2.5	-2.7	-2.4	2.3	0.6	-1.9	-0.1	-15.9
2007	0.2	-4.0	-0.2	-0.3	-1.4	4.9	6.0	-2.3	0.2	2.4
2008	-5.9	-2.4	-1.5	-1.5	-0.5	0.8	-4.7	-2.7	-6.3	-10.0
2009	-17.0	-15.7	-6.5	-6.4	-11.9	-12.2	-21.7	-16.2	-17.7	-17.9
2010	-5.0	0.6	-2.0	-2.1	-7.0	3.9	7.7	-3.7	-4.9	2.5
2011	-0.3	-1.0	-0.4	-0.7	-1.4	-1.7	-3.4	-1.1	-0.4	4.3
2012	-2.0	-1.8	-2.0	-0.2	-1.0	-0.3	0.8	-2.1	-1.9	5.6
2013	-1.3	-1.8	-1.7	-2.1	-1.2	2.6	-2.3	-0.5	-1.7	-4.2
2014	-3.0	-1.1	-0.3	-1.4	-1.7	-2.1	-4.0	-1.1	-3.1	-2.1
2015	-0.8	-2.3	-1.0	-0.6	-0.3	2.3	2.2	-2.2	-0.9	-0.8
2016	-1.9	-0.9	-1.1	-1.0	-1.0	-1.3	-1.9	-1.3	-2.0	1.3
2017	-2.0	-1.2	-2.3	-2.4	-2.3	4.1	-3.1	-2.0	-2.6	-5.2
Sector Rank	168/195	166/195	167/195	104/195	149/195	140/183	141/183	158/195	165/183	N/A
Economy Rank	652/706	637/706	627/705	445/705	599/706	167/226	172/226	637/706	205/226	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 (%)
2003	58.89	5.35	5.34	166.34	26.19	19.56	43,558.19	0.53
2004	59.02	5.78	5.58	169.33	25.93	19.18	43,908.42	0.51
2005	58.31	6.07	5.95	174.15	25.09	19.21	43,687.19	0.49
2006	58.01	6.11	6.09	178.41	24.61	19.22	43,908.50	0.47
2007	55.62	6.47	6.37	181.19	24.01	19.00	43,504.74	0.45
2008	57.72	6.57	6.83	171.39	24.82	19.20	42,534.94	0.44
2009	58.62	6.25	7.22	161.46	25.06	18.09	40,459.83	0.38
2010	62.10	7.08	7.90	164.95	25.40	17.16	41,902.90	0.37
2011	61.66	6.86	7.79	166.79	25.20	16.99	42,030.56	0.36
2012	61.78	7.05	7.93	165.10	25.17	17.16	41,563.56	0.35
2013	61.50	7.01	8.24	164.93	25.38	17.25	41,857.97	0.33
2014	62.72	6.95	8.32	162.75	25.88	17.01	42,113.35	0.32
2015	61.80	7.16	8.58	161.94	25.51	17.13	41,310.88	0.30
2016	62.43	7.16	8.63	160.46	25.67	17.15	41,185.78	0.29
2017	62.94	7.13	9.17	160.96	25.67	17.15	41,312.02	N/A
Sector Rank	8/195	140/183	133/183	178/195	13/195	171/195	149/195	4/195
Economy Rank	57/706	160/226	156/226	452/706	228/706	306/705	409/706	52/706

Figures are inflation-adjusted 2012 dollars. Rank refers to 2012 data.

SOURCE: WWW.IBISWORLD.COM

Jargon & Glossary

Industry Jargon

COMPUTER-TO-PLATE PRINTING The process of transferring digital data from computers directly onto printing plates.

E-BOOK An electronic version of a book that can be downloaded to a portable e-reader, smartphone or computer.

GRAVURE PRINTING The process by which an image is engraved on a copper cylinder and partly immersed in ink, thus allowing the image to be transferred; typically used for high-volume printing such as wallpaper.

PRINTING PLATE Used to transfer an image to paper or other surface. A plate is prepared for each color used.

IBISWorld Glossary

BARRIERS TO ENTRY Barriers to entry can be High, Medium or Low. High means new companies struggle to enter an industry, while Low means it is easy for a firm to enter an industry.

CAPITAL/LABOR INTENSITY An indicator of how much capital is used in production as opposed to labor. Level is stated as High, Medium or Low. High is a ratio of less than \$3 of wage costs for every \$1 of depreciation; Medium is \$3 – \$8 of wage costs to \$1 of depreciation; Low is greater than \$8 of wage costs for every \$1 of depreciation.

CONSTANT PRICES The dollar figures in the Key Statistics table, including forecasts, are adjusted for inflation using 2012 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 The use of goods and services within the US; the sum of imports and domestic production minus exports.

EARNINGS BEFORE INTEREST AND TAX (EBIT) IBISWorld uses EBIT as an indicator of a company's profitability. It is calculated as revenue minus expenses, excluding tax and interest.

EMPLOYMENT The number of working proprietors, partners, permanent, part-time, temporary and casual employees, and managerial and executive employees.

ENTERPRISE A division that is separately managed and keeps management accounts. The most relevant measure of the number of firms in an industry.

ESTABLISHMENT The smallest type of accounting unit within an Enterprise; usually consists of one or more locations in a state or territory of the country in which it operates.

EXPORTS The total sales and transfers of goods produced by an industry that are exported.

IMPORTS The value of goods and services imported with the amount payable to non-residents.

INDUSTRY CONCENTRATION IBISWorld bases concentration on the top four firms. Concentration is identified as High, Medium or Low. High means the top four players account for over 70% of revenue; Medium is 40–70% of revenue; Low is less than 40%.

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

INDUSTRY VALUE ADDED The market value of goods and services produced by an industry minus the cost of goods and services used in the production process, which leaves the gross product of the industry (also called its Value Added).

INTERNATIONAL TRADE The level is determined by: Exports/Revenue: Low is 0–5%; Medium is 5–20%; High is over 20%. Imports/Domestic Demand: Low is 0–5%; Medium is 5–35%; and High is over 35%.

LIFE CYCLE All industries go through periods of Growth, Maturity and Decline. An average life cycle lasts 70 years. Maturity is the longest stage at 40 years with Growth and Decline at 15 years each.

NON-EMPLOYING ESTABLISHMENT Businesses with no paid employment and payroll are known as non-employing establishments. These are mostly set-up by self employed individuals.

VOLATILITY The level of volatility is determined by the percentage change in revenue over the past five years. Volatility levels: Very High is greater than $\pm 20\%$; High Volatility is between $\pm 10\%$ and $\pm 20\%$; Moderate Volatility is between $\pm 3\%$ and $\pm 10\%$; and Low Volatility is less than $\pm 3\%$.

WAGES The gross total wages and salaries of all employees of the establishment.

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