The Impact of Market and Technology Changes on Publishers and Printers

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Introduction

Pira International produces the Strategic Futures Forum (SFF) report annually. SFF is a membership benefit, distributed solely to senior management of member organisations.

This report is designed to be used as part of the strategy formulation for companies. It is a high-level review of the impacts of new technology and market forces across major sectors of the print and publishing industries.

Every year the need to develop a successful strategy becomes ever more important. Business pressures are increasing. Printing is being driven towards a digital future.

Publishers face new competition from alternative media, and have to develop new versions of many of their titles. They are becoming brand-owners and are exploring new methods to exploit their content.

These are critical challenges for every organisation. Pira International exists to help companies to identify the key issues and develop strategies to profit from these changing times. We suggest you use this report as a stimulus and input to your strategic planning processes. Many points discussed are common to both printers and publishers, but Chapters 4 and 6 respectively, discuss more specific issues.

Methodology

This report was compiled by two of Pira International's senior consultants. It builds on previous research work (for SFF and other projects) and a series of interviews conducted with senior decision-makers across most sectors of printing and publishing markets. The interviews were conducted to provide insight into the practical issues, threats and opportunities facing real printing and publishing businesses in 2001.

It was a challenging task to bring together these disparate views into a cohesive document, hence Chapters 7 and 8 outlining company developments and a series of timelines.

The market forecasts presented build on the major Prima project that provided forecasts for the future demand for paper.

Acknowledgements

The authors gratefully record the valuable inputs from various individuals and companies across the major printing and publishing marketplaces, which comprised:

- 2 web offset printers (magazines and books)
- 3 general printers, one also producing books
- 1 short-run book printer
- 1 in-plant book printer
- 1 FM service provider
- 2 book publishers
- 2 magazine publishers
- 1 book and magazine publisher, printer
- 1 legal publisher
- 1 catalogue publisher.

As some participants prefer to remain anonymous we will spare the blushes of all who agreed to take part. We have tried to include the various inputs while not releasing too many details of several very interesting, commercially advantageous strategies.

You know who you are, thank you.

Executive summary

Unprecedented forces for change are impacting printing and publishing. You have heard the message before; this time the external forces are much wider than just printing and publishing. They are being driven by changing consumer demands and expectations and enabled by startling technological development. The key element is the development of a wider communications industry, enabled by the rapid changes in IT and communications technology, particularly the internet.

The main impact on printers and publishers of this technological trend is the increasingly important aspect of digitisation. This leads to:

- digital content management
- distributed digital workflows
- distributed digital administration
- digital information controlling the production processes.

Technology-driven automation has brought increased productivity to production processes in the printing industry. Now IT developments applied to the transaction and business process itself, and to prepress processes, have the potential to bring about another step-wise increase in productivity.

Print and publishing are prime examples of the trends of globalisation and growth of transnational corporations. Barriers to trade are dropping, partly by reducing tariffs but also due to the internet forcing business models to be re-examined.

The overall economic picture is one of continued growth, and although there are some clouds, future prospects for the demand for print remain good. There will continue to be ever-increasing competition: from alternative publishing media and especially from excess capacity in many product sectors.

In 2001, the need for a clear strategy is more important than ever.

Summary of successful business strategies in print and publishing

Some themes which apply to both publishers and printers have emerged from the study. As the companies interviewed are successful, these are useful pointers.

Most companies recognise the key pressures on them and respond positively. Successful companies pre-empt these pressures by responding to the pressures on their customers.

Key pressures

All businesses have pressure to reduce their prices and improve their time to market. For print and publishing, specific pressures include:

- market pressures
- reduced demand for some products
- run length reductions
- timescale reductions
- cost reduction.

These factors can be tackled by evolutionary change, but a better result may be obtained from business process re-engineering across the supply chain.

- Legislation pressures:
  - health and safety

  - employment conditions
  - environmental legislation.
- Technological pressures:
  - digitisation
  - automation
  - the need to 'keep up', to maintain leadership
  - technical complexity.

If ignored, these factors reduce production efficiency and competitiveness and detract from the core business. Successful companies make these items specific responsibilities of directors, or appoint specialists (possibly on a part-time basis).

Company structure

Successful companies have developed their company structure to serve their markets better. Examples are:

- all-in-one model, with a departmental structure;
- a separate companies model with group inter-trading – information enables costs and performance to be tracked;
- keep the maximum size of any individual unit manageable, accountable and efficient;
- separate manufacturing from sales and administration.

Use of management information

Successful companies use management information effectively, for example:

- monitor key performance indicators on a regular basis and follow trends
- know the most profitable products and product mix
- measure performance as a means to continual improvement.

People

Successful companies recruit carefully, train and reward, while less successful ones poach. Good examples are:

- investors in people schemes;
- recruit enthusiastic young people with good basic intelligence and aptitude, then train them well;
- create individual training programmes for every member of staff to raise their level of performance;
- ensure successes are well publicised;
- provide mechanisms for staff to participate in the company's success.

The printing industry in particular is ageing as the number of young recruits is relatively small. There is concern that the industry is not attractive and able to recruit the necessary talented staff. As time goes on this will make a recruitment strategy based on poaching increasingly less successful.

Growth

Successful companies have a growth strategy to achieve and maintain a good market position. They use any or several of the following methods to build the company structure and capability they require:

- organic growth:
  - gaining more work of the existing type from existing customers
  - gaining more work of a different type from existing customers
  - changing and/or expanding the customer base
  - offering new services to existing customers, and potential ones
- acquisition
- partnerships
- greenfield start-up
- diversification:
  - move from business forms into promotional print or direct mail
  - move from books and journals into provision of training materials and distance learning
  - geographic diversification with companies who know local markets
  - move from being a repro house to a design agency, photographic studio, video producer and new media facility
  - manage communication.

Specialisation

Successful companies develop specialities that bring rewards of economy of scale, USPs or production efficiency. Examples are:

- production specialism or rationalisation
- constrain product specification.

Focus

Successful companies continually reinvent themselves so as to adapt their structure, products and services to changing market requirements. Examples include:

- identify core competences and focus on these while outsourcing everything else;
- reposition the company and rename it (as IPC Media, Communisis and Lightning Source International have done);
- diversify into growth markets.

Summary of key strategies for publishers

All the publishers undertake at least some in-house production, the rationale being to achieve editorial control (few claim substantial cost savings). Some are moving towards a totally digital workflow to achieve:

- time savings on magazine schedules;

In-house prepress

- integrated multiple media workflows that can deliver to the web simultaneously with print;
- effective content management;
- online or very rapid delivery to end-customers (possibly of a customised content product).

Some of these can be equally achieved by outsourcing, so it is not the case that in-house production is the only way to develop. The choice of whether to make or buy repro is still difficult and not just a financial decision. To take advantage of the digital technology, skilled personnel are necessary; there may be good reason to work closely with an experienced repro supplier.

Asset management

Publishers recognise the need to store content so that it can be used for multiple purposes or be traded. This is giving rise to the implementation of general content management systems or more specialist picture libraries.

Growth

All the publishers were committed to growth. Typical methods are:

- acquisition of companies or titles;
- geographic diversification through partnerships or other arrangements with local publishers and distributors.

Diversification

Some publishers were diversifying into products *and services* related to the interests of their core markets. All the publishers are diversifying their product mix by developing electronic media products. The problem with all electronic media is finding a business model that provides publishers satisfactory returns.

E-tailing

All the publishers were developing websites to facilitate commercial transactions of either their own products and services or those of their advertisers.

Summary of key strategies for printers

Successful companies have developed unique selling points (USPs) and know what they are. In the past, a typical print company would position itself in terms of:

- price
- quality

Unique selling points

- service.

These no longer provide differentiation from other companies; in fact, good performances in each area are basic table stakes to compete. Differentiators must be developed in other areas of product and service. Examples are:

- one-stop-shop service provider
- 'firepower' – significant production capacity
- exclusive equipment
- exceptional expertise
- digital print services
- design services
- typesetting and text processing services
- fulfilment and managed communication services
- multimedia capability and expertise
- geographical spread.

Customer service

Successful companies provide superb customer service, anticipating customer needs and outperforming their expectations. Examples include:

- providing an account manager system to give the client information to help them manage their business;
- provision of warehousing and fulfilment services;

- a 'we will manage the complexity, so you don't have to worry' approach;
- providing electronic communications to support interaction with customer – e-enabling their communication needs.

The sales process

Successful companies are changing their sales process:

- they manage the processing of more lower value individual orders;
- they focus on understanding the pressures and demands on the client;
- they achieve approved supplier status within a contract framework;
- they train sales staff to sell services not just product;
- companies are examining internet-based print procurement services and/or developing their own approach with their MIS supplier to minimise sales costs;
- print brokers are repositioning themselves as print management providers.

Capital investment

Successful printers have clear policies for investment. Examples are:

- depreciate over ten years but replace after four years to optimise productivity advantages of the latest equipment;
- invest to automate and reduce labour cost;
- invest to achieve unit cost reductions;
- invest to provide new products and services;
- avoid equipment purchase and lease – particularly applicable to digital print equipment.

Many aspects of print are cyclical, requiring significant investments infrequently. Successful companies smooth this effect by careful planning. If investment is delayed the competitive position will worsen, akin to 'falling off a cliff'. Over the short to medium term, access to new sources of capital will become progressively more difficult for unprofitable companies.

The global scene

1

Globalisation

The shrinking of distance between people and places, as the result of improved transport and communications has led to the concept of the global village, a trend that has accelerated in recent years. Key factors encouraging this have been the rapid developments in both air transportation and information technology (IT). The latter is developing so rapidly that it is now easy to have instantaneous visual communication throughout the world.

These developments have fostered rapid growth of transnational corporations, namely firms that operate across national borders either by:

- greenfield investment in building new plants in host countries, or
- mergers and acquisitions involving existing firms in host countries.

These two types of foreign direct investment will continue to grow as more host countries open their doors to foreign firms. The host country's subsidiary firms gain the managerial skills and technological know-how of the foreign parent company and above all become linked to its transnational production and distribution network. The transnational corporation gains access to the locational advantages of the host country, including its domestic market and its labour force.

The print and publishing industries provide prime examples of this type of globalisation and growth of transnational corporations. Paper manufacturers, ink manufacturers, press manufacturers, film and plate manufacturers, a few print companies and many publishers all now fall within this description. However, this is not universally regarded as good: with so few suppliers in some market sectors, competition can be reduced and prices raised, while product range is restricted. And the average print company, being relatively small, has a weak negotiating position in relation to large corporations.

The internet and some other developments are enabling new types of global operations to be established. 'Data warehouses', created initially to serve on-demand production of books at a local print facility, can in fact be used to serve print facilities anywhere in the world and also to deliver e-books. This is an example of the more general concept of distribute and print rather than print and distribute. B2B (business-to-business) catalogue production is also affected as the catalogue moves on to the web and serves a much larger geographic market.

For any large printing or publishing company operating globally, there is a need for consistent and strong branding.

This internationalisation also applies to services, including the provision of entertainment and tourism. Films, videos, CDs reflect such internationalisation to an ever-increasing extent. For example, a film may be made in Britain with American finance, British technicians and studios, American and British actors, with the result that it becomes difficult to determine whether it is American or British. The rapid expansion of tourism associated with the widespread use of jumbo jet aircraft has led to a corresponding growth in the hotel industry, including the rise of transnational hotel corporations. Such trends in globalisation are likely to continue.

Convergences

As a result of globalisation, countries will continue to converge towards each other in terms of GDP per capita. Among European countries, the extremely rapid current growth of GDP in Greece, Ireland, the Czech Republic and Poland (all in the region of 4% to 5%) are projected to converge towards the European norm (of about 2.75%) by 2010. These high growth rates have been the result of a 'catch-up' period during which inefficiency has been removed and increases in productivity achieved as a result of technological progress. Transfer of technological innovations by transnational corporations also encourages this catch-up process. In the printing industry in particular, this has the effect of increasing competition since, while these countries are catching up in terms of technology and productivity, they remain low-wage economies.

In contrast, the *developed* countries do not have the same scope for improvement and their future growth is dependent purely on technological progress. Hence, the growth of GDP per capita of the developing countries will converge towards those of the developed countries.

This process can currently be observed in countries such as Poland. New press installations there are increasing productivity many times over, raising quality to industry 'norms' and enabling publications previously imported into Poland to be produced within its own borders. Clearly this increases overall production capacity in Europe, and consequently, competition.

At the same time, the tastes of consumers throughout the world, particularly those of young people, tend to converge in the sense of wearing similar clothes, drinking the same soft drinks, buying the same music, reading the same books and even following the same sport of football. The diffusion of television (especially by satellite) and of the internet throughout the world will aid this convergence.

Trends in international trade

The acceleration of globalisation and convergence is linked to the opening of markets to international trade. In particular, the USA has opened its markets, thereby stimulating growth throughout the world. For example, in the 1990s the USA took nearly half of the growth in developing-country exports to the industrial world.

The European Union has formed a single market by gradually eliminating non-tariff barriers to trade between member states. European monetary union (EMU), with its single currency of the euro, will accentuate trade between the members of the euro zone.

The publishing industry has, however, been reluctant to follow this trend. For example, book publication/selling rights and copyright licensing are normally defined by continent, but the technological developments of internet book retailing, e-books, data warehouses and on-demand book production are all making the established norms somewhat outdated and impractical (or unenforceable, as has been the case with music on the internet) and new approaches will have to be found.

The labour force

The growth in international trade has intensified competition. Inevitably this creates winners and losers. In the developed countries, unskilled workers find it more difficult to

obtain jobs as the pace of technological change increases. Even skilled workers in some manufacturing industries in developed countries lose their jobs as high-wage manufacturing is transferred to lower-wage developing countries. Transnational corporations will switch production from high-cost to low-cost areas throughout the world and this trend is likely to continue into the future. In developed countries the labour force is having to adapt from a manufacturing base to a knowledge base.

The US administration is investing heavily in education and job training programmes to enable its less-educated and less-skilled workers to adapt to an increasingly competitive world. The UK is following suit. Such moves should increase the demand for printed products. France, Germany, Scandinavia, Switzerland and Japan have already raised the skills and education levels of their workers. Even so, they will aim at further improvements in the quality of their workforce. In an age of increasing sophistication of production and rapid improvements in IT, human capital is all-important.

Technological progress

Much of technological progress depends on developments in IT. The power of microchips doubles every 18 months, a property that, at first sight, indicates very rapid technological progress. However, this also depends on the speed at which these new developments are diffused throughout an economy. The rate of diffusion is usually higher in the business than in the personal sector. Transnational companies increase the speed of diffusion by the transfer of best practice techniques from the parent company to the subsidiary company in the host economy.

IT has not, so far at least in Europe, led to the productivity gains that might be expected – but evidence is now appearing that the position is different in the USA. There, productivity growth in 2000 had increased to 2.9%, twice the rate of the previous two decades. While there are sceptics who challenge the basis of this increase, there is also a body of opinion that Europe has the potential not only to match, but to surpass this productivity increase. European practices are perceived as inefficient by comparison with those in the USA, and Europe also has the advantage of being able to learn from the US experience.

This is partly the rationale for the new breed of internet-based print specification and procurement services. Claims are made that transaction costs related to ordering and order processing of a print job can be reduced from €80 to €15 as a result of gain in efficiency. In fact, since the whole prepress process is IT based (and much of it in publishers where productivity among editorial teams has not been a prime concern), there is scope for very significant gains.

The network effects of IT are very important. A business with extensive IT will expect its suppliers and customers to communicate with it by using the internet. The personal sector will also be affected. Just as it is regarded as essential to have a telephone if one's family and friends have telephones, so it is becoming essential for a person to have e-mail and internet links to communicate with others.

Engines of growth

World trade is likely to grow at an annual rate of 6.7% up to 2006. This projection, together with the likely entry of China into the World Trade Organisation (WTO), augurs

well for world economic growth. In fact, the projected growth of world GDP per capita is 3.6% pa up to 2006. However, there are some clouds on the horizon that are best discussed for each engine of growth.

The USA is a major engine of growth. In recent years it has enjoyed a long spell of non-inflationary economic growth and its projected growth of GDP per capita until 2006 is 2.4% pa. This projection depends heavily on the behaviour of its stock market.

By all the usual measures, such as price/earnings ratios, US equity prices have been too high and some fall has been experienced. A large fall would reduce people's perceived wealth and hence lead to a reduction in US consumer spending that could generate a depression. The National Institute Global Econometric Model indicates that a 20% fall in US equity prices would reduce output in the following year by 1.25 percentage points. This depression would spread to the rest of the world as the USA reduced its imports.

However, it could be that all the traditional measures, indicating that US equity prices are too high, are misleading because of the fundamental changes in technology that are taking place, such as the rapid development of IT and biotechnology. The resulting increases in productivity and in profitability might support the high US equity prices. In the best case scenario, there would be a modest market correction rather than a burst of a stock market bubble and the projected economic growth rates would hold.

In the Pacific Rim, the major source of growth used to be Japan, but the country has been in the doldrums since its asset-price bubble burst in the early 1990s. Recently, Japanese firms have begun to reduce their excess capacity and their labour hoarding, and this, together with substantial increases in government expenditure, may enable the projected growth rate of 2.0% pa until 2006 to be reached.

Other Pacific Rim economies, such as South Korea, Taiwan and Singapore, are apparently recovering well as a result of global increases in the demand for microelectronics, but it is unlikely that these high growth rates can be maintained for the decade to 2010.

With some 1.2 billion consumers, China has tremendous potential for economic growth. If it really enters the WTO it could experience extremely rapid growth in the medium term, but there are several political and internal infrastructure obstacles to be overcome. India is another enormous economy with nearly one billion consumers. However, although India has tremendous potential for economic growth, it is possible that political and cultural obstacles will impose severe restraints on the increase in its GDP per capita in the medium term.

Despite this, India, building on its considerable use of the English language, is playing a significant role in printing and publishing. It has established itself as a centre of expertise in prepress processes involving SGML/XML and text capture and processing in general, software development (e.g. some management information systems have their software written in India) and website creation services. Because of its geographic position it is also well placed to provide online software support to Europe and the USA at times of

day that would be inconvenient to locals. All this has become possible because of the ease of electronic communication.

Both India and China are expected to double their prosperity in the coming years to 2010, although not uniformly throughout their populations. A sizeable middle class will develop leaving a large mass of the population behind.

The EU is expected to have annual growth of about 2.6% until 2010. The enlargement of the EU by the admission of countries from the former eastern European bloc should increase the average growth rate for a period. The key drivers of EU growth are Germany, France, Italy, Spain and the UK.

Germany is likely to grow at about 2.5% pa until 2010. It enjoyed major economic success until recently. It has had low inflation for many years. The reunification with eastern Germany presented difficult economic problems: for example, in 1998 unemployment in East Germany averaged 18.2% which was very severe. Germany has a relatively high proportion of GDP in the manufacturing sector and is exposed to the cyclical swings in the world demand for its capital goods. The economic crisis in Asia and subsequent recovery in the late 1990s had significant impacts on German exports of manufactured goods, particularly those of the mechanical and electrical engineering industries. For example, in the first five months of 1999, Germany's exports to Japan increased by 14% and those to China increased by nearly 20%.

The projected growth rate of France until 2010 is also 2.5% pa. France trades less with the Asian economies than does Germany and was less affected by the Asian slump and recovery in the 1990s. It invests heavily in human capital, especially through vocational training in its schools. It will continue to have low inflation as a result of its membership of EMU. Unemployment at 11.2% is a serious problem and is projected to average 9.6% up to 2006. If the proposed drastic reduction in hours worked per annum reduces its competitiveness, its growth rate will decline and its unemployment will be increased.

The projected annual growth rates until 2010 of Italy and Spain are 3.0% and 3.2%, respectively. These are above the EU average of 2.6%. However, in both countries unemployment is a serious problem, while Italy in particular has a kind of political instability.

The UK is expected to grow by about 2.3% pa until 2010. It is still outside EMU and its monetary policy is determined by the Bank of England rather than the European Central Bank in Frankfurt. Its inflation rate is low and its unemployment rate of 6% (International Labour Organisation definition) is well below that in France, Germany, Italy and Spain. In comparison with the other countries mentioned, its future economic performance appears remarkably stable.

Economic prospects

The economic growth rate for Europe is projected to be 2.7% in the year 2000. For the period 2001 to 2005, the average annual growth rate is projected to be 2.5%. The Republic of Ireland is thought to have the highest future growth rate of 4.4% pa (2001–2005), though this is much lower than its very high growth rates in 1997, 1998 and 1999.

Table 1.1 gives the annual growth rates of GDP per capita for France, Germany and the UK, and for the EU15 over the periods 2000–2005 and 2000–2010.

TABLE 1.1 Projected annual growth rates in real GDP per capita, 2000–2005 and 2000–2010 (%)

	2000–2005	2000–2010
France	2.1	2.3
Germany	2.4	2.6
UK	2.4	2.2
EU15	2.4	2.5

Source: Prima report

Since the fortunes of the print and publishing industries are closely related to economic growth (GDP in particular), the projections in Table 1.1 are encouraging. However, in the USA, where a strong correlation has existed for many years, the link has apparently broken. Speculation might suggest that this has been caused by the internet, but it is probably too soon to say, and likely to be too simple an answer. Europe has a more complex structure and it is not clear whether the same effect will be experienced this side of the Atlantic.

Demographic factors

The total European population of over 376 million is expected to increase by about 1% to over 379 million by 2005 and by a further 1% to over 381 million by 2010.

The five largest countries are Germany, Spain, France, Italy and the UK. Their population projections for 2000–2010 differ. In France, the population is expected to increase by over 2 million, and in the UK by some 1.5 million. In contrast, in Germany it is expected to decrease by over 1 million although this may be somewhat compensated for by immigration. Spain, Italy and the remaining EU15 are expected to have little change in population. Thus the main demographic influences on the print market are likely to stem from France and the UK.

This is confirmed in Table 1.2 which summarises the population projections for the education and training of people aged between 5 and 24 years, a key sector in the print market. For the EU15 countries there is likely to be a decrease in the population in these age groups of some 4.9 million (5.4%) over the decade 2000–2010. The numbers of these key consumers of printed material are also likely to decrease in Germany, Spain and Italy. In France and in the UK, however, their numbers are likely to remain steady during 2000–2010.

TABLE 1.2 Population projections for the education and training of 5–24 year olds, 2000–2010 (millions)

	2000	2005	2010
EU15	90.2	87.6	85.3
Germany	18.1	17.8	16.8
Spain	9.8	8.5	8.0
France	15.4	15.5	15.3
Italy	13.4	11.4	11.2
UK	14.9	15.2	15.0

Source: Prima report

Against this, it might be argued that increasing *proportions* of these age groups will undergo further and higher education so that demand for printed material from these decreasing cohorts will not fall. It is also suggested that the tendency for the retirement age to reduce will provide more leisure time for the older population cohorts and hence is likely to increase demand for the printed form of reading material. If the proportion of females in these groups increases as a result of their longevity, this tendency for increased reading will be reinforced because it is known that females are more avid readers than males.

Households and their composition

In Europe as a whole and also in the individual countries, the total number of households is expected to increase over the decade 2000–2010 because of the increase in the number of one-person households. Any projections of the demand for printed material based on population projections must therefore be modified: population may not increase very much, but the number of households will. This could, for example, have a significant effect on the demand for newspapers if one assumes a sale per household as opposed to a sale per individual.

Technology enablers

2

The drivers for change that fuel the transformation in the publishing and print sector boil down to the changing consumer patterns and the mechanisms that businesses adopt to satisfy these demands. The technology developments enable these changes to occur.

Generic technological drivers

The key IT developments of computer and communications technology (networks, client/server and the internet) are enabling the changes that are occurring in the print and publishing industries.

Computer technology

Moore's Law is still in operation, with computer power doubling every 18 months or so, with a slight proviso: that the costs are falling rather than remaining constant. For businesses using computers in critical areas this is a major concern, determining what is the optimal time to keep a computer while not risking falling behind a competitor. Typical desktop computers have processors running at 1GHz, with 256Mb of RAM and local disk capacity in excess of 20Gb at a cost of less than £1000 (€1560). Workstations will be accordingly more powerful with the addition of built-in networking at 100Mb ps standard with gigabit capability available for a small premium.

Implications for print and publishing

- The more powerful computers remove processing bottlenecks at RIP/output stage, allowing large-format impositions to be processed and complex variable content pages and digital print jobs. Complex colour and job attributes can be handled during the screening and painting stages of output according to print specification tags. This promotes more use of digital workflows and digital print.
- Graphic workstations are powerful enough to allow sophisticated image manipulation on an inexpensive workstation running standard software applications. Skilled staff become an even more valuable resource with easily transferable expertise.
- Computers are powerful enough to allow formats and make-up to be applied at point of output, further fuelling the development of media-independent digital asset management systems.
- There will be increasing use of computerised controls and automation in conventional printing machines and particularly binding and finishing equipment. This promotes the trend towards the designer/creators producing in a media-independent way, with the print company specifying the actual printing conditions and applying the characteristics at output.

Wildcard: speech recognition and language translation

The increasingly powerful computers allow applications previously too complex for typical computers to become mainstream. Automatic language translation and speech recognition are two applications that the current 1GHz processors have sufficient processing power to tackle. Software developers can produce easy-to-use programs that provide high degrees of accuracy, and as the price drops these may become add-on features to standard office software. For publishers this could open up new geographic markets and lower text capture and the cost of digitising legacy content.

Networks

Local networks in publishing and prepress have been developing since the introduction of the Mac; now the majority of systems have a client/server topology. Specific graphics-related manipulation will be carried out on the local workstation although there is a trend towards thin-client applications where the server performs processing across a very fast network to a reduced-specification local client. The thin client will increasingly have a web browser interface and provide access to both local and distributed resources, transparently. Suppliers claim that the annual cost of installing, running and maintaining a thin client computer system can be just one-third the cost of operating a standard network of PCs. Local area networking with servers running databases containing tagged content becomes the norm for creative and production units. Mixed-platform networks are used. The dominance of the Macintosh for publishing applications is challenged, particularly with corporate clients. Network topology moves from 10/100baseT towards gigabit ethernet, with file transfers at rates of 1Gbit/s.

TCP/IP will become the dominant telecommunication network technology. The packet-based technology will allow any application (voice, data, internet, video) to be carried transparently across the network regardless of the nature of the infrastructure. The need for a fast transparent network between different sites and collaborators increases. Point-to-point file transfer is still important but increasing features are needed, from specialist graphic arts suppliers such as Vio, Wam!Net, DAX and Fileflow as well as mainstream ASPs (application service providers) and corporate networks. Data transfer rates will speed up greatly, along with sophisticated data compression algorithms further promoting group working. The biggest change will be the incorporation of administration details along with the job files, and job management routines that help to notify the next member of the chain and make approval cycles easier and faster.

Virtual private networks (VPNs) will be widely used between remote offices, perhaps in different countries. VPNs are networks deployed on a public network infrastructure that employ the same security, management and quality of service policies applied in a private network. They use advanced encryption and tunnelling to permit organisations to establish secure, end-to-end, private network connections over third-party networks such as the internet or extranets. The costs are lower than using fixed networks because the only channel paid for is that to the local internet service provider (ISP). Variable bandwidth is available with secure file storage and forwarding allowing file transfers at the speed of each office to be accomplished rather than suffering the lowest speed of the chain. Guaranteed service levels will be agreed with the ISP, who can provide additional services. There are two categories of VPN:

- *Site-to-site VPNs* extend the classic WAN by providing large-scale encryption between multiple fixed sites.
- *Remote access VPNs* permit secure, encrypted connections between mobile or remote users and their corporate networks via a third-party network, such as a service provider.

Implications for print and publishing

- Increasing group working in developing print jobs occurs between publisher, creator and printer.
- Editorial functions are distributed at the publisher to include many freelance contributors. Much of this function will be carried out from home.
- Administration is automated and shared in a standardised job ticket (job description format (JDF)).
- E-commerce is facilitated for specification and procurement of many print products, particularly for digital printing.
- Fast, secure and low-cost transmission of large files between collaborating parties is possible. The network provider can provide several value-added services useful to the publisher/printer:
  - variable connectivity rates
  - file storage and forwarding
  - error checking and audit trail
  - data compression
  - managed service.
- There is additional competition from new media products for printing.

Wildcard: WAP/ Bluetooth

The wireless application protocol (WAP) is an open, global specification providing internet access to mobile phones and other devices. While Forrester research predicts that by 2004, one-third of all Europeans – over 219 million consumers – will regularly use their mobile phones to access internet services, the actual uptake is slower. While mobile phones are tiny, practical and easy to carry, the WAP screen has to be small. It is difficult to read the same amount of information on a WAP screen as on a desktop computer: the screen quality is not as good. Pictures can be sent with WAP, but if they are too complicated they will appear merely as blurs. Use of format-independent content will become more important, with integrated sound a valuable additional feature.

Telecoms developers are constantly working on better and faster ways of sending information to mobile phones. Advertisers need to be able to use one more channel in order to reach consumers. Users will become accustomed to advertisements as an integrated part of the WAP services. That may help to reduce service costs to the consumer and fuel further growth. Bluetooth technology allows short-range wireless connectivity between enabled devices (digital cameras, WAP phones, printers, personal digital assistants (PDAs) and computers). These devices will be used as part of the distribution channel for various business-to-business channels, e.g. in catalogue retailing of electronic components, suppliers are promoting access into their website through new-generation PDAs (that they will sell).

Implications for print and publishing

- WAP is another channel for distribution of published material and advertising. This will drive the media-independence of content still further.

Industry-specific technology developments and trends

Prepress

Film usage has peaked and will decline in terms of share as digital workflows prevail. Files will be rendered print-ready and output direct to litho and flexo plate, gravure cylinder and to digital presses. Estimates suggest that in 2000 more than 75% of print jobs in Europe are digital, with interactivity and networked collaboration involved in some 25%, a figure that is growing fast. The use of computer-to-plate (CTP) systems will rise steeply, with the majority of print companies either owning systems or in a close commercial relationship with a trade house offering a gateway service.

The current activities of large magazine publishers will encourage the use of a standardised PDF (pass4press) as the format for the delivery of digital advertisements for litho-printed titles. Gravure has been using digital workflows for some time, using the TIFF/IT format. The difficult initial implementation of this change will be helped by the activities of some large repro companies providing the technical resource and skills on behalf of major publishers. By 2002 it will be the norm to supply electronic files to printers, or to trade houses acting in partnership with the printer. The majority of magazines will be output on a CTP system with some still using film, but with significant cost penalties.

This move towards complete digitisation is an opportunity for trade houses to provide specialist services to publishers and printers, rather than acting as a make-up to film provider.

Ever more people are able to produce copy to a graphics arts standard (or near), and that is likely to encourage more print, especially at a domestic and small office/company level.

It is becoming easier to produce copy for other media as well as for print. After CTP, the main industry trends will be the following:

- Media-independent editorial and asset management systems capable of outputting in PDF, XML, HTML, etc. (so facilitating electronic and hard-copy versions of the same data source). Content will be tagged and stored in asset management systems, with the content loaded into creative applications as now and increasingly in automated functions into rules driven templates.
- Database management, both for managing content and aiding personalised print products, will be increasingly common.
- Further advances in preflight software to render any media-independent file ready for output. For printing this would mean being made print-ready, a task currently undertaken by prepress operators. This will be accomplished by applying output device specification tags to the file, automatically setting parameters such as:
  - colour management for process and six-colour jobs
  - resolution for contones, linework and text
  - trapping
  - imposition and bleeds
  - crop marks, folder and trim guides
  - generating files to preset printing and finishing machines and building up a job audit trail to use in administration.

Proofing systems will provide an 'appropriate balance' between speed, cost and quality. In many instances the need for hard-copy contract proofs will disappear as clients work with printers to remove time and cost from the process.

Format and media independence

For companies that have traditionally communicated using large-scale print production processes, the emerging e-business presents significant challenges. The intense competitive pressure to have a compelling internet presence forced companies to charge ahead and make major investments in the systems and people needed to create and run sophisticated websites. As this rush to the web settles, many companies needing to communicate effectively with customers face new challenges. These organisations now operate two large-scale production processes – one for print and another for the website. In most companies, these two production processes are disparate operations that run on parallel but completely separate tracks.

This dual approach is inefficient, requiring separate staffs and budgets, and different technologies. Companies cannot afford the level of inefficiency this approach brings. The challenge for management is to find a single solution that drives efficiencies across both processes, enabling each system to take advantage of the work done in the other.

Digital asset management offers a solution to this cross-media publishing challenge by introducing format independence – multimedia capability. The graphics elements are stored in a variety of ways to allow easy repurposing. Structured documents may be stored as application (i.e. QuarkXPress files), as PDFs or as raw content (SGML or XML). This allows maximum graphics capability enabling the delivery of assets in content-specific form for dynamic use across an enterprise. Images are stored as high-resolution CMYK files for conventional print and sub-sampled in RGB to allow fast delivery into a web page. Pages and documents will be held as high-resolution PostScript for output to plate, as optimised PostScript for output to a digital printer, as PDF for ease of distribution to a consumer for printing on an office (or home) printer and HTML/XML for delivery as a web page or frame. The correct format will be selected according to the target output.

When combined with a detailed customer profile, the information may be presented in the most effective way. Demographics show that there will be more affluent 'vigorous greys' in the market. As humans age, their eyes deteriorate, they cannot see as much colour and they cannot easily read small type. So if a customer is over 60 the print on any documents (mailer or statement) should be always over 12 point. *Time* magazine publishes a 16pt type version for the over 40s, alongside the standard (10pt) copy. Text can be formatted into sympathetic designs so it does not have the stigma of the poorly designed look of many large-print books. It is providing the customer with the content in the manner most suitable to them.

In his book *Why we Buy* (Simon & Schuster, 1999) Paco Underhill details a promotion for its Visa Gold Card run by a southern Californian savings bank. This involved

a colour poster of the Gold card sitting on top of a gold ingot that was positioned behind the cashiers so customers could see it. When interviewed, the young customers remembered the poster but the older ones just saw a 'yellow splurge' – their ability to differentiate the colours had deteriorated. The information in the poster was lost on the consumers it was aimed at because of flawed formatting.

Automatic make-up

Since the inception of movable type, the greatest advantage of print has been the use of good graphic design rules to provide maximum legibility. The legibility allows more information to be carried on less paper, benefiting the competitive position of print. Modern reproduction technology combines this text legibility with sharp, clear pictures and illustrations, providing an information-rich, aesthetically satisfying, tangible printed product. This results from the combination of good content (text and pictures) combined into a defined design by a skilled operator capable of providing an editing function during make-up. Each page or spread was crafted in a dedicated prepress department, at relatively high cost. Because the operators make subjective decisions, it is necessary for proofs to be checked by the client, adding further cost and time.

New technology is allowing this situation to change. Content can be assembled into design templates automatically, with the system making up pages or documents that have the appearance of being designed by operators. Early examples of this technology are rigidly structured documents (such as business cards or basic stationery) available on demand from many print-related websites.

New on-demand publishing systems enable the design and automatic production of customised documents aimed at narrow segments and individuals. The selection of the digital content is controlled by final consumer profile information. Flexible templates then assemble this selected content into the final document for output, electronic or printed. This enables the marketeer to tailor a specific message relevant to the target customer, providing much improved response to direct mail and improving the relations with existing customers. The content may be repurposed, making it more effective.

The document content will vary according to the individual customer profile information. The template captures the overall abstract look, automatically adjusting the layout according to the size and placement of the variable content. New output systems provide optimised PostScript to go to a conventional RIP or digital colour press, a PDF to be e-mailed or posted on the web or as HTML/XML data to form a dynamic web page.

Colour management

Colour printing has long been a craft process, empirically learned by skilled operators who understood their equipment and could tweak the results to satisfy customers. This resulted in different results at local plants with no standardisation across different companies. Proofs and print runs did not match. The reproduction process was tailored for a local production. The scanner operator would adjust the range and settings for the final press, platemakers would adjust exposure to compensate for printing conditions, and the press minders would change press settings to provide the optimal result.

There are now scientific methods to ensure the accuracy and consistency of print production. Colour can be controlled and optimised at all stages of the communication process in accordance with the ICC (International Color Consortium) standard. All proofing devices and presses are fingerprinted under controlled conditions to define their colour capability and prepare a colour profile. These profiles are stored with the data in the asset management system and applied to the images when output is selected. This results in the correct colour being printed regardless of which press is used, providing more consistency of the corporate brand. Proofing uses the system, allowing good quality contract proofs to be produced remotely, in many cases in the client's office to reduce the time for approval. Colour management is also applied to images that will be used on the web as it can work across all media. A further benefit of colour management is a uniform print condition, reducing press set-up and waste – economic benefits that are passed on to the client.

Using colour management bridges the digital world to the real world of installed printing presses that will remain an important segment of the communications market. Using colour management allows improved colour communication (a good match between proof and press and ensuring colour consistency between different presses) and minimises set-up time and waste on press by running to specified press settings.

Administration

The print industry is being impacted by the development of e-commerce within the general business-to-business and specialist print procurement systems. The promise of e-commerce lies in the ability to automate the complex business processes involved in specifying and procuring print. Specialist companies are developing and using this technology effectively, and in the next few years a standard data transfer format will emerge allowing further reductions in cost and time associated with the procurement of print.

While there is much work to be completed before a standardised e-commerce format emerges, the print community has developed a vendor-independent format that has widespread support. Building on the existing technologies of CIP3's print production format (PPF) and Adobe's portable job ticket format (PJTF), the job definition format (JDF) supplies printing businesses with a means to streamline the process of producing printed material. JDF allows the description of all the processes needed to complete a print product, from job submission through prepress, press and postpress. It does this by translating each process step in a job into a node; the whole job is represented as a tree of nodes. The nodes taken together describe the desired printed product and the workflow of its production. Each individual node – each process – is defined as an input or output. The inputs for a process consist of the resources that the process uses and the parameters that control it. So, inputs in a node describing the cover of a brochure might include the inks, the press sheets, the plates and a set of parameters that indicate how many sheets should be produced.

The output of the process node using these particular inputs will be a set of printed press sheets. Resources produced by one process, however, are modified or consumed by subsequent processes. So, the output above – the printed sheets – becomes

the input resource for some set of finishing operations, such as folding and cutting. In turn, the finished sheets that are the output of those operations become the input resource for further postpress processes such as binding.

Any job is defined as a hierarchical network of processes linked through the consumption of inputs and production of outputs that in turn become the inputs for further processing. The end result is the combination of outputs that produce the desired finished product. JDF provides the ability to place individual actions into a greater context so that each element is regarded by the structure as a part of the whole.

JDF provides a mechanism to allow production automation systems (which are MISs) to control and track jobs by supplying a messenger service to run between MIS and production. As each process in a job executes, the results are recorded into the job to facilitate tracking each aspect. In addition, JDF defines a messaging architecture, which includes message formats, semantics and message protocols. JDF devices use this architecture to communicate with systems that control print production facilities. System vendors therefore are given a great deal of flexibility in terms of how they choose to use the messaging architecture and whether they provide both notification and control facilities.

Printing technology

There is a wide variety of printing technologies as demonstrated in Figure 2.1. For the established processes (principally litho, gravure and flexo), the required paper properties are now well established. For digital presses, where almost every manufacturer has a significant variant of the basic process, the required properties are less certain. Printability of papers for digital printing is still a developing science.

The key technology changes affecting printing today include:

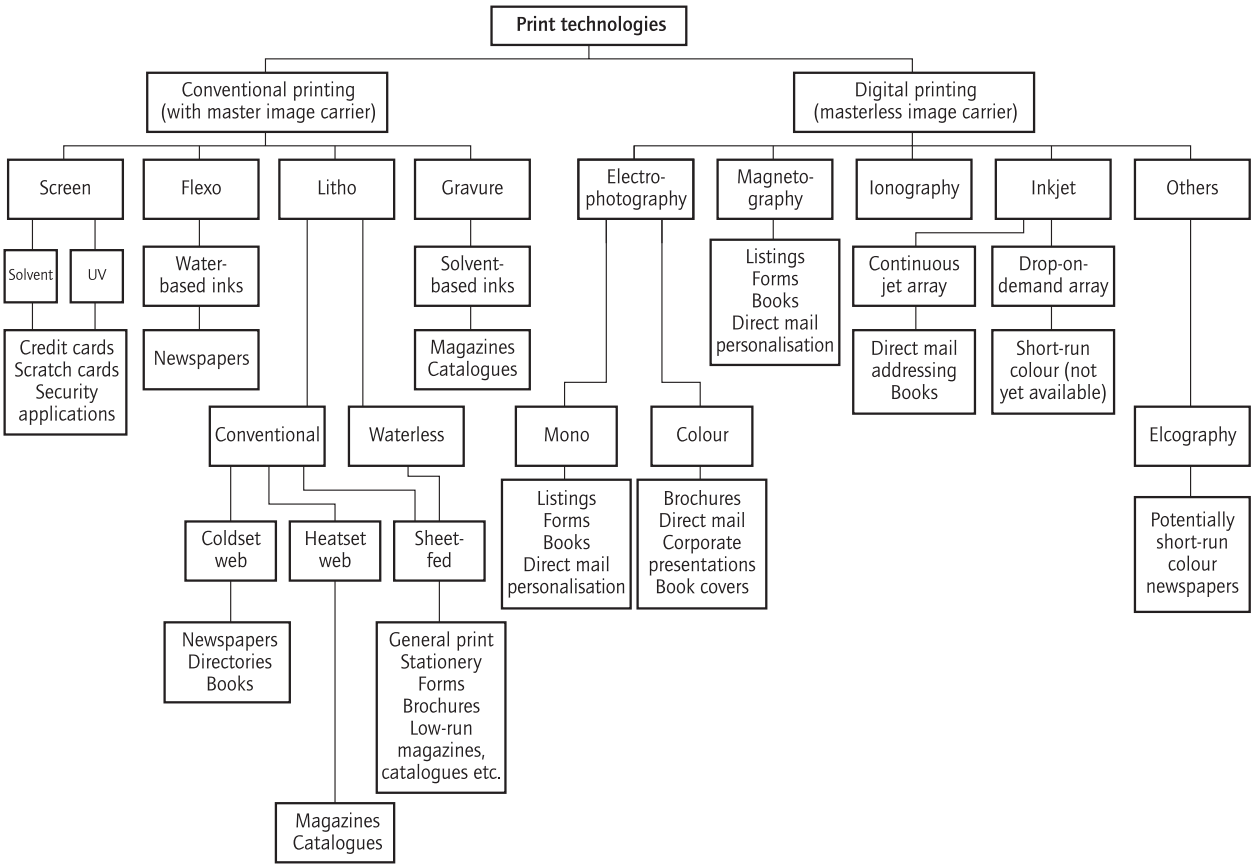
- the widespread implementation of JDF/CIP4 and integrating administration functions into a standardised electronic job ticket. This automates administration, facilitating wider adoption of e-commerce channels between buyer and producer, with some third-party involvement in some cases (broker/managed service provider or dotcom);
- faster make-ready, especially on web presses;
- wider web litho presses (48- and 64-page machines);
- installation of more automatic plate-changing;
- wider implementation of digital printing systems;
- the fitting of heatset dryers to coldset presses, to give newspaper presses the capability of printing semi-commercial sections and magazine-like products.

There is a need for improvements in finishing systems, particularly on web presses to provide different configurations, more complex folding possibilities, and permit add-on units to provide personalisation so as to provide publishers with the means to differentiate their products from others' offerings. However, the more severe technical constraints that would be imposed by more complex finishing requirements could reduce paper choice thereby limiting one means of product differentiation.

The overall impact on paper is a demand for improved printability and runnability but on cheaper and lighter grades of paper. The move towards 48- and

64-page presses is significant in this regard since lighter-weight papers are required to fold efficiently on these presses. New paper machines can produce satisfactory lighter grades that will meet this requirement.

FIGURE 2.1 Technology map showing available printing technologies and areas of application



Source: Pira International Ltd

Lithography

Offset litho is now a well developed and mature process, the dominant process measured in terms of number of presses installed, volume and value of printed products. New machines are largely automated in all set-up and control functions and, apart from improving these, there is only modest scope for additional productivity gains. There are developments to simplify the inking mechanisms by premixing ink and fount solution and using an anilox roller to provide a uniform ink film to the plate.

Web presses are not so automated but are catching up. The latest machines offer automatic plate changing and resetting, allowing typical job changeovers to be accomplished in 15 minutes. However, not all machines in use are up to this high level of automation, and consequently there will be a continual increase in productivity and production capacity at least until 2005 as older, non-automated machines are replaced.

The speed and format of new machines are designed to minimise waste. A 16-page web offset machine to deliver A4 folded sections had a cut-off of 630mm, with a plate and blanket gap of 13mm. Allowing 3mm bleed top and tail, this format equates to a waste of 27mm, or 4.3% on every revolution. Gapless and microgap technology have allowed reduction in cylinder circumference to 612mm, saving 18mm per revolution and reducing this process waste by 67%. Over the life (15 years) of a press operating 24 hours over a five-day week that runs at 2000fpm for 75% of the time using 75gsm paper, web width of 900mm, some 166,000 tonnes of paper is converted. At £600 per tonne, this reduction in gap saves some £4.3m.

The developments result in significant productivity benefits from new presses against older installed base. Recent investment in B1 sheet-fed and web offset capacity has resulted in significant overcapacity in the UK.

The use of variable sized cylinders is widespread in the forms and stationery industries; the long changeover is unlikely to be taken up in publication work. There will be wider machines and multiweb configurations to boost productivity. Closed-loop quality assurance and control systems employing artificial intelligence techniques and real-time image inspection will be offered. These systems will reduce the time required to achieve ink/water balance and hence make a substantial impact on the waste produced during the start-up phase of a press run.

The most significant development in conventional offset printing processes is the application of automation and control to minimise set-up and waste. The role of the operator will change to that of a technician, ensuring the correct materials and plates are available, monitoring consistency and troubleshooting in the event of problems.

These developments promote:

- the increasing viability of short runs
- improvements in quality and consistency of printed work.

As a consequence there is a marked change in the economics of press operation. The most apparent development is in the emergence of various digital printing systems offering high productivity and economic viability.

On-press platemaking, DI (™ Presstek) direct imaging

Drupa 2000 saw the launch of more than 20 models, although the only widely installed press in this category is the four-colour Heidelberg Quickmaster DI. The devices expose and process plates on press while setting up the inking and register at the same time. Many offer significantly easier operation than conventional litho presses, with waterless offset widely used. The benefits are quick make-ready, very low waste, and a consistent print product. The economics of effectively integrating multiple CTP units in situ on the press is not clear in many markets.

An interesting potential development is the use of reimageable plates from Asahi and Agfa that have been demonstrated with Creoscitex thermal imaging heads. They incorporate switchable polymers coated on the plate surface and offer significant improvements in press changeover times if the technology can be implemented successfully.

Gravure

Although gravure is losing market share, it is still the process of choice for some long runs. Manufacturers have introduced quick changeover systems to reduce preparation times on press so reducing the minimum viable run length. Cylinder-making is still a lengthy and costly process by comparison with litho and flexo platemaking, but for many packaging applications the stock of reusable cylinders is a significant barrier to change of production methods.

Publication gravure presses are big machines. New installations are typically in excess of 3.5m wide, with cylinder circumference up to 1.5m producing 192-page sections. They run fast, with trials at 25m/s making them very productive on long runs, equating to production speeds of up to 3200 colour pages per second from a single web, some five times faster than the fastest web offset machines. The barrier to greater output is the folder. There are still many products, for example mail-order catalogues and magazines, that require long runs and for which no other type of process is really suitable.

Gravure can produce good quality results on lower quality and lower grammage papers than would be necessary for heatset web offset. Hence, if distribution costs (e.g. postal rates) were to increase sharply, or if paper prices rose unacceptably, this would encourage more catalogues and magazines to move towards gravure.

Digital printing

Variable imaging digital printing allows the production of short-run, personalised single-copy printing to be technically and economically feasible. It is because the information to be printed is digital that the concept works. Digital print is so powerful owing to the enabling ability of the underlying IT.

Digitisation

The biggest opportunity facing communicators results from digitisation. Increasing digitisation has led to novel services and printing techniques as well as improving the efficiencies of conventional printing.

The growth of digital information is a fundamental change, providing significant implications for every organisation and business. Information is key across society and business; digitisation provides the ability to store, process, manipulate, analyse, transmit and display information via computers. This is changing the way humans live and work and the way business is run and organised. It is a key pressure changing the nature of the print and publishing industries into a broader communication industry.

'Digital soup' is a term describing the idea that, once information is digitised it is a resource, to be used over and over again. It could be combined with other digital information, it may be chopped up and used in bits and can be distributed to any location. Digitisation has made the earliest impact in financial and office-based work. In future, impacts will be in production, integration (between networks of businesses and end-customers) and in the home.

The increasing volume of information that is available, and which needs to be stored, used and communicated, is at the heart of the publishing and printing world.

Digital information can be stored, copied and transferred with no loss of quality easily and almost instantaneously. However, the human beings who use this information have not changed quite so much. The key issue for the future is not how much more information, or how fast can it be processed, but how can this information be of value. Understanding this quandary provides an understanding of the effects of the 'information revolution' for the communication process.

Digital printing allows a move from the print-and-distribute model (printing lots of copies and then distributing them) to the distribute-and-print model (distributing the data and then printing it locally). This is considered by some to be a positive development in environmental terms. Digital printing spans the gap between desktop computer printing and traditional printing. As such, it consumerises the printing process, shifting the emphasis from output to content.

In summary, digital printing:

- allows moves to smaller volume, high-added-value products and services;
- decreases the proportion of product value derived from 'manufacturing';
- increases the proportion of product value derived from service;
- requires greater commitment to customer service;
- can provide higher added value for any product or service.

Significant developments in digital printing include:

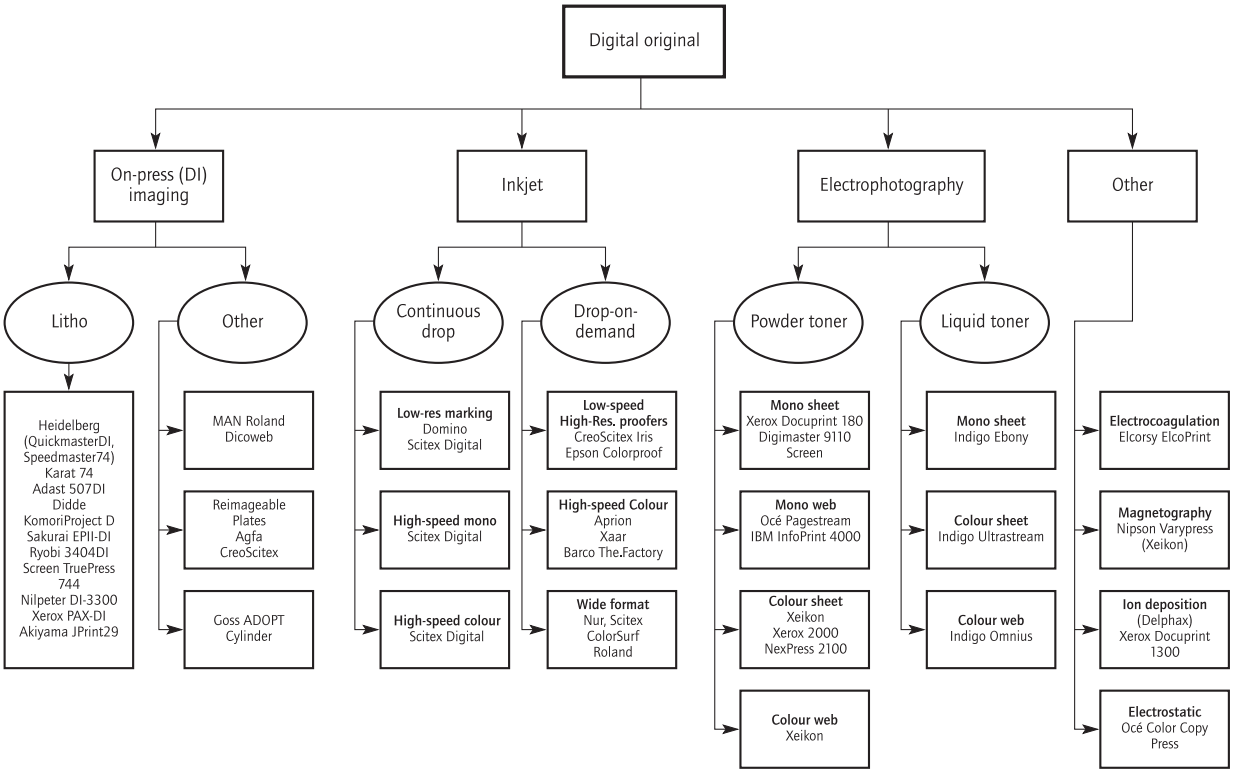
- higher quality and speed at lower page costs;
- the introduction of a wider range of web-fed faster monochrome printers (webs inherently provide more flexibility with finishing options than sheet-fed, with the capability of a variable print length);
- the development of more imaging systems.

The significance of digital print, however, is that it encourages and enables:

- change in workflow since it is one of the CTP technologies;
- a change in industry structure since it simplifies operation to the point that non-printing companies may easily adopt it.

Digital print technology is not one but many different technologies. There is a continuum between a desktop printer through to high-volume industrial systems. Every manufacturer has its own variation on the theme or even a completely different technology from all others. Figure 2.2 illustrates the range of high-productivity systems. There is an even larger range of equipment in the mid range, although these tend to be based on more standard toner, and increasingly inkjet, technologies as summarised in Table 2.1.

FIGURE 2.2 Technology map showing digital print technologies



Source: Pira International Ltd

The demand for digital print comes from fundamental changes in end-user behaviour and the need for businesses to respond to these changes and communicate better with their customers. Users are adopting digital printing for one of two reasons:

- to achieve what they do now more effectively (i.e. better quality, lower cost and faster turnround), or
- they are communicating with consumers in new ways.

There will be significant changes in the supply chain for many printed products, facilitated by digital printing in conjunction with the internet and e-commerce developments. Pressures of cost reduction and reducing leadtime are particularly severe in printing. In many cases the additional investment required to improve these situations is simply not cost effective and there is little scope for significant productivity improvements in the printing process. The printer cannot simply further reduce the costs of the process. Working with the client, the two parties will jointly seek to reduce the overall cost of supply across the whole chain by re-engineering the business processes involved.

TABLE 2.1 Summary of commercial digital print systems, 2000

Manufacturer	Model	Technology	Capability	Mode	Resolution dpi	Grey levels	Speed[a]	Availability
Aprion	BookNet	Inkjet (5.9" Magic)	Mono	Web	600		600pp in 10min	2001
	DPS65	Inkjet (5.9" Magic)	4–6 col	Web/sheet	600		60m/min	2001
Barco	The.Factory	Inkjet (Xaar OEM)	4-col	Web simplex	360	8	21m/min	2001
Canon	CLC1000	Laser copier	Colour	Sheet	400	256	31ppm	2000
Danka	see DigiMaster 9110		Mono	Sheet	600			2000
Elcorsy	Elco 400	Electrocoagulation	4-col	Web	400	256	1745ppm	2001?
Heidelberg	DigiMaster 9110	Laser	Mono	Sheet	600		110ppm	2000
IBM	Infoprint 2000	Laser	Mono	Sheet	600		110ppm	2000
	Infoprint 130	(OEM Xeikon)	4-col	Web	600	64	130ppm	2000
	Infoprint 4000	Toner	Mono	Web	600			2000
Indigo	Ebony	Liquid toner	4–6 col	Sheet	800×2400			2000
	UltraStream 2000	Liquid toner	4–6 col	Sheet	800×2400		68ppm (4-col)	2000
	Omnius WebStream 400	Liquid toner	4–6 col	Web	800×2400		64m/min (4-col)	2000
	Publisher 8000	Liquid toner	7-col	Web	800×2400		267ppm	2001
	XB2 series	Liquid toner	7-col	Web	800×2400		540ppm	2002
MAN Roland	DicoStream	OEM Xeikon	4-col	Web	600	64	130ppm	Now
Nexpress (Heidelberg)	NexPress 2100	Toner	4-col	Sheet	600	8 bit per pixel	70ppm	2001
Océ	Color Copy Press	Toner (electrostatic)	7-col	Sheet	400		25ppm	2001?
	DemandStream 8000DI	Laser	Mono	Web	600		470ppm	2000
	PageStream 1000	Laser toner	Mono	Web	300 (240)		1000ppm	2000
Scitex Digital Printing	VersaMark Business Press	Inkjet 9" head	Mono (spot)	Web	300		1000fpm	2001
	Business Color Press	Inkjet 9" head			300		500fpm (2100ppm)	2001
Screen	TruePress V200	Toner	Mono	Sheet	600		200ppm	2001
T/R Systems	MicroPress	Cluster of printers	Mono/colour					2000
	M@estro	Controller software for server						2000
Xaar	XJ128 series	Piezo inkjet	Up to 7 col	Fixed head	200		Many formats	2000
	XJ500 series	Piezo inkjet	Up to 7 col	Fixed head	360		Many formats	2001
	R4 series	Piezo inkjet	Up to 7 col	Fixed head	185		Many formats	Concept
Xeikon	CSP 320D	Toner	4-col	Sheet	600	64	32ppm	2000
	DCP 500D	Toner	4-col	Web	600	64	130ppm	2000
	Xeikon 7000 (was Nipson)	Magnetography	Mono	Web	240/480		196fpm	2000
	Varypress (was Nipson)	Magnetography	Mono	Web	240/480		344fpm 18"	2000
Xerox	Docucolor 100	(OEM Xeikon)	4-col	Web	600	64	100ppm	2000
	Docucolor 2000	Toner	4-col	Sheet	600	10 bit per pixel		2000
	Futurecolor		Process					2003?
	DocuPrint 180	Laser toner	Mono	Sheet	600		180ppm	2000
	DocuPrint 1300	Ion deposition	Mono	Web	600		1300ppm	2000
	DocuPrint 92c	Laer	Spot col	Sheet	600		90ppm	2000

[a] *Speeds are according to manufacturer specification*
Source: Pira International Ltd

Digital printing productivity is limited by the computer power used rather than by the speed at which the imaging system can work. This limitation will erode as the advancement of computer power is transferred to digital presses. These presses will have higher production speeds, probably with traditional press manufacturers applying their proven bulk paper handling skills to digital printing systems. There will be much higher image quality product.

The use of personalisation will be more widespread, fuelled by the standardisation through the use of PPML (personalised page mark-up language) to reduce data processing and possible delays at the RIP. Features common in the production printing world, error checking and run validation will move into the mainstream graphics to provide better management control and audit trails for personalised printing.

Significant developments in digital printing that will impact include:

- the development of more imaging systems, particularly inkjet technology;
- the introduction of a wider range of web-fed faster mono printers at high resolution (webs inherently provide more flexibility with finishing options than do sheet-fed machines and have the capability of a variable print length).

There will be significant change in the players using digital printing systems. Digital print will be the realm not only of specialist printers and in-plants, but also of other parties in the supply chain who wish to provide better service to the consumer. The scenario will be:

- to encourage short runs, and just-in-time production;
- to reduce the operational skill level required;
- to reduce the manpower required;
- to present new business opportunities;
- to increase competition as these machines are being installed in companies that are 'outside' the established print industry.

As well as the established suppliers such as IBM, Indigo, Océ, Xeikon and Xerox, which use electrophotographic methods, companies such as Xaar, Spectra and Scitex Digital have high-speed process colour inkjet systems under development. Of particular interest is the trend for third parties to bundle Xaar and Spectra heads on to machines for printing on to webs, sheets and objects. The announcement of an A4-page-format head developed by Agfa and Xaar may mark the mainstream of high quality inkjet digital colour for graphic arts and publishing markets.

High-volume digital printers will be web rather than sheet fed as this permits easier paper handling, especially of lighter-weight papers. Digital print systems will have an output capability equivalent to conventional simplex sheet-fed presses in terms of speed and image quality. Print costs are likely to be higher for electrophotographic methods because of the consumables and maintenance; inkjet costs may be on a par. Digital print systems will therefore sit alongside other processes as an equal, rather than a niche player.

The fastest digital press available commercially in 2000 is an inkjet system, the Scitex Digital Print Versamark machine. British Telecom has purchased eight lines to produce its bills, in other applications it can print a 360-page monochrome book in 8 seconds.

Factors limiting the rate of take-up of digital processes include the following:

- Lack of a good inline binding system (i.e. one that will give results, especially for books, as good as conventional binding methods).
- Unreliable technology with too high downtime – a print company needs to have back-up to allow sufficient confidence of being able to deliver.

- Lack of appreciation of capability of digital print systems by customers – especially the ability to personalise and customise content (related to this is the lack of databases with suitable content and personal profiles).
- High cost of consumables and maintenance.
- Inadequate print quality, although this is changing rapidly.
- Printing speed too slow.

Print process market share

3

The Prima survey results, modified by the Focus Group discussions, suggest that the market shares of print processes are as shown in Table 3.1. However, the large degree of uncertainty in these figures should be recognised. Nevertheless they are in broad agreement with studies in the USA (e.g. Frank Romano, RIT) that predict that digital print (i.e. digital plus desktop in Table 3.1) will have a 25% market share (by printed area) by 2010.

TABLE 3.1 Market share of print processes by value, 2000–2010 (%)

	2000	2005	2010
Litho	62	60	57
Gravure	22	21	19
Digital	4	6	11
Desktop	5	7	9
Other	7	6	4
Total	**100**	**100**	**100**

[1] *This table does not include packaging, where particularly flexo is making significant gains.*

[2] *Digital refers to 'production scale' printing systems that would be typically used in a printing company.*

[3] *Desktop refers to network and other office digital printing systems that would be used in an office or at home.*

[4] *Other includes flexo (a few newspapers), screen (some promotional and transactional print), and letterpress.*

Source: Prima report

Some important issues emerge when considering this type of data. For example, gravure's, market share in terms of area printed has probably grown recently, but since print prices have been declining year on year, expressed in value terms its market share is reducing slowly.

Another difficult area is that of desktop printing, much of which has no commercial value attached to it since it is simply produced in the day-to-day operation of non-print businesses. Furthermore, if one was to value it realistically, the cost per A4 sheet would probably be very high (slow production, high consumables costs), giving an inflated view of market share in value terms. In area printed terms, its market share is likely to be lower. However, cut sheet paper for office and other desktop machines is the most rapidly growing sector of the paper market.

Printers

4

Activities carried out: what is a printer?

The role and identity of printers are changing. New technology and increasing business pressures result in new uses of printed products. After 500 years of being the only permanent medium for mass communication the print sector has a viable competitor with the development of the internet and online services.

There are some 14,000 printing companies within the UK. The vast majority are small (less than £800,000 (€1.25m) sales) employing fewer than eight people, while there are multinational operations employing thousands across continents at the other end of the scale. There is no meaningful standard characterisation of a printer; some have even migrated away from the business of applying ink to paper as they strive to serve their clients better.

The range of products and services offered is developing and increasing all the time, while traditional products are being produced ever more efficiently in less time. The biggest change happening now is in the way that printers interface with their customers (and to a lesser extent with suppliers), to ease and automate the complex administration and design/prepress activities necessary to produce a product.

Printing companies are looking at themselves and their business models critically. The interpretation of events and future prospects are different and an interesting split is being seen. On one side there is the traditional print specialist who is investing to increase the efficiency of the print production processes for clients who depend on printed products. Their strategy is to improve their cost position and reduce the leadtime of production, still building their businesses around print. All forecasts show significant increases in most print markets (with the exception of business forms and some transactional print products) for the foreseeable future. These businesses are trying to develop their key competencies to compete with other printers and with the emerging new media. Producing high pagination magazines with a variety of advertising is not simple; these businesses understand the pressures on their customers and they are trying to develop their people-based customer service approach to encourage the publishers to view print as their most important medium.

Other businesses are trying to provide alternative media products, or in most cases multimedia products. In some cases the strategy is to help their customers develop online capability. Printers with good prepress and IT skills are well positioned to take advantage of these developments. The complexity of the print requirement in many cases means that the print-ready files can be altered and sub-sampled to provide data useful for other media. An A4 high-resolution CMYK image will typically be some 60Mb; the same file for inclusion on a web page must be changed to RGB and have a resolution of typically 72dpi, sized at maybe 20Kb after being compressed into JPEG format. It is easy and straightforward to convert the print version for use on the web; going the other way and increasing detail and information is impossible.

Growth strategies

Historically, *every* printing company in existence has used one of three areas to compete:

- price
- quality
- service.

With the advent of modern communications technology there are now opportunities for a fourth area: to develop additional products and services. When choosing to compete on price, the printer must ensure there is a significant cost advantage for the company or the margin will be insufficient to maintain investment and retain the cost advantage. This is not tenable for a small company although low prices are an important tactic when trying to win new business.

The quality of print is a property that many suppliers believe is a differentiator; in reality with modern equipment and a well trained staff it is very difficult for companies to compete on quality. Quality tends to be a disqualifier: if the supplier does not have the equipment (prepress and print) to meet the latest six-colour hexachrome demands then they cannot quote for the job. Customers now demand quality in terms of fitness for purpose and on-time delivery as the bare minimum service requirements.

Too often quality is considered the achieving of a good printed result, rather than as a system to ensure all products are manufactured efficiently to meet an agreed specification for the customer. This means applying old-fashioned quality control (i.e. removing non-conforming product manually after it is produced) techniques rather than applying internationally recognised standards of quality management. Systems such as ISO 9000 ensure that the production process is geared to provide good quality first time, with continual monitoring and approval instead of checking the finished output each time. These systems ensure that materials and time are not wasted in producing bad product. If companies wish to enter export markets on a large scale then many print procurement agencies demand accreditation to the quality management standards. Today, quality is not a serious source of competitive advantage; it is a basic requirement in order to compete. It is not enough to be able to produce a good result; the supplier must be able to demonstrate that the result is good, and consistently so.

The third source of advantage is in service. This is primarily aimed at reducing the leadtime to produce the print, and ensuring that customer deadlines are met and exceeded, *every* time. It is generally the most effective source of competitive advantage because by developing particular systems and relationships with clients the printer can differentiate themself from the competition. Physical location may make it difficult to compete on fast turnround items outside the vicinity, but for non-time-sensitive items there may be an opportunity to compete or to use the emerging communication and distribution channels to allow some niche competitive areas. Simple jobs can be easily obtained from a variety of suppliers.

A good example is Personal Printing Services, a small New Zealand printer who sells mono business cards (printed litho) over the internet (www.personalprint.co.nz) across the world. Their site offers an easy-to-follow job set-up and ordering mechanism (would you like some labels to go with these cards?). It provides competitive prices (very favourable for some currencies), reasonable ordering cycles, guarantees of service and quality for the customer. For the printer there is the opportunity to attract new business and make the existing capacity utilisation more efficient.

With the advent of new technology and changing customer demands there is a fourth strategy emerging: to offer additional services to existing clients. These services will be based on the core competence of the printer, moving forwards into the design and specification of printed items, or backwards into the management of printed products. To develop printing it may be necessary to move into alternative technology, such as digital print, to offer new personalisation and cost-effective short-run printing. For example, the printer can offer a customer purchasing stationery a managed service, monitoring the stock consumption at the customer site and ensuring that the customer never runs out.

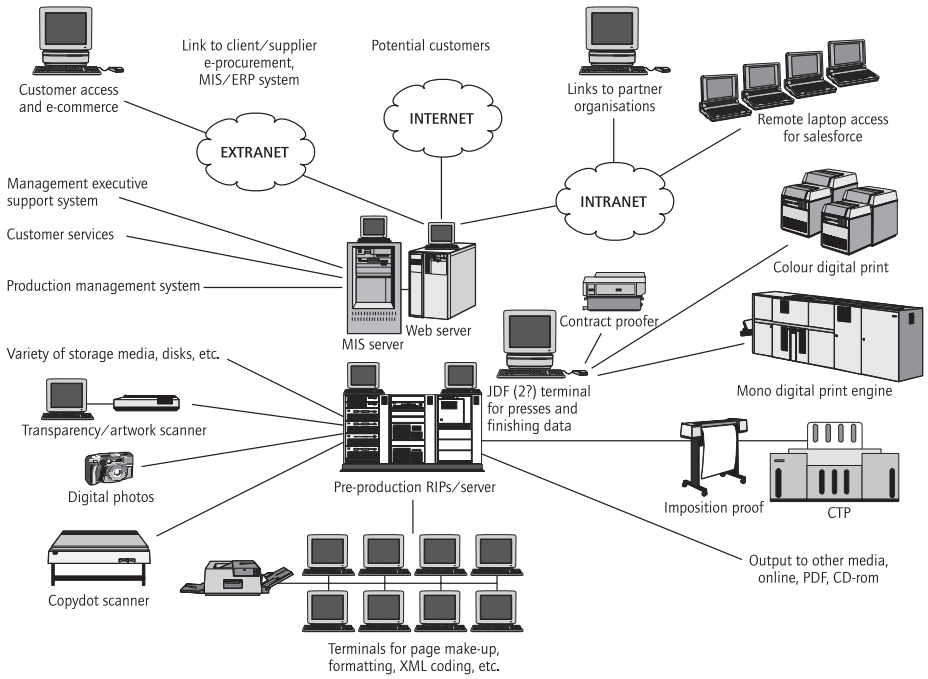
Potential new products and services

Tools to allow a printer to hold data independent of format are now available. This would allow the printer to output the same customer data directly to conventional print, digital print, CD-ROM or to an online application with little (or no) manual involvement.

Front end

Figure 4.1 represents how any printer might be in 2003.

FIGURE 4.1 Schematic diagram of future IT and media data system at any printer in 2003



Source: Pira International Ltd

The diagram shows schematically the capability of moving towards becoming a communications company, managing data on behalf of clients. While it looks complicated, the essence is to maintain the printer's strength of formatting data and information for printing, using the most effective production to carry out the print and to offer additional services on behalf of the client. The other trend is for the integration of the MIS with production equipment.

Digital asset management

The management of content will become key, to provide, prepare and manage a centralised asset management database. This becomes the repository for all graphic elements within a relational database. Items (pictures, text, logos, illustrations, templates, documents, pages, publications) are catalogued according to customer requirements, following the corporate branding specification. Elements will have metadata associated with them: descriptive (keywords, what is it, what form, what colour, etc.); physical (type of file, dimensions and file size, resolution, colour space, etc.); and workflow (is it ready for use, where is it in the production schedule, as full audit trail). These keywords allow sophisticated searching on all communication material while providing maximum production efficiencies and optimal workflow, reducing leadtimes.

The database will provide total audit trail capability of all elements and the progress of projects. It may be networked, providing access-controlled customer service, client and approved client agents in a secure, controlled manner. Customer service agents (perhaps a help-desk operation) and clients have direct access to their prepress material to aid the design, selection and format of their graphics communications within corporate branding requirements. This improves quality, ensuring that customers' expectations are met. The benefits include:

- all communications are catalogued with the correct, latest versions available;
- consistency of branding is maintained;
- consistent repro services across a distributed organisation (interdepartment, intercompany and inter-country) is possible;
- redundant designs and elements are archived off-line;
- electronic selection and delivery of low- and high-resolution files;
- design templates and files available for designers;
- complete library for reference is available;
- the latest version is always used;
- ability to update elements of design across all communications;
- useful data can be associated with the graphics (metadata), totally customisable to client requirements;
- detailed search and query capability;
- PDF versions containing artwork and complete specification are available;
- complete workflow record;
- complete audit trail of prepress is available;
- individual graphics elements available as well as finished pages and projects;
- remote colour-managed proofing ICC colour profiles for litho, screen and proofing devices to ensure total consistency between proof and final card;
- access via the internet to any web client browser (Mac or PC);
- total firewall security with controlled access privileges for customers and their agents;
- workflow and production management (job progress) information is available.

Digital assets are catalogued incorporating suitable metadata (e.g. source, designer, operator, time and date and revision number, audit of elapsed time the file is open, status,

file format and size, etc.) while the operator adds specific information (systematic file name, position in the database hierarchy, keywords, copyright and permissions). Additionally the server will track the activity of all clients (workstations, individual personnel and remote users), assigning access and revision rights automatically.

Maximum flexibility for searching is provided. There is a job-tracking progress function allowing relevant personnel to assess progress against deadlines. There is regular automatic back-up provision to eliminate the problem of data loss. The archiving system and format are capable of providing input to intranet and internet servers.

The system can integrate into the administration system of supplier and customer, and be a part of any e-commerce solution. This allows control over updates of unique batch numbers and security features to smooth the production function and eliminate errors.

Systems track all use of every element to develop a suitable charging mechanism; a transaction-based model with a pricing menu covering:

- entry into the database
- access to the system
- reuse of images
- delivering files to third parties
- updates and changes
- making proofs
- making print-ready films and plates
- providing print-ready files into printer job queues.

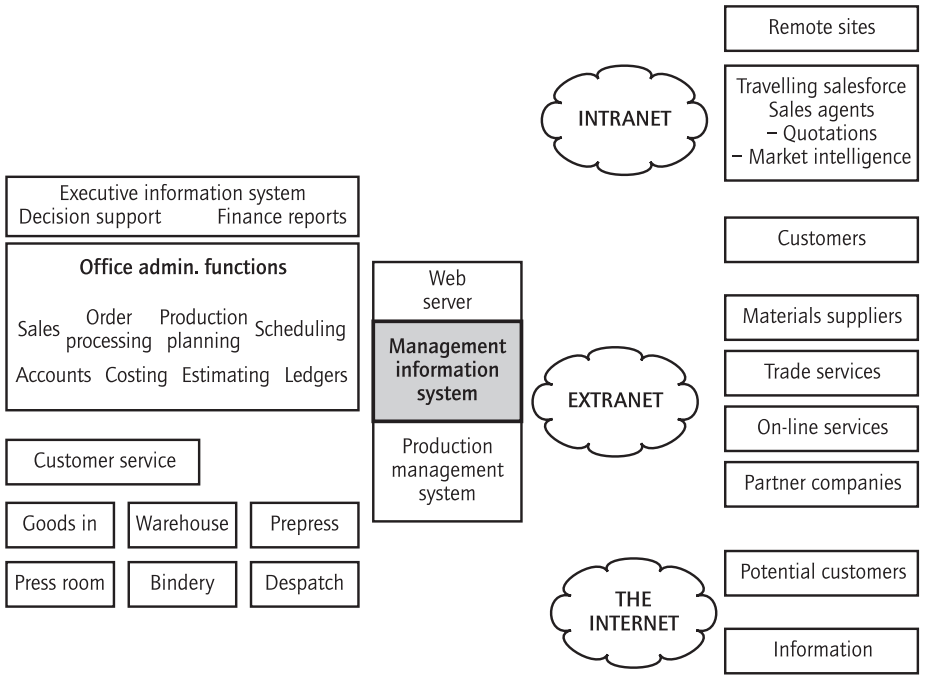
The front end encompasses developing the existing prepress and administration facilities into key components of customer contact points. Printers should explore the possibility of developing partnerships with other concerns to offer a wider range of services to clients. Any IT capability should develop a website, maybe with one of the developing service providers serving the printing industry. The other development of e-commerce that will aid particularly small printing operations is the collaborative aspect. Printing companies are tending to polarise, either into large groups or very small operations. The internet will aid the links between groups, allowing more efficient utilisation of their assets to provide better services to clients. Additionally it will allow many small operations to share each other's facilities and provide a wider range of services. There are many examples now, although these tend to involve non-competing areas – a small offset printer working with a graphic designer, repro company and specialist finisher to produce a job for a client – but there are few examples of directly competing printers working together. There will be increasing examples of the 'distribute and print' model evolving as the cost of digital transfer drops and the standardisation of output improves. A key feature of the printer's system will be the ability to distribute work to the most effective location, to minimise distribution costs and time.

Development of MIS and e-commerce

Printing involves transferring formatted information from originator to recipient. This information can be customised and personalised for the recipient. The internet allows the direct transmission of these communications. E-commerce provides the mechanism to reduce administration costs and the time involved in supporting these products and services. This increased efficiency will ensure that the current situation is not a short-term fad.

The widespread adoption of e-commerce solutions will allow printers to reduce their administrative burden. The MIS and the e-commerce system will integrate, as shown in Figure 4.2.

FIGURE 4.2 The integration of MIS and e-commerce platforms by 2005



Source: Pira International Ltd

The form envisaged will allow the client to see a single interface to print buying, customer service, production processes, distribution and archive. This development will aid the adoption of digital printing by reducing the associated overhead of administration in cost and time.

To operate effectively there will be three integrated servers: for production (the development of prepress digital asset management servers), the MIS and a web server. It is likely that the web and MIS server will be separate for security purposes. In fact there may be multiple web servers configured for individual customers to keep their content secure.

What is e-commerce? Despite the razzmatazz of the new e-business companies, e-commerce is simply the use of electronic communications to conduct and support a business transaction.

Any business (particularly in the ultra-competitive, me-too print industry) is defined by the information that the market holds. Three of the marketeer's key tools for supporting a product (place, price and promotion) can utilise the internet as a channel to carry the message far and fast. Marketing is changed and the internet becomes a supporting channel and a direct sales channel for many products and services. It is happening in many industries; printing is no different. The actual process of purchasing is an exchange of information and can be accelerated by the internet.

The dotcom phenomenon will not fizzle out. The players will come and go, generating headlines and confusion associated with any industry transition. Only a few players have arrived so far: they are jostling for attention to gain the leadership position that will allow them to dominate and prosper in the future. They are all learning and defining the game. There will be high-profile casualties, mergers and takeovers.

Printers and print buyers should not ignore dotcoms. The same arguments that surrounded the emergence of the desktop publishing revolution are being trotted out. The same arguments also surrounded the advent of desktop colour. These arguments suggest that administration and workflow of print jobs are too complex to be handled by a computer, and anyway the jobs are not in the correct format and there are no standards. These are hygiene issues and will be systematically solved. The prize is too great for the print purchaser: the opportunity to re-engineer the supply chain and to take out significant blocks of cost and time.

The main benefit of e-commerce is the increased productivity achievable in the selection, purchase, manufacture, delivery and administration of a transaction. This could be buying, selling or supporting the business process. In printing, the business-to-business process (to support ongoing relationships) is the most important, with direct channels to end-consumers an interesting possibility for digital printers.

Digital print

Conventional printing companies should examine the potential of digital print, both mono and colour. Mono digital printing is becoming increasingly common in the armoury of book printers. There are many printers available capable of 600dpi and more at various formats and speeds. Such a device can be operated unattended (an operator sends a file and ensures the machine has paper and then comes back when it is finished), allowing significant improvements in output with no additional staff. As well as books, much stationery could be preprinted and have the personalisation details added digitally. This could allow use of standard sizes of paper and reduce trimming and finishing.

When considering a colour digital press the most important factor is the front end data preparation and handling side of the business.

Customer print management

Some printers are concerned about the rise of the 'facilities management' organisations and the trend for many customers to outsource their print-buying requirements. One option is to consider extending the range of products provided, adding value by helping clients to better service their print procurement. This might involve implementing a stock management system for clients that take business stationery, with the delivery person monitoring stocks

at the client. Companies might offer to sell on a consignment basis, providing stocks at client's premises and invoicing on a monthly basis what is used. The objective is to develop a closer relationship with the client in order to take over the administration and hassle involved in print procurement. Increasing 'transparency' at the client helps the printer to operate a smoother production flow, increasing efficiency, and offers the possibility of selling more products (unprinted stationery and office supplies) to the client base.

Techniques of business process re-engineering (BPR) should be used to examine the procurement process, identifying opportunities to reduce the overall cost of purchasing while maintaining and increasing the value to the client.

E-commerce is probably the biggest change affecting print procurement. Many large corporates are using standard-platform e-procurement systems to purchase goods and services and they are increasingly using systems to specify and procure print. There are several systems developed specifically for printers and print buyers. One small company has been successfully using the PrintChannel e-commerce system to develop the relationship it has with both large and small clients, as well as serving customers' e-procurement channels (particularly Ariba). PrintChannel was chosen after a study visit to the USA. The company is very pleased with the technical side of the system but is looking to an alternative to avoid the percentage payment.

The service offered is a personalisation into predesigned templates. The customer inputs details and a PDF is generated and sent to the client. When approved, the PDF is passed to the company's prepress for imposition and printing, along with order details, etc. Benefits are significant labour savings and increase in prepress capacity (particularly with CTP), and the ability to offer improved service to clients to help retain loyalty.

There is no link with the company's MIS: it is planned to generate the administration details automatically by the third quarter of 2001. The other link that is missing is with client Ariba systems: a standard would be beneficial. The increasing e-enablement of print procurement is both a threat (more transparency) and opportunity (to attract more clients). The transparency issue is critical on open procurement sites (such as Ariba or Commerce1) where other parties may see pricing and capacity information openly. Their strategy is to attract clients rather than reacting to demand from customers. Timing of the development is important: providing customers with e-empowerment is a useful selling tool to allow buyers to demonstrate new capability with their companies. PrintChannel classifies customers as 'golden clients', offering them the preferred channel to develop the relationship and provide new services.

What drives investment?

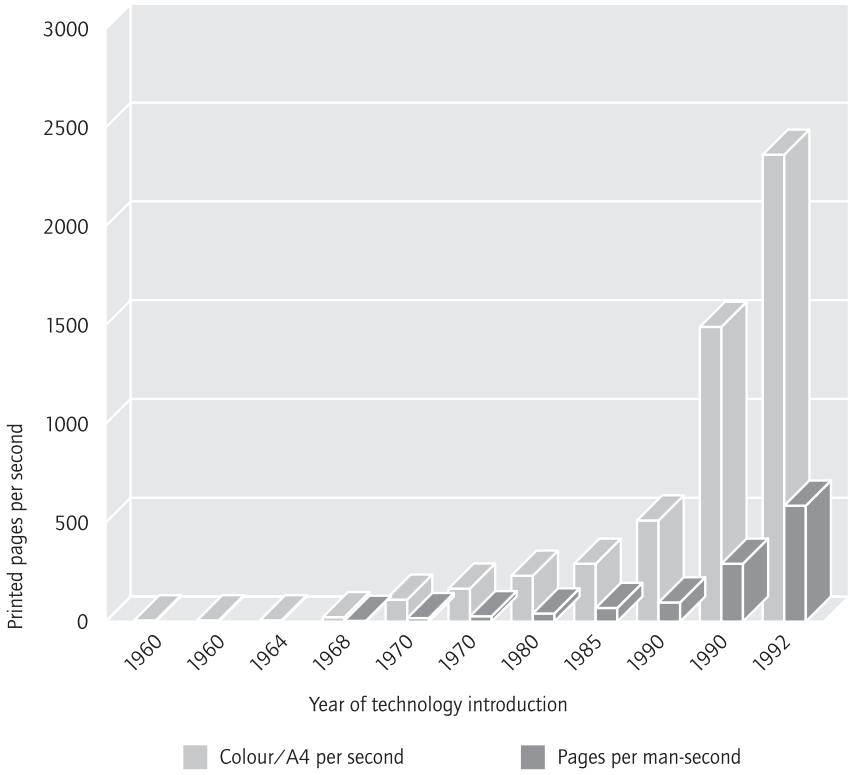
Printing is a capital-intensive industry, requiring considerable regular investment to maintain competitive position. As new technologies develop older equipment is rendered inefficient and uncompetitive. New generations of printing press have reduced make-ready time while increasing speed. These developments were continually happening: a major piece of new equipment depreciated over ten years was invariably less productive than any newer model, if not obsolete, long before the end of the depreciation period.

The driver for investment has predominantly been to increase efficiency by using various automation aids to greatly increase the productivity of the device and associated direct labour. The technological development by press manufacturers has dramatically changed the competitive position of print companies. Figure 4.3 shows the productivity increases in terms of colour A4 pages printed per second at the manufacturer's top-rated speed.

FIGURE 4.3 Productivity improvements of printing press technologies with their dates of introduction

Date of acceptance of technology	Development	Format (A4pp)	Speed copies/phr	Web speed	Fpm manning	Colour A4pp/sec.	Colour A4/sec./man
1968	4-col litho sheet-fed	8	4,000	n/a	2	8.9	4.4
1970	4-col litho sheet-fed	16	5,000	n/a	3	22.2	7.4
1970	16-page web offset	16	25,000	approx 800	5	111.1	22.2
1980	16-page web offset	16	40,000	approx 1,200	5	177.8	35.6
1985	16/32-page web offset	16	55,000	approx 1,600	5	244.4	48.9
1990	32-page web offset	32	35,000	approx 2,000	4	311.1	77.8
1990	Twin web 32-page web offset	32	60,000	approx 2,000	5	533.3	106.7
1992	Twin web 32-page web offset shortgrain	64	85,000	approx 2,200	5	1,511.1	302.2
1995	Twin web 'Sunday' press	48	180,000	approx 3,000	4	2,400.0	600.0

Source: Pira International Ltd



Source: Pira International Ltd

In practice, the top speeds indicated in Figure 4.3 are not always attained, but the pro rata benefits will still apply. Most of the recent press developments have concentrated on reductions in make-ready and set-up. On a new sheet-fed or web press with automation aids, a make-ready time of 15 minutes for a complete changeover is commonplace.

This puts the owner of older equipment at a severe production disadvantage. While older equipment may be paid for and have a low depreciation charge, the additional running time and waste, particularly in terms of direct labour, will be higher. Thus the variable costs of producing a job (together with cash outflow) will be higher when using older equipment than with the new technology.

This is a dilemma for printers: delay investment and the competitive position gradually declines until new technology is well established, at which point the position very rapidly deteriorates.

Labour

The skills and profile of typical personnel in printers have changed greatly. The days of the craft artisan building up useful experience are gone. In the past few years even the terminology has changed: recruitment advertisements now offer positions of 'machine manager' instead of the traditional printer or minder.

This is particularly important in prepress and digital printing, where IT and specialised digital file handling skills are critical. Several interviewees for this study identified the potential shortage of these people as a major threat to the continuing success of the industry. Administration personnel must also be well versed in IT skills: the role of integrating systems with clients and suppliers is increasingly important.

Competitive position

Printers have complained about overcapacity in the industry for over two decades. The situation in the UK is getting very serious.

Capacity

The biggest issue facing large web printers is the supply-side overcapacity, particularly for the UK. In 1998, the UK web industry saw the exit of Donnelley's (Ben Johnson) and Europrint, a loss the equivalent of ten 32-page web presses. This was beneficial for the remaining printers, with a UK capacity of some 105 32-page presses across the industry. The good times spurred many companies to invest so that there will be some 140 press equivalents (actually 125 of various format but with significantly higher productivity than the 1998 average model providing the further boost) in operation in 2001. The end of November 2000 saw significant investment announcements from Artisan Press and SouthernPrint.

In 2000, there has been the well-publicised loss of significant web contracts (estimated at some £40m) across to Europe. Much of this is owing to the £/euro exchange rate rendering the UK too expensive. A lot of time-insensitive work, particularly long-run mail order catalogues, is now produced on mainland Europe, with UK gravure capacity used to produce longer-run magazines, moving these titles from web offset. Although there is growth in magazines there is widespread belief that the market cannot sustain and

accommodate this capacity and there is bound to be rationalisation. This is the biggest issue facing the UK web market in the short term.

A similar pattern has impacted the large format (B1) sheet-fed market, with recent investment in eight- and ten-unit perfecting presses, putting the operators of four- and five-colour machines at a significant disadvantage for production of double-sided print.

Customer demands

The key driver for many businesses is the pressure that their customers are facing. Increasing competition forces all businesses to continually examine their costs and time to market, forcing better service at a lower price. The macroeconomic environment means that currency fluctuations provide additional pressure for highly valued currencies on products that are not time sensitive, providing further indirect overall reduction in demand. At the same time there are opportunities to improve the customer relationship and provide additional products and services helping to improve communication between businesses and their customers.

Customers are demanding to be treated as individuals. They are looking for what they want, when they want it, at the lowest possible price. Every business ultimately serves these individuals and must change to satisfy this gratification, instantly.

Corporations can spend up to 15% of their revenue on the origination, printing and distribution of graphics material and documents (from office memos to manuals, contracts, bills, statements and promotional material). The fragmented structure of the industry has resulted in printing's being regarded as a necessary service, treated as a commodity for which it is not worth developing a strategy to improve its overall efficiency. The characteristic is to buy better, reduce the supplier base and develop advantageous pricing.

This ignores the fundamental behavioural changes of customers. Customers demand more from all their spending; they are more likely to become and remain customers of organisations that present their products and services effectively. Recent technology developments mean that organisations can gain competitive advantage by building a strategy to maximise the value of customer communications.

The emerging communication products will support the customer relationship management activities of clients, many of whom will choose outsourcing to manage the process effectively. Shortening run lengths, leadtimes and customisation demands will lead to increases in digital printing. Printers will develop their core competences (prepress, high-volume ink on paper conversion, and finishing and distribution) to serve the variety of formats and distribution channels.

Printed products will be produced more effectively as one part of the overall communications process, in tandem with electronic products. Quality and consistency will be improved to promote corporate branding, with media databases ensuring the correct content and latest branding architecture, and colour management ensuring the integrity and consistency of colours in all print and electronic communications.

The emerging technology developments will allow lower-cost, faster, better-quality communications, with more control to ensure that the effectiveness of the communication is enhanced.

E-commerce will make the specification, procurement and administration of communication products easier and cheaper. The pricing, ordering, production and delivery systems will be more transparent to the customer. Intercompany and wider industry systems are developing for stock items and 'simple' structured documents. Many communication products are too complex to allow automatic preparation of the documents at present, but systems will develop to allow automatic assembly of customised content, with branding consistency maintained by colour management and control.

The landmark book by Peppers and Rogers *The One to One Future: Building Relationships One Customer at a Time* (Piatkus, 1996) coined the term 'one-to-one marketing'. This concept radically changed many marketing approaches: instead of developing strategies to increase share of a market, their concept was to build individual customer share. This involves identifying and serving a customer, selling as many products and services to that individual. The new digital print technologies enable this process to be successful. Find and convert a prospect into a customer and then find new products to supply to that customer. It is this concept that is behind much of the consolidation that is taking place in financial (and other) sectors serving consumers. As a bank, the relationship with the customer can be developed to supplying additional financial services, and perhaps other products and services. This process of customer relationship management (CRM) is a key strategy for many businesses.

Once a customer has been obtained, the supplier invests effort to discover their preferences. It is worth the time and trouble (and cost) to do this, as over the lifetime of an individual there will be many opportunities to conduct profitable business. This is not a short-term opportunity. IT developments allow marketeers to track the sophisticated status and preferences of millions of individuals. New communications technologies allow these companies to provide tailored, individual communications to develop the relationship. This is CRM, a key technique allowing companies to provide the tailored products and services demanded by individual customers.

CRM involves the consistent application of up-to-date knowledge of individual customers to product and service design that is communicated interactively, in order to develop a continuous and long-term relationship which is mutually beneficial. It is a set of technologies that enable organisations to collect customer, transaction, service and demographic data from internal and external sources. These data can then be analysed to acquire, retain and service valuable customers effectively. The internet is one of the enabling technologies, allowing marketeers to gain tremendous knowledge about their customers. CRM means anticipating customer needs and delivering what they need, when they need it, through an appropriate mix of products and services. The goal is to serve those needs for the life of the needs – and ultimately to sell more products and services.

For example, a garage could sell an individual a car and provide a finance/leasing offer of maintenance, tax and insurance. This situation allows the vendor to provide service as part of the product. Since finance and insurance are not core competences, that service is provided by partnering with a financial institution offering banking and insurance. Over time, the garage will send personalised maintenance reminders to the owner at appropriate intervals, maybe with a coupon for the branded oil/tyres/parts to be changed. In exchange for this added value, the car owner provides information to the dealer about lifestyle and how the car is used. This information may be collected informally when the car is delivered/collected, or through a service questionnaire. Further information is obtained by servicing the car. The customer data might be used to customise the service reminders – perhaps adjusting the time intervals at which they are sent, or the service offered. The dealer may also offer deals on car parts and accessories and related lifestyle goods (luggage, winter sports gear, etc. suitable to the profile of the driver). If a child-seat is installed then suitable children's offers could be made.

The dealer knows when mileage may signal the need for a new car, so when it is finally time for that owner to purchase, they receive a customised brochure with products targeted to their lifestyle, driving habits and personal preferences. The goal is to build the customer's loyalty and retain that customer – for the life of the car, of the dealership and of that customer's need for a car.

Many companies with effective systems in place are reluctant to share details or results because they provide significant competitive advantage and are kept confidential. CRM is the successor to mass marketing and is enabled by database technology allowing a mass marketeer to address an audience as individuals, despite the large numbers involved.

The four goals of a CRM programme are customer acquisition, customer retention, cross-selling and up-selling – in other words, increasing share of customer, in addition to share of market. In business, understanding and implementing CRM is key to building and nurturing relationships with customers. CRM activities are currently supported by documents; future activities may be direct electronic communications. The process is a three-stage one:

1 Obtaining prospects – marketing communications (brochures, direct mail).
2 Converting prospects to customers – business communications (offer documents, forms).
3 Developing existing customers – financial communications (payment, bills, statements).

Print companies with digital capability and good prepress and database skills will be well placed to aid the CRM processes of their customers.

Outsourcing and beyond

Document outsourcing is growing at an impressive rate with several companies enjoying fast growth providing e-enabled print specification and procurement services. The world is moving from the industrial era's 'I own everything I need to meet all my and my customers' needs', to the information economy's 'I am involved in alliances that allow me to meet all my customers' needs by partnerships with other suppliers and my customers to develop the infrastructure required to build a seamless community.' In the past, a company would

provide specialised services as a totally independent supplier; now that is not possible. Outsourcing is the strategic use of external resources to perform major non-core functions traditionally handled by internal staff and resources, using specialised, efficient service providers. Organisations always hired special contractors for particular types of work (cleaning and catering lead to wider applications, particularly specialist IT functions), or to level-off peaks and valleys in workload. Companies have always partnered to form long-term relationships with others whose capabilities complement their own and they have contracted to share access to resources beyond their individual reach, maybe property, technology or personnel. The difference between subcontracting and outsourcing is that outsourcing can involve wholesale restructuring of the corporation around core competences and outside relationships.

Document outsourcing and facilities management is a growing market. Solutions providers offer traditional and on-demand print services and also take on new roles. These will centre on the content management and infrastructure to ensure efficient distribution. New technology means expertise in web authoring and total site management while providing the necessary networking capability. Conventional activities may include acting as a direct mail or database management consultant, librarian (archival and retrieval), designer, warehouse, and advertising or fulfilment partner. Players include traditional print brokers, printers that have moved into print and communications management, and former in-plants that have been sold off from the parent company.

Large corporations will invest in long-term, mutually beneficial strategic business partnerships for document management, not merely to bid out print jobs to a partner.

Summary of successful business strategies in print and publishing

5

From the interviews that were carried out in relation to this study, the following themes have emerged. Which in several cases are applicable to both printers and publishers. Chapter 6 discusses some further points related to publishers. Since the companies interviewed are successful businesses, it is assumed that this might be related to the way in which these strategies have been applied.

Key pressures

Most companies recognise the key pressures on them and respond positively. Successful companies pre-empt these pressures by responding to the pressures on their customers.

All businesses have pressure to reduce their prices and improve their time to market. For print and publishing, specific pressures include:

- Market pressures
  - Reduced demand for some products
  - Run length reductions
  - Timescale reductions
  - Cost reduction.

  These factors can be tackled by evolutionary change but better results may be obtained from business process re-engineering such as is being applied to the on-demand production of books.
- Legislation pressures
  - Health and safety
  - Employment conditions
  - Environmental legislation.
- Technological pressures
  - Digital workflows and communication
  - Automation
  - The need to 'keep up', maintain leadership
  - Technical complexity.

If ignored these factors reduce production efficiency, competitiveness, and detract from the core business. Successful companies make these items specific responsibilities of directors, or appoint specialists (possibly on a part-time basis).

Unique selling points

Successful companies have developed unique selling points (USPs) and know what they are. In the past a typical print company would position itself around the conventional criteria of price, quality and service. However, these no longer provide a differentiation from other companies; in fact, good performance in each is a basic necessity to compete. USPs, or more correctly, 'differentiators' since it is practically impossible to be truly unique, must be developed in other areas of product and service. Examples are:

- one-stop-shop service provider
- 'firepower', i.e. the production capacity to take on large jobs and yet produce them in very short timescales
- unique equipment

- unique expertise
- digital print services
- design services
- typesetting and text processing services
- geographic spread.

Company structure

Successful companies have a designed/managed company structure – it is not the result of accident – and the structure is as it is for some good reason. The following are examples:

- An all-in-one model but with a well-defined departmental structure so that costs can be allocated, targets set and measured, etc.
- A separate companies model where companies in the group inter-trade. In this case, a flow of invoices takes place that enables costs and performance to be tracked.
- Keep the maximum size of any individual unit manageable, accountable and efficient. Larger companies become unwieldy and inefficient.
- Separate manufacturing from sales and administration.

Use of management information

Successful companies use management information effectively, for example:

- Monitoring key performance indicators on a regular basis, following the trends with a moving annual total model. Important ratios include: gross margin; AV (added value) /employee; AV/£labour; return on sales; return on capital employed.
- Knowing the most profitable products and product mix.
- Measuring performance as a means to continued productivity enhancement and a constant drive to reduce costs and add value.

People

Successful companies recruit carefully, train and reward. Less successful companies poach. Examples are:

- Investors in people schemes.
- Recruiting enthusiastic young people with good basic intelligence and an aptitude for production, then training them well.
- Creating individual training programmes for every member of staff (directors to cleaners) aimed at raising their level of performance and ensuring successes are well publicised.
- Providing mechanisms for staff to participate in the company's success.

The printing industry in particular is 'ageing' as the number of young recruits is relatively small. There is concern that the industry is not attractive and able to recruit the necessary talented staff. As time goes on this will make a recruitment strategy based on poaching increasingly less successful.

Customer service

Successful companies provide superb customer service, anticipating customer needs and outperforming their expectations. Examples include:

- Providing an account manager system. Providing regular reports to customers on the costs and historical account details, with trends presented in their preferred manner. Many will allow customers to do it themselves in a way that manages the transparency.

- Provision of warehousing and fulfilment services (moving into preparing the mailing list and handling the responses as well as managing a direct mail campaign).
- A 'we will manage the complexity, so you don't have to worry' approach.
- Providing electronic communications to support interaction with customer – e-enabling their communication needs. In many cases, plans exist that are not yet fully implemented, although some companies are leading the way.

Growth

Successful companies have a growth strategy to achieve and maintain a good market position. They use any or several of the following methods to build the company structure and capability they require.

- Organic growth is recognised as difficult but can be achieved by:
  - gaining more work of the existing type from existing customers;
  - gaining more work of a different type from existing customers;
  - changing and/or expanding the customer base;
  - offering new services to existing customers and potential ones.
- Acquisition. Buy other companies to gain market share, new customers, expertise and additional titles. (Acquisitions are not always successful and involve a lot of management time. The new arrival will bring 'baggage', and significant amounts of business will often migrate elsewhere.)
- Partnerships are particularly useful for small companies. They enable strength to be gained from sharing resources and expertise across a wider geographic spread.
- Greenfield start-ups create a new company investing in the latest equipment and systems, hence building a super-efficient operation with low overheads, selected staff and no 'baggage'. The downside is the lack of market presence and customers.
- Diversification tends to be a high-risk option but can also be very rewarding. For example:
  - move from business forms into promotional print;
  - move from books and journals into provision of training materials and distance learning;
  - geographic diversification by establishing partnerships with companies who know local culture and markets;
  - move from being a repro house to a design agency, photographic studio, video producer and new media facility.
- Manage communication.

The sales process

Successful companies are changing their sales process.

- They recognise the incompatibility of more sales personnel each producing lower sales revenue at the same time as order value is decreasing.
- They focus on understanding the customer, and the pressures and demands on the customer (e.g. need for lower cost and speedier service).

- They achieve approved supplier status within a contract framework to provide stability against short-term market fluctuations.
- Sales personnel are being trained to sell services not just product, especially in connection with promotional print and digital print.
- Companies are examining internet-based print procurement services and/or developing their own approach in conjunction with their MIS supplier with a view to minimising sales costs through automation.
- Print brokers are repositioning themselves as print management providers.

Capital investment

Over the next few years, access to new sources of capital will become progressively more difficult for unprofitable companies. Successful companies have clear policies related to capital investment. Examples are:

- Depreciate over ten years but replace after 4 years in order to maintain the productivity advantages of the latest equipment.
- Invest to automate and achieve unit cost reductions.
- Invest to stay ahead of the competition.
- Avoid equipment purchase and lease – particularly applicable to digital print equipment.

Many aspects of print are cyclical, giving rise to large investments required at infrequent intervals. Successful companies smooth this effect by careful planning. If the investment is delayed for too long the competitive position can rapidly worsen, akin to 'falling off a cliff'.

Specialisation

Successful companies develop specialities that bring rewards of economy of scale, USPs or production efficiency. Examples are:

- Production specialism or rationalisation: for example, focus on B2 presses.
- Constrain product specification: for example, reduce range of permitted papers for digital web book production.

Asset management

Successful companies recognise the need to store their assets in a form in which they are readily accessible, able to be used for multiple purposes and to be traded. For printers this might involve managing this facility on behalf of a client. Some examples are:

- Content management systems (the question of the ideal file format is still being debated, choose one that suits the client's needs).
- Picture libraries.
- Knowledge management.
- Contact management.

Focus

Successful companies continually reinvent themselves in order to adapt their structure, products and services to changing market requirements. Examples include:

- Identify core competences and focus on these while outsourcing everything else. For example, some suppliers of on-demand books identify their core competences as data

warehousing, rights management and distribution. All aspects of production are outsourced to an in-house facility in which the equipment manufacturer owns the equipment, mans and maintains it and supplies consumables.

- Reposition the company and rename it (as IPC Media, Communisis and Lightning Source International have done).
- Diversify into growth markets, e.g. business forms printers move into direct mail, a book printer moves into promotional print, a repro house moves into web production or video.

Publishers

6

Publishing is alive and well, consumer magazines have been described as the 'medium of the decade'. Since 1990 average circulation in the UK has risen 9%, reader expenditure has increased at four times the rate of inflation while advertising revenue has increased by 30%. It comes as no surprise that the average profitability of magazine publishers has increased from 6.5% to typically 15%.

Business-to-business publishing has also been very successful. Advertising revenues have increased by more than 50% since 1990, with the share of classifieds rising to 35% of the total advertising revenue. There are now over 39% more titles than there were in 1990. Worldwide, magazines represent some 13% of total advertising expenditure. There are many published statistics that demonstrate the success of this sector (see, for example, www.ppa.co.uk/dataandtrends/index.htm).

Book publishing has grown, too. In 1998, some 25% more new titles were published in the UK than in 1993. The increase is across all sectors, particularly adult fiction which increased by more than 30%. The demise of the Net Book Agreement has not diminished the publishing opportunity but has changed the bookselling market, with internet retailers and supermarkets becoming significant players.

This growth has been achieved through significant changes and developments within the publishers. There has been much merger and acquisition activity across all sectors of publishing, with many small start-ups contributing to the breadth of titles available. New technology, particularly the internet, has lowered the entry barriers to publishers, and in some cases authors directly, to get their work disseminated.

While businesses are very different in nature, it is interesting that a number of common themes emerge, both in the factors that are driving change in their businesses and the response that they make to these.

Forces driving change

In the marketplace

Competition emerges as the prime factor driving change, this breaks into two main areas:

- *Competition* from other companies in the business. As publishing companies polarise, the effects of competition are expressed in different ways. Large companies aim to gain market share (of readers and advertising revenue), a major factor encouraging them to acquire other companies. Smaller publishers cannot compete on these grounds so they find specialist niches where they excel and try to provide superior service, especially important in publications serving legal and financial/taxation markets.
- *Electronic media developments* (especially the internet) that compete directly against the product and/or for advertising revenue where relevant. So far these effects are mixed, with no clear trend emerging. In magazines, classified advertising is developing on the internet in several sectors (e.g. recruitment). The way this is being managed by publishers means that it has had little impact on revenue streams, although developing the website is a significant cost on the business. Display advertising in print is not thought to be affected greatly by the internet. Whatever decline there might be is probably offset by increase in advertising that promotes websites.

Several publishers provided specific examples of the impacts of change:

- Decline in demand for mono reference books serving specialist professional markets, likely to be a result of the CD-ROM products that are well established and the internet-based services and versions that are being introduced.
- A major business-to-business catalogue publisher has changed from three editions per year to two after introducing a CD-ROM version several years ago. The major catalogue is being supported by a large number of 'specialogues' covering narrow product ranges targeting segments of their total market. Its website system is experiencing significant growth (through its trade website and as part of larger customers' wider e-procurement systems). There is a WAP interface and new PDA versions through which substantial revenue is now generated, particularly in the Far East.
- In the medium term, the internet is expected to have a marked effect on business-to-business magazine publishing as e-mail and other techniques are used to target advertising.
- Other effects are more difficult to relate to precise causes.
- Individual magazine circulations have experienced a long-term slow decline.
- A book publisher's run lengths have declined 20% since 1995.

Another major factor driving change is the relentless push to reduce costs. Across the board, publishers focus on unit costs as a means of managing production. This approach largely overlooks the 'soft' costs in the supply chain: wastage and returns. One major consumer magazine publisher reports over 30% wastage in the supply chain in 1990, which has fallen to around 25% now. Increased marketing effort is being used to promote subscription sales, increasing the share of the cover price to the publisher and obtaining a loyal customer (at least for one year). In book publishing, some 25–30% of printed books are not sold.

There is a growing awareness of the weakness of this and the benefit of taking a broader (lifecycle cost) view that includes everything from authoring through to pulping the last leftover copy. It is difficult for publishers to take the overall lifecycle view since (in most cases) warehousing costs and in some cases distribution costs are not monitored in the detail and structure that is necessary to make the analysis. The recent major row caused by the proposed Tesco/WH Smith new distribution methods indicates the increasing prominence of looking at the overall lifecycle approach and the likely changes that will result. In the case of books and some journals, on-demand printing services are increasingly being used because although the unit cost tends to be higher than conventional printing, the overall costs are lower.

The need for financial controls and information is becoming as important as traditional publishing flair. Getting the market projections wrong can result in the demise of the company.

Production is driven by the need for appropriate quality, the required schedule, and price, the latter factor including paper costs. Many publishers complain about paper costs, and consider changes in grade or weight, but a few have standardised formats, and

intelligently chosen page sizes (in conjunction with their printers) to achieve significant savings. IPC's manufacturing programme, undertaken in conjunction (and to some extent in partnership) with its suppliers saved £1m in its first year, and in some cases maintained the financial viability of several titles. One area that has been largely overlooked is in binding and finishing. The innovative and sophisticated programme of cover mounting and consumer 'attention grabbers' is creating delays in the manufacturing schedule and issues in the distribution chain that needs to be addressed.

Run lengths in almost all sectors are decreasing. Historically this was a factor influencing the change from gravure to web offset. Now, certainly in book and journal publishing, some very short run titles are moving from litho to digital.

Since 1990, prepress technology has been gradually moving into publishers, as illustrated by the timeline in Figure 7.3 Chapter 7. Some key stages with very approximate dates are shown in Table 6.1.

TABLE 6.1 Key stages of technical developments in prepress impacting publishers, 1990–2001

Year	Development
1990	Introduction of desktop publishing systems into editorial environments
	In-house typesetting
1995	Introduction of SGML coding in some publishers
	Use of databases for some book publishing and catalogues with automatic or semi-automatic page make-up as an option
1997	Digital picture storage by some publishers
1998	In-house high resolution scanning by some editorial teams and complete page assembly
	Direct output to CTP at printers in rare instances
1999	PDF becomes workflow de facto standard
	Colour management and preflighting become accepted in limited cases
2000	Pass4press PDF 'standard' for digital ads agreed
	XML becoming adopted
	Formal content management systems become more widely installed
2001	Digital photography becomes widely adopted
	Cross-media publishing becomes more popular

Source: Pira International Ltd

Publishers that have adopted appropriate prepress technology have now gained the experience and systems to move to formal content management with the multiple output possibilities that this brings.

However, to achieve a fully digital workflow in magazine publishing requires that all advertising material be in appropriate digital form; the vast majority is still supplied on film. This situation is, however, changing. IPC Media, in cooperation with other leading publishers and the PPA, developed a standard way of handling ads digitally to achieve a totally digital workflow. The outcome is the Pass4Press 'standard' that defines the method of producing, checking and using PDF files. IPC media predicts that by the end of 2002 over 99% of all advertisements will be totally digital. In the interim, larger publishers will work with their prepress suppliers (if they do not operate internal repro) to convert film and raw files into the appropriate format for printing.

Digital photography

Digital photography can deliver comparable quality to standard photographic equipment (if done with appropriate equipment and methods) which in principle offers opportunities for cost reduction. Recognising this, one magazine publisher is setting up a dedicated digital photographic studio, the rationale being as follows.

- Cost. Current charges are £300–£500 per day for photographer and studio, plus film costs. The in-house costs should be about £200 with no film. For the present the savings from not scanning film are insignificant, given that RGB to CMYK conversion is still required. However, colour management systems should eventually perform this task.
- Rights. As an in-house operation, the publisher will own the copyright to the photographs instead of the photographer, which makes it easier for repurposing content.
- Time savings. Shots will potentially be available for inclusion in a magazine minutes after being taken. This may not be of much consequence for many magazines. However, there will be significant savings in administration time associated with pictures.
- Increased capacity. The publisher will receive a larger number of pictures per shoot, with a higher probability of being able to sell some to other parties.

Distribution: targeting

There is a common desire to target customers more precisely. In magazines this raises the importance of subscription sales. For catalogues it has introduced the concept of the specialogue: smaller, more targeted versions of the catalogue. From a production point of view, targeting increases the opportunity of using selective binding and personalisation in both of these product applications. Even in books, the aspiration to achieve closer contact with final consumers is stimulating the concept of end-to-end production tracking (i.e. author to end-customer). The aim is to improve the efficiency of the supply chain and reduce the number of returns by being more certain about what the customer wants in the first place. Techniques of efficient consumer response are being adopted from the FMCG (fast-moving consumer goals) sector. The aim is 'serving the consumer better, faster and at lowest cost', and will try to identify improvement concepts, managed through developments of supply chain partnerships.

Development trends and response strategies

Growth/structure

All mainstream publishers were committed to growth, or had been set growth targets by their owners. The general view is that organic growth is very difficult and the only way to grow significantly in a short time is through buying companies or titles. One specialist publisher expressed the view that the basic market in their sector is saturated, hence the only way to grow is by acquisition – gaining titles, authors and some customers. A rate of acquisition of one company or set of titles per year was typical, although one had made four acquisitions in two years.

Publishers succeeded in growing by two other ways:

- Progressive geographic diversification using the core product of the conventional book (sold and/or repackaged by local copublishers/distributors) resulted in steady growth and return on assets of 5–10% for the publisher. It has also resulted in 75% of sales

being non-UK, providing a more stable business overall. This geographic spread and the range of products made the company attractive for a 70% takeover in 1995, which was raised to 100% in 1999.

- Another publisher obtained growth by diversifying the product base, in its case into training materials and courses that were related to the specialist subject matter of some of its titles. This resulted is some synergy of products and provided an overall boost to sales (although the training materials did detract from book sales to an extent). Some courses are also delivered as distance learning courses using a mix of print, CD-ROM and online content. This diversity has made the business more complex to manage.

Investment in electronic media

Publishers are taking the internet very seriously, and even in the limited sample interviewed for this study, examples of investments of £10m to £100m (over some time) were encountered. This is for:

- converting assets into a suitable form. Generally this means creating and managing a database from which both electronic and print versions can be generated at will (and maximum flexibility for future versions is maintained);
- creating and designing the website;
- developing the e-commerce system to allow online transactions;
- providing online delivery (in limited cases).

There is considerable uncertainty, however, with electronic media, the key issue being how readers/customers will adapt and whether they will adopt new methods. Associated with this is the question of whether effective new business models can be found to be applied to electronic media that provide the same levels of financial return that print media still do. None of the publishers interviewed had arrived at a solution to this point that they were satisfied with. Furthermore, as one publisher pointed out, 97% of the company's revenues are still from conventional print. If it invested a corresponding amount in print products, a much higher return could be expected, at least in the short term.

Changing image

Magazine publishers, and others, are changing their image to reflect their growing interest and activity in new media products. In magazines this appears as a brand-centric approach (in which the brand is exploited across several titles, several media, maybe as a retailing or e-tailing umbrella, and for other products and services) rather than a traditional magazine which tends to focus just on the printed magazine. For example, IPC changed its name to IPC Media early in 2000. Its core strategy is:

To leverage market-leading magazine brands, and their relationships with customers and advertisers, into new media areas.

This involves:

- the ability to step back and see brands as media-neutral;
- the willingness to expand beyond the digital horizon of ink-on-paper into TV, the web, WAP and radio;

- the vision to focus on strengths in core market areas;
- the imagination to expand creative horizons and broaden revenue streams.

A similar change of name was made in early 2000 by Lightning Print Inc. in the USA, one of the leading producers of on-demand books. As a result of its recognition that the 'data warehouse' that it was creating could and should serve not only print production but also e-books and other forms, it changed its name to Lightning Source Inc.

In-house prepress

Publishers continue to invest in in-house prepress, principally to save time (on the schedule) and/or cost. But the choice of whether to make or buy repro is still difficult. One approach is to keep simple pages in-house (and create PDFs) while leaving retouching, cut-outs, contract proofing and complicated page assembly to the repro house. This has the unfortunate feel of an interim measure, since it fails to simplify the workflow and still keeps the repro house in the system. But maybe it is also a recognition of the useful services provided by the repro house: checking, 24-hour service and so on. On the other hand, some publishers are taking all prepress in house, including high-resolution scanning, compiling complete pages and transmitting these directly to a CTP system at their printer.

Summary of key strategies

All the publishers recognise the need to store their assets in a form in which they are readily accessible, able to be used for multiple purposes and to be traded. This is giving rise to the implementation of general content management systems or more specialist picture libraries. There is still debate over the most suitable file formats to use. SGML and XML are becoming more widely used, and PDF appears established as the page output format, which is also usually stored.

Asset management

Growth

All the publishers were committed to growth to achieve market dominance, increase market share and remove competition. Typical methods of achieving growth are:

- acquisition of companies or titles;
- geographic diversification through partnerships or other arrangements with local publishers and distributors.

Diversification

Some publishers were diversifying into products *and services* related to the interests of their core markets. Training materials and courses are a good example.

All the publishers are diversifying their product mix, developing electronic media products. Most perceive CD-ROMs as an interim technology which will begin to fade in importance as web delivery grows. Some are examining radio and TV (especially digital TV). A common problem with all electronic media is finding a business model that provides publishers with the returns they have traditionally achieved with print products.

In-house production

All the publishers undertake at least some in-house production, the rationale being to achieve editorial control (few claim substantial cost savings). Some are moving towards a totally digital workflow to achieve:

- time savings on magazine schedules;
- integrated multiple media workflows that can deliver to the web simultaneously with print;
- effective content management;
- online or very rapid delivery to end-customers (possibly of a customised content product).

Some of these can be equally achieved by outsourcing, so it is not the case that in-house production is the only way to develop.

E-tailing

All the publishers were developing websites to facilitate commercial transactions, either of their own products and services or those of their advertisers.

Development profile

Table 6.2 provides a summary picture of some of the changes that have taken place since 1990. They are based on a combination of the experiences of the publishers that have been interviewed. They serve to demonstrate how the publishers have responded to changes in markets and technology and changed themselves accordingly. Very few were prepared to commit themselves to anything more than two years into the future.

TABLE 6.2 Outline of developments at the book publishers interviewed for this study, 1990–2002

	1990	1995	2000	2002
Company profile:				
Turnover	Steady increase; real growth achieved by acquisition			
Profit			97% from traditional print	
Print order size trend	Run lengths static		20% lower than 1995	Declining
Structure		Corporate intranet	Multi-site	Corporate internet
M&a activity			4 acquisitions in last 2 years	2 acquisitions
Company activities:				
Product mix	Books, hard and limp covers, journals, newsletters	Books, hard and limp covers, journals, newsletters Diskette products Few CD-ROM products	Books, hard and limp covers, journals, newsletters, directories CDs, e-books and online products	No change in the nature of books Proportion of revenue changes as more CDs and internet transactions Strong branding essential to avoid customers' confusion about integrity of information in electronic form
Customer interface:				
Customer service				New business models required for new forms of electronic products and delivery
Production				Multi-million £ investment in web services
Administration				Introduction of e-commerce Automated order processing

TABLE 6.2 Outline of developments at the book publishers interviewed for this study (cont.)

	1990	1995	2000	2002
Selling and promotion techniques:				
Salesforce	Direct mail	Direct mail and telemarketing	Direct mail and website	Direct mail and website
Timescales for production:				
Design/creativity	Long – weeks	3 weeks		
Film to print				
File to print		3 days	48 hours	24 hours
Technology in use:				
Design/creativity				
Prepress	Conventional typesetting (external supplier)	System in-house Intro of SGML Oracle database archive	System in-house In-house SGML expertise established Oracle database archive Content management may be outsourced	System in-house XML Oracle database archive Formal content management system in-house
Printing		Few digital print products	External digital print used extensively	
Finishing		Conventional warehousing and distribution	Printers may have to provide fulfilment services	
Administration		No contracts, everything on a per-job basis	Contracts with 'preferred' suppliers	
Production issues:				
Supplier base	30–40 printers		6–7 printers	View printers' production schedules
Waste				
Profile of skills:				
Direct/indirect				
Training				
Skills	Dependence on external suppliers for typesetting and production	Typesetting in-house	SGML in-house	XML in-house
Supply chain developments:				
Prepress	Dependence on typesetter	External author, internal typesetting system	External authors, in-house editors edit on-screen/SGML	Typesetting in India Typesetters bypassed, CTP at printer
Printing				On-demand production of 1000 titles available
Distribution	Warehouse/mail			Streamline distribution
Retailing		Watching the internet – perceived as insecure, lacking billing facilities, awful to use	Operational website	Introduction of e-commerce Redefined business rules/models Online delivery equals print sales in revenue terms Sell direct

Source: Pira International Ltd

Impact of current and likely future drivers

7

The objective of this Strategic Futures Forum report is to examine the current and likely future drivers for several sectors of the print and publishing markets. Much information was gathered, and this chapter attempts to present the results for each sector. It combines the predicted demand characteristics for each product sector. There are three projections in each case representing a set of assumptions that are used to make a projection of the future for the print product concerned. The survey sometimes resulted in quite a wide range of opinion; three different projections have been made in each case:

- A continuation of current trends – this is based on demographic considerations and continuation of recent (i.e. last ten years') growth rates (e.g. for advertising expenditure). The internet and any other electronic media are ignored.
- Likely scenario – this is based on the typical or central views of opinion derived from the survey. It takes into account the demographic trends and growth rates as in the 'continuation of current trends' case, but adds to this the positive and negative effects of the internet, and any other impacts that were identified in the survey.
- Large impact – this takes the 'likely scenario' and assumes that the significant effects are 50% greater.

The projections are all calculated in terms of the effect on printed page area. Hence, for magazines the results reflect both circulation and pagination. The likely developments in supply chains resulting from the trends and market forces outlined in previous chapters are presented.

In several cases we have produced a timeline diagram, showing the important technical developments and the impacts these have made on industry practice and structure. They include a projection into the future.

Typical supply chain structures and trends

The two major pressures on all businesses (in any market) are to reduce costs and time to market. These pressures are particularly severe on printing as it is a very competitive sector, with considerable difficulty for a printer to differentiate itself from the competition. In their efforts to minimise time and cost, printers have invested heavily in new technology, to reduce wastage and set-up times while increasing production speeds. In many cases the additional investment required to improve these situations is simply not cost effective and there is little scope for significant productivity improvements in the printing process.

To improve the situation the printer cannot simply further reduce the costs of the process. By working with the client, the two parties will seek jointly to reduce the overall cost of supply across the whole chain by re-engineering the business processes involved. There are several stages and many steps involved in the overall process. While the actual production chains differ for various products, a generic chain might include the following discrete processes:

- *Commission* – Request/Legal (copyright)/Project plan (process engineering)/Budget /Marketing final product.
- *Tender* – Invite estimates against specification/Appoint suppliers/Agree timescale/Raise orders.

- *Manage* – Communicate process specification/Track project progress/Monitor cost against budget/Monitor proofs, materials and work against specification/Complete and close ledgers.
- *Create* – Design/Photography/Illustration/Write copy/Artwork/Presentation/Approval/Generate database attribute list (in the case of personalised product).
- *Produce* – Client generates instructions/Producer receives instructions/Receive design materials/Retrieve from archive/Prepare master for printing/Proof, correction cycle and approve/Personalise/Print/Bind/Distribute/Organise components (envelopes/inserts/packaging)/Enclose and mail/Deliver to mail, warehouse, mailing house or broker/Deliver to customer/Deliver into retailer distribution chain/Submit delivery note(s)/Submit invoice(s)/Fulfilment (handling enquiries arising from the product).

This list is by no means comprehensive; it demonstrates the stages involved in a print or publishing project. Importantly it encompasses business processes as well as more typical graphic arts reproduction processes. There is a great deal more detail involved in the stages, for example when a printer delivers a truckload of printed product to the customer the printer will consider the cost of the trip (labour, fuel, costs of the lorry) and the administration involved. There are also costs for the customers – the following activities might occur:

- complete finishing binding
- load on to pallet
- stretchwrap and label pallet
- store pallet in printer warehouse
- enter stock quantity and location into MIS
- generate picking list and delivery note
- fetch pallet to loading bay
- load on to truck
- transport to customer warehouse
- unload and inspect at customer site
- customer signs for goods received
- customer enters stock into MIS
- customer receives invoice and enters into ledgers
- customer moves pallet to store area
- pallet is broken to stock items
- stock items taken as needed.

When examined in detail there are many operations, some duplicated by supplier and customer, currently carried on in the processing of an order. These activities involve costs and time. Business process re-engineering involves detailed examination of the process, with the supplier and customer working jointly to reduce these costs and sharing in the benefits. There will be major changes in the supply chains across industries as well as a myriad of small-scale improvements between printer and supplier.

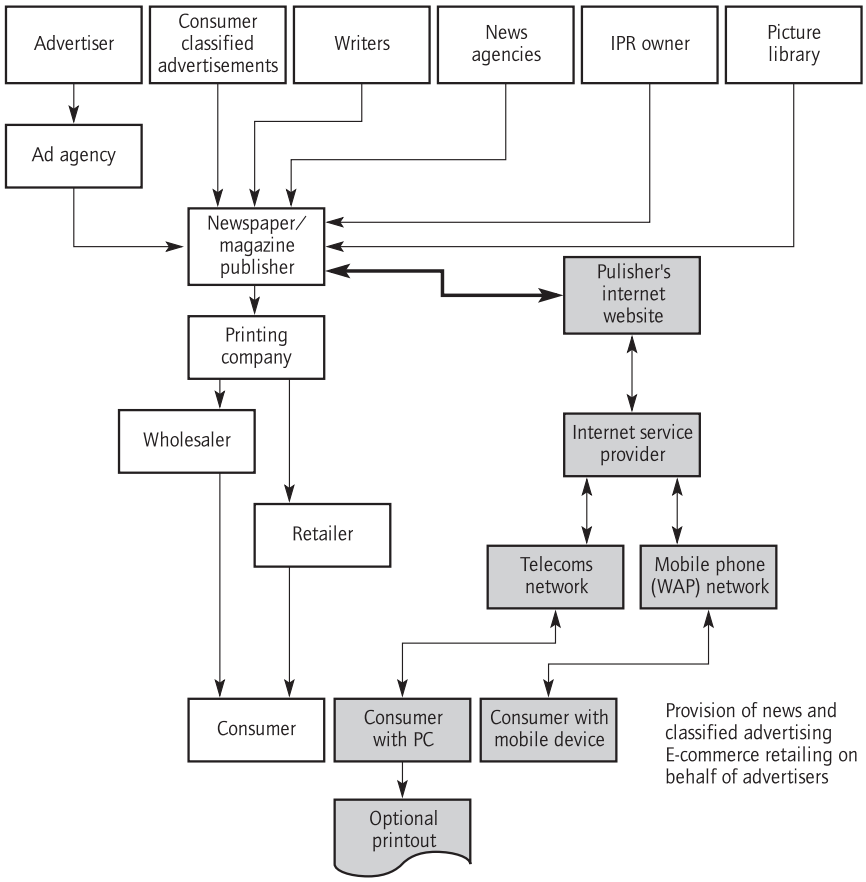
Over the next few years there is expected to be a continuation in the changes in supply chain structures that have already begun. For most products the long-established supply chain structures will continue but in all cases will experience growing alternative supply chains in parallel with the conventional structures. New players are involved in these new supply chains. The alternative supply chains provide the same (and enhanced) functionality as perceived by the consumer and are based on computing and telecommunications technologies (mostly in the form of the internet) and digital printing.

There are significant unknowns that make it difficult to predict the extent and rate of change. For example, how will e-commerce on the internet grow and what will be the impact of digital television and widespread business-to-consumer offerings through this channel? There are no useful precedents to use in predicting the take-up of these methods, but we do know that almost everything connected with the internet is growing at very high rates.

The following diagrams present a view of the supply chain structures as they currently exist for a number of products; the shaded boxes indicate the newly developing supply chains.

Magazine supply trends

FIGURE 7.1 Supply chain for magazines



IPR Intellectual property rights
Source: Pira International Ltd

Principal trends for magazines

- Implementing totally digital workflows with advertisements supplied digitally or via the publisher's repro supplier. Files sent to printers for output via CTP, some printers will use specialist repro houses.
- Growth of digital photography.
- Examination of waste at all points of the supply chain, driving efficiencies at the printer and reducing waste at the distribution centre/retailer by more consumer targeting and growth in subscriptions.
- Growth of classified advertising on the internet.
- Growth of e-commerce branding by publication title, the publisher taking a proportion of the revenue. Publishers become multimedia publishers, some titles are not available in printed form.
- Provision of product information (either directly or via links to other sites) via publication website for business-to-business products and services.
- Display advertising in print to become the pointers to websites.

Table 7.1 summarises the trends for the magazines sector.

TABLE 7.1 Summary of factors influencing magazines

	Positive factors	Negative factors
General trends	▶ Continuing polarisation of generalist and specialist titles – more products serving narrow market interests (in consumer field) ▶ More supplements· ▶ More subscription and controlled circulation readership	▶ Danger of losing advertising revenue to other media – predicted decline from 20% to 17% market share by 2010 ▶ Sponsorship advertising (that then appears on TV) is detracting from advertising in print
Technology drivers	▶ Digital photography ▶ Continued enhancements to DTP systems enable publishers to enhance product ▶ Selective binding	
Other drivers		▶ Lack of readership profiles ▶ Copyright concerns ▶ Environmental concerns – waste in the supply chain (unsolds maybe 40% of production)
Potential for electronic substitution	▶ Print product is a highly successful format for reader and advertiser	▶ STM is prime user of electronic media
Indicated overall product trend	▶ Magazines will become increasingly niche, smaller circulations with slowly decreasing pagination ▶ An increase in number of titles (resulting in overall increase in circulation)	

Source: Pira International Ltd

Magazines are remarkably successful print products, proven to be highly effective at delivering targeted advertising to a defined audience. The targeting results in more titles

(although this is not perhaps true in all countries as yet). However, advertising market share is falling, but given the constant rise in total advertising expenditure, the net advertising revenue for magazines is also increasing.

Print process and typical run lengths

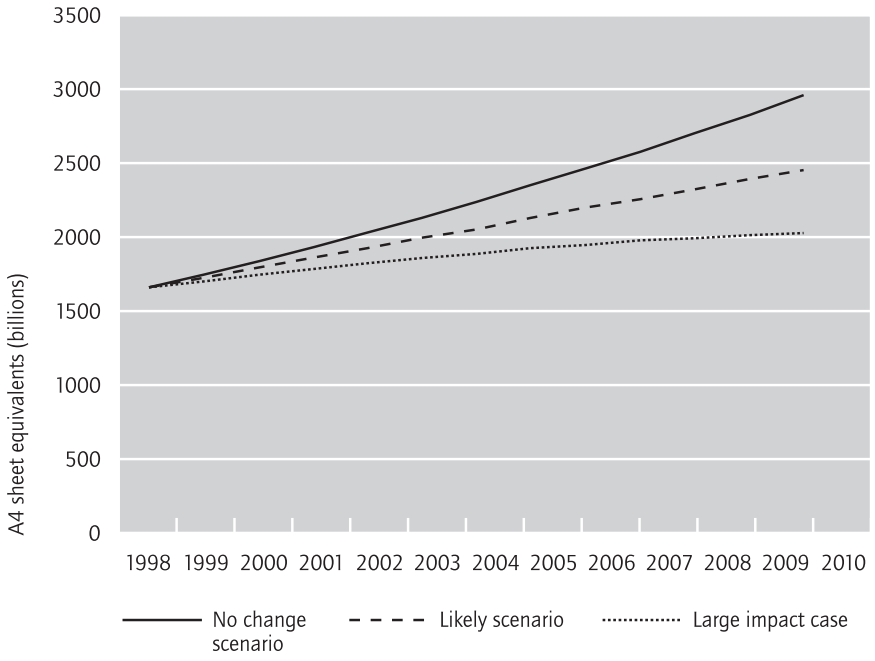
The proportion of magazines printed by heatset litho will increase from 65% to 70% by 2010, gaining from gravure. Digital printing (including printing at the desktop) could account for 9% of magazines printed by 2010. At first sight this seems excessively high but may be appropriate for business-to-business magazines.

There is a minority opinion that gravure will not decline in use. It has the capability of printing well on lower-quality grades of paper, and as cost pressures increase and distribution costs rise (encouraging use of lighter-weight papers) so gravure becomes a more attractive process.

Projection

Figure 7.2 charts three scenarios for the future demand of printed magazines.

FIGURE 7.2 Predicted print demand for magazines, 1998–2010



Source: Prima report

No change scenario

- Population growth is as predicted.
- Number of households change is as predicted.
- Increase of readers of 1.5% pa.
- Advertising expenditure tracks GDP.

This scenario provides a projection showing growth in excess of 7% pa to 2010, broadly in line with past growth although possibly a little lower.

Likely scenario

As above plus:

- Take-up of internet is as predicted (33% of households by 2010).
- Of those with internet access, the number changing to reading online increases by 1% pa, rising to 13% by 2010.
- Loss of advertising revenue to magazines of 15% by 2010.

Large impact case

As above except:

- Of those with internet access, the number changing to reading online increases by 2% pa, rising to 26% by 2010.
- Loss of advertising revenue to magazines of 30% by 2010.

The likely scenario provides a projection of about 5% pa growth over the decade.

Figure 7.3 presents a timeline showing the adoption of digital prepress technology by the magazines sector.

Book supply chains

There are many markets covered in the global characterisation of books:

- mass market paperbacks
- fiction hardback
- general interest (hard and soft bound)
- illustrated, colour and art
- reference
- STM (scientific technical and medical) /academic
- children's
- Bibles
- technical documentation
- journals/monographs.

Principal trends

The book supply chain is being restructured as a result of internet retailing, digital printing and associated concepts. These changes are illustrated in Figure 7.4–7.6. Non-time-sensitive books are sourced globally, and there has been a great deal of restructuring of the book printing market.

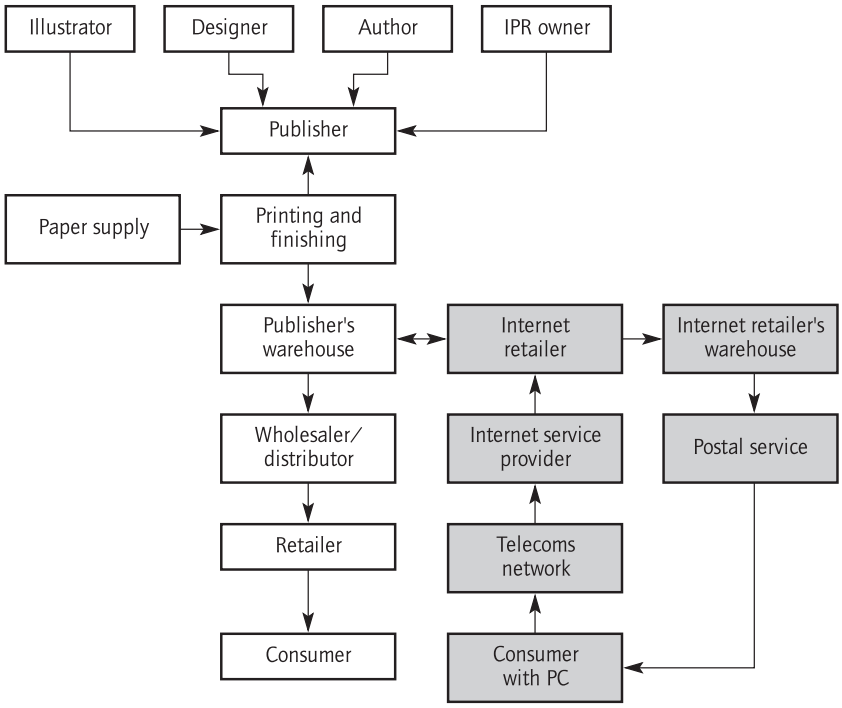
The present supply chain This shows conventional production methods and a supply chain involving warehouses and distribution systems, supplemented in the past few years by internet retailing (Figure 7.4).

FIGURE 7.3 Timeline for the adoption of digital prepress into magazine workflows, 1990–2004

Development		Flatbed scanning reduces operator skills	PostScript is mainstream technology	OPI allows low-res. files to be directly used by designers	ISDN and data transfers	Launch of Windows 95 and NT	Internet	Asset management systems linked to editorial and ad systems		Colour management Pressure on distribution costs and waste	XML and cross-media are hot topics		90%+ pages supplied for CTP including advertisements (often digitised and checked by publishers/printer repro partners)	XML becomes mainstream	
Activity	CEPS systems	Development of widespread desktop publishing systems				Large-format imagesetters and imposition systems	CTP introduced to books and some commercial printers	PDF allows non-contract remote proofing	Newspapers develop digital ad handling systems	PDF workflows increase in use, PDF becomes de facto standard for digital file transfer	Pass4Press 'standard' agreed Digital ads trickle through	30% ads are supplied digitally, companies preparing / formatting		Cross-media publishing becomes the norm	
Outcome	High investment in systems, high cost per page		Entry barriers reduce for in-house adoption of prepress		Workgroups and editorial systems become common	Complete imposed signatures output to save assembly		Some ads and editorial on PC	TIFF/IT used in gravure	Increasing subscriptions		Issues on binding and cover mount offers more important			
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Industry structure	Printers and trade houses handle editorial production, ad agencies provide film	Publishers increasingly adopt desktop publishing internally for text, some take production in-house			Printers taking prepress (output to film and platemaking) in-house	Trade houses under pressure, some specialists			Publishers develop internet publishing strategies	Many titles have web versions as publishers develop their brands	New titles appear on the web and not in print	Publishers specify digital workflows, some use trade shops to handle all files for submission to printers	Printers have to have CTP (themselves or in partnership with trade houses) Manufacturing is more controlled		Major impact on B2B titles and classified ad revenues to internet

Source: Pira International Ltd

FIGURE 7.4 Supply chain for books



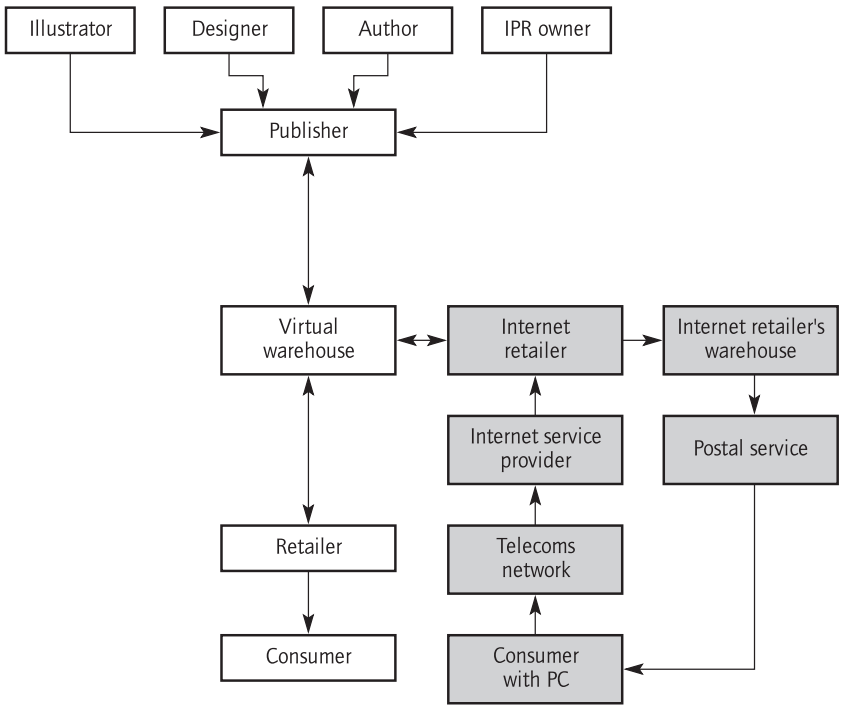
Source: Pira International Ltd

The virtual warehouse This uses digital printing techniques in a centralised fashion, but production takes place on demand. Consequently there are no warehouses (Figure 7.5). This concept has been in use in the USA for some years providing customised textbooks to universities. The other principal application that exists in the USA and in Europe is that of printing books that have gone 'out of print'. Lightning Source is one pioneer; the first UK implementation has been announced to come on-stream in 2001.

There are two significant variations on this theme:

- using a conventional retailer (i.e. bookshop)
- using an internet retailer.

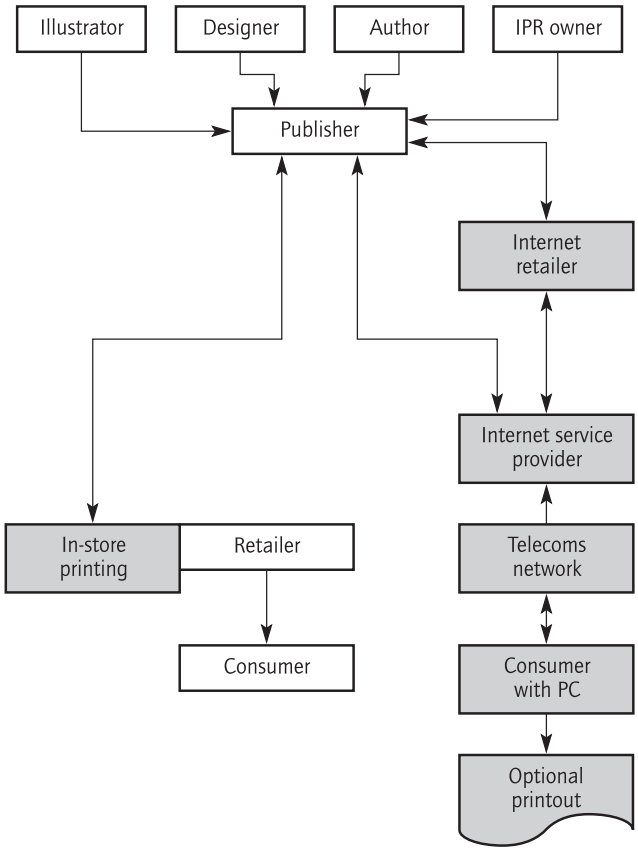
FIGURE 7.5 Virtual warehouse concept supply chain for books



Source: Pira International Ltd

In-store production This uses relatively low cost digital printing and binding systems in the bookshop to produce in an on-demand fashion, possibly while-you-wait (Figure 7.6). This might be regarded as a mid-distributed production system.

FIGURE 7.6 In-store book production supply chain



Source: Pira International Ltd

Table 7.2 summarises the principal trends for the books sector.

There is much interest in the concept of on-demand book production using the virtual warehouse concept. This may overcome the problem of the high proportions of unsold books that currently remain in many publishers' and wholesalers' warehouses. When manufactured to order there are significant cash flow benefits to both publisher and retailer. This process also provides the facility to offer consumers a customised product, fitting well with market trends towards mass customisation.

TABLE 7.2 Summary of factors influencing books

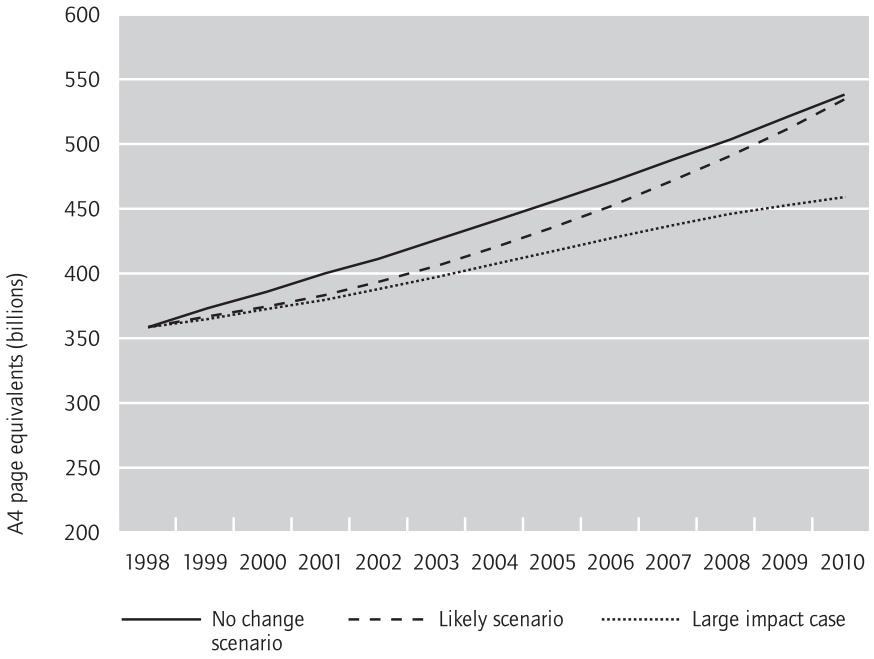
	Positive factors	Negative factors
General trends	▶ More graphics and more colour ▶ More titles published	▶ High risk for publishers with novel products ▶ Lack of copyright enforcement discourages product development
Technology drivers	▶ Continued improvements in DTP systems enable publishers to reduce costs ▶ Database technology, SGML/XML ▶ Digital photography encourages enhanced product ▶ Digital printing systems with inline finishing enable on-demand and customised book product	
Other drivers	▶ Internet bookshops improve accessibility to books	▶ Poor indexing and other user attributes of a book ▶ Lack of interactivity ▶ Environmental concerns ▶ Modern youth expectations ▶ Distribution costs ▶ Warehousing costs and associated waste ▶ Need to reduce bulk and storage space of books
Potential for electronic substitution	▶ Lack of low-cost portable electronic device with good user interface ▶ Copyright concerns ▶ Lack of suitable content assets archives	▶ PDAs development ▶ Electronic book developments ▶ Electronic paper developments ▶ Search characteristics of electronic media ▶ Internet with e-commerce systems is good delivery vehicle
Indicated overall product trend	▶ STM journals will decline by 20% in printed copies by 2010 but digital print provides opportunity for more short run titles ▶ Textbooks will continue but decline in medium term as electronic books become more accepted ▶ Coffee table books will decline slowly as they have less appeal to upcoming generations. However, the population is getting older, with a higher proportion of older people who may well maintain a liking for this product ▶ An increasing number of titles in print produced in smaller quantities	
Technical documentation (such as computer manuals)		
General trends	▶ Increased use of colour ▶ More graphics	▶ Documentation is being built into the product
Technology drivers	▶ Digital print enables documentation to be up to date and tailored to individual machine	▶ Internet is increasingly the source of technical support information ▶ PDF is the popular format for distribution of techdoc ▶ SGML/XML increasingly used in content creation process
Other drivers	▶ Poor user interface on some electronic systems	▶ Increasing complexity of products ▶ Reducing lifecycle of products
Potential for electronic substitution	▶ Possible only with electronically based systems	▶ Relatively easy to build techdoc into electronic product with enhanced user features ▶ Lower cost than printed equivalent ▶ Lower distribution costs
Indicated overall product trend	▶ Technical documentation will continue its sharp decline in relation to electronic and computer-based products ▶ Computer manuals will reduce in pagination ▶ Other techdoc will be digitally printed and customised	

Source: Pira International Ltd

Projection

Figure 7.7 charts three scenarios for the future demand of books.

FIGURE 7.7 Predicted print demand for books, 1998–2010



Source: Prima report

No change scenario

- Population growth is as predicted.
- Number of households change is as predicted.
- Increase in the number of titles of 5% pa.
- Decrease of readers per title of 2% pa.

This scenario projects in the region of 5% pa for the decade, approximately in line with previous trends. In the Prima survey, there was no support for this view.

Likely scenario

As above plus:

- Take-up of internet is as predicted (33% of households by 2010).
- Those with internet access purchase 5% more books than they would otherwise have done.
- Those with internet access download and print out 5% of their books.
- An exponential increase in the sales of books in purely electronic form rising to 10% by 2010.
- An exponential increase in the number of books printed digitally, half of which are assumed to be additional sales.

Large impact case

As above except:

- An exponential increase in the sales of books in purely electronic form rising to 20% by 2010.

The likely scenario projects an overall growth rate (over ten years) very similar to the no change scenario, but with lower initial growth. This arises from the somewhat complex set of factors that are involved. Internet users might buy 5% extra books. Ten per cent of books could be in electronic form by 2010. However, there are significant developments in this area (e.g. Openbook standard) that may make the take-up of such books considerably more rapid, portrayed in the large impact scenario. Digital printing could lead to an increase in very short run titles and customised books, resulting in 5% volume growth by 2010.

Figure 7.8 presents a timeline showing the technological developments that have taken place in book production since 1990.

General printing

It is difficult to categorise general print, but the need to develop differentiators is driving many companies towards an e-procurement route to get closer to customers. The other trend for consumers of print is the growth of print and communications management companies that outsource print procurement on behalf of their customers.

A flowchart of the general print supply chain as it stands in 2000 is illustrated in Figure 7.9.

Principal trends

- The internet becomes a significant customer interface for providing quotations, job tracking information, receipt of copy, proofing, invoicing and payment.
- Paper buying becomes an e-commerce activity between printer and paper merchants.
- Networking between print companies becomes commonplace as they seek to provide the 24 hour, 7 day a week service demanded by customers but struggle with limited resources, and the need to share high capital cost items of equipment. Even larger companies are likely to operate as a distributed network of small print sites, possibly with a central administration, order processing and prepress department.
- Print brokers and communications management companies operate over the internet. Some companies are already established and act as the marketing arm for printers, who concentrate on production efficiencies.

Figure 7.10 shows the timeline for development of SME printing companies from 1990 to 2004.

Business forms and transactional print

Products considered include:

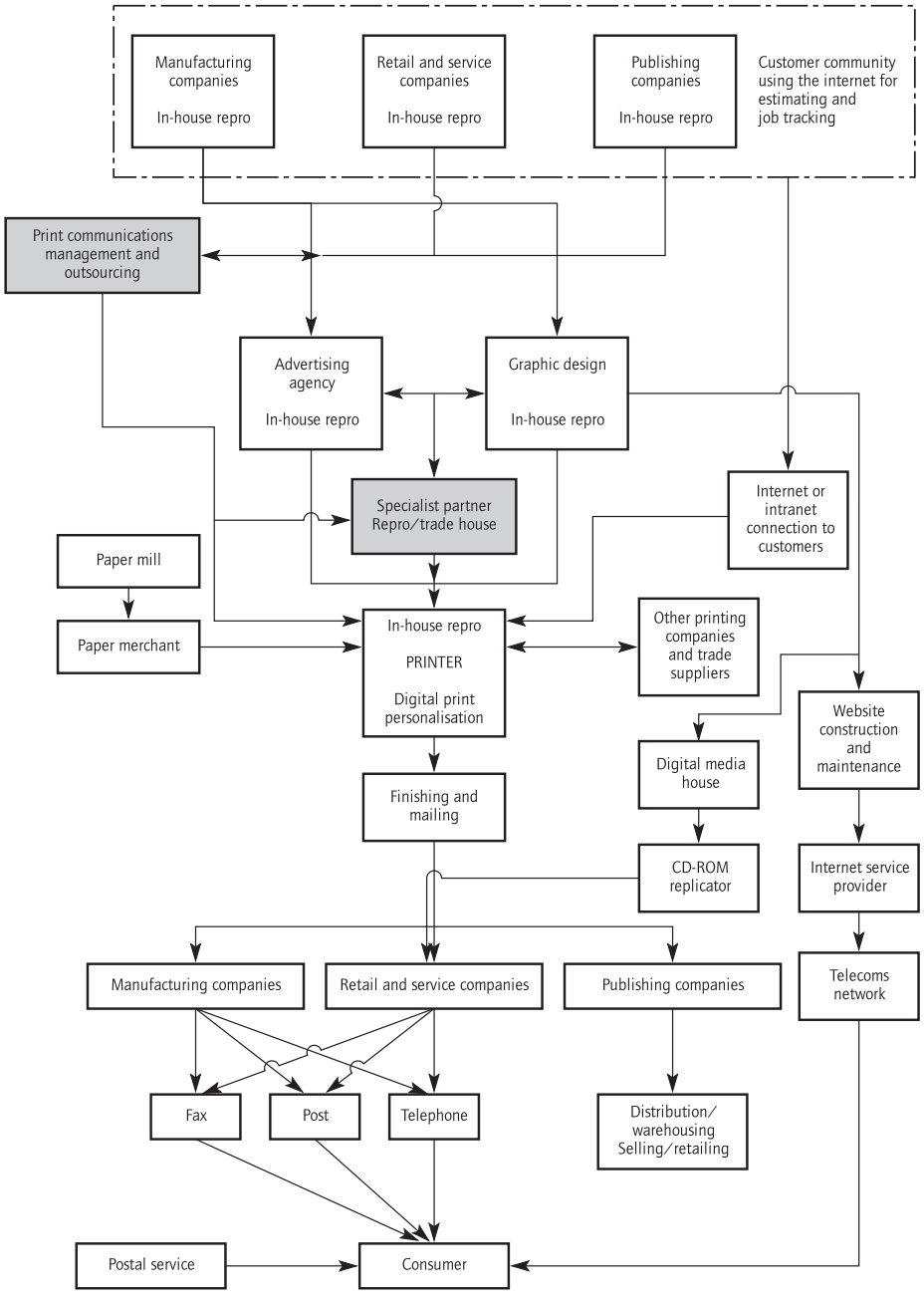
- business forms
- carbonless multi-part forms
- business stationery
- cheques and other financial documents
- greetings cards
- A4/A3 cut sheet, plain and preprinted sheets for personal and office desktop printers.

FIGURE 7.8 Timeline for technological developments in book production, 1990–2004

Technological development	DTP wysiwyg page makeup systems well established	Automation of litho presses to reduce make-ready time		SGML into book publishers	Databases being applied to content management	CTP begins to be implemented for books Growth of internet	Digital webs become established for mono book production		E-book readers introduced to US market	XML replacing SGML PDF incorporates XML	New generation e-book readers (PDAs)	On-demand print systems for in-store production arrive in Europe			
Activity	Conventional typesetting outsourced to typesetters		Typesetting brought in-house		Large-format imagesetters and imposition systems	CTP implemented in printers, replacing film projection step-and-repeat machines			Data warehouses come into being	Create formal online content management system			Phasing out of CD-ROM products			
Outcome	Entry barriers for professional typesetting reduce		Diskette products and few CDs provide early attempts at electronic books		'Books' on CDs – often as a complement to printed book		Prepress cost/page: £4.20		CDs, e-books and online		Customised content books become widely available					
					Large reduction in prepress staff, reduction in page cost, reduction in timescales to press						Online delivery of e-books becomes popular					
						Online catalogues develop				E-trading develops						
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	
Industry structure		Specialist typesetters decline				Demise of Net Book Agreement	Amazon grows as significant book retailer			On-demand books				In-store book production implemented		
							Supermarkets sell bestsellers			Development of 'self-publishers'			Publishers trade direct with consumer, bypassing retailer			
									On-demand print production implemented at wholesalers							

Source: Pira International Ltd

FIGURE 7.9 General print supply chain



Source: Pira International Ltd

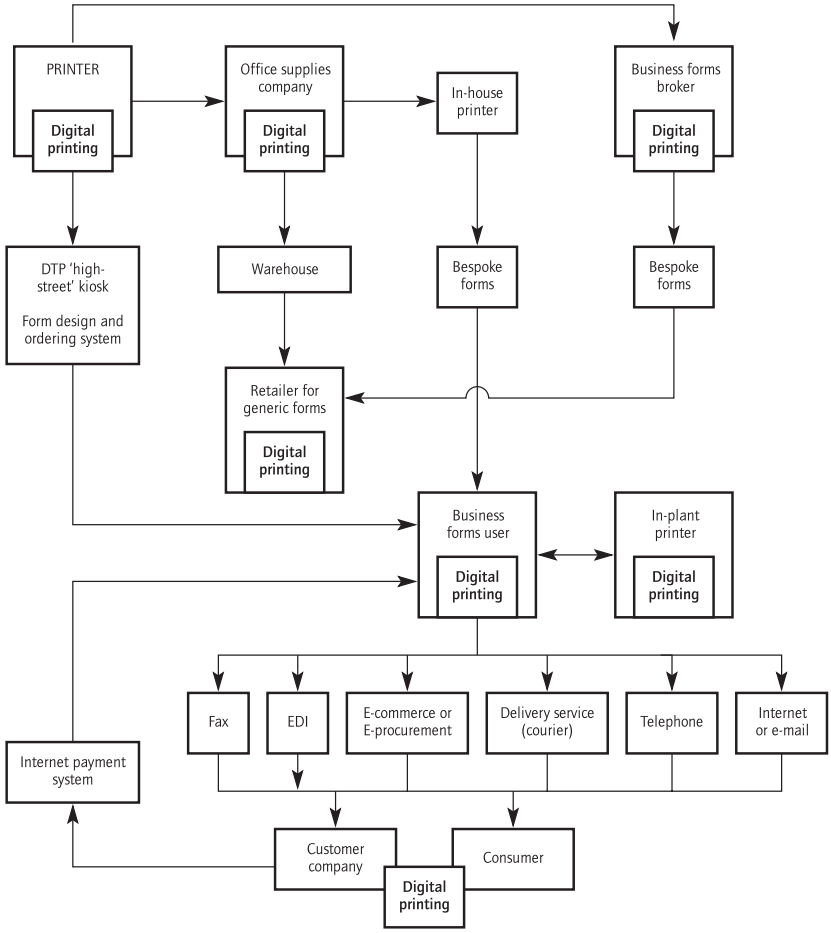
FIGURE 7.10 Timeline showing trends in the development of SME printing companies, 1990–2004

Development	Management information systems become mainstream	Maturation of of DTP and PostScript	Development of imposition and large-format imagesetters	Launch of colour digital presses Offset machines increase automation	Press manufacturers launch direct imaging machines	Widespread launch of CTP	8(+)-unit perfecting Speedmaster		Development of e-procurement systems related to print	Launch of PPML Integrated digital manufacturing systems launched	Still little automation in binding and finishing				5m/s high-quality colour digital processes
Activity	Much administration is computerised		Lower entry costs and skills required for prepress			Widespread implementation of e-mail			Development of fully digital workflows based on PDF	Printers explore e-commerce systems	Much administration is automated		Major print buyers have access to printers' systems, more transparency		
Outcome			Explosion in colour page demand, reduction in run lengths	Reduction in hand planning		Development of short-run colour digital print markets	Early use of e-mail in administration	24 hour 7-day customer interface needed	Decline in use of film and sales of imagesetters		Commercial launch of high-speed, high-quality inkjet	Widespread use of sophisticated colour personalisation			
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Industry structure	Distinct classes of company, agencies, repro/trade houses, printers, finishers			More printers invest in prepress, huge pressure on traditional repro companies					Printers develop strategies to provide novel products and services	Growth of 'Facilities Management' and print brokers outsourcing print procurement	Printers explore process re-engineering techniques to add value to clients				
Technology	Printers are concentrating on ink-on-paper, strategies based on price, quality and service					Auto-plate loading is standard on new sheet-fed presses			Decline in mini-webs, more competition on B1 sheet-fed printing		Auto-plate loading is standard on new web presses	Closed loop control of new sheet-fed presses	Digital presses are common in 'traditional' print companies		Commercial use of high-quality digital inkjet

Source: Pira International Ltd

This sector is expected to show considerable fall in demand for products, especially in the continuous stationery market. There has been considerable consolidation and rationalisation in the supply side with much more advanced penetration of brokers and print management companies. Printers are diversifying, rapidly. The current supply chain for business forms is illustrated in Figure 7.11.

FIGURE 7.11 Supply chain for business forms



Source: Pira International Ltd

Principal trends

- Considerable interest in developing from base stationery into personalisation, particularly direct mail, security applications and labelling.
- Move from continuous multi-part forms for personalisation on impact printers to cut sheet products for inkjet and laser printers, with a wider range of distribution points and personalisation.
- Growth of electronic forms for use on e-commerce and the internet, the design of the form and gathering of the data offers new opportunities.

The trends in the business and personal stationery sector are set out in Table 7.3.

TABLE 7.3 Trends affecting business and personal stationery

	Positive factors	Negative factors
General trends	▶ Increasingly colourful company logos ▶ Large users turn to suppliers for stock management	▶ Decline in use of continuation sheets, compliment slips
Technology drivers	▶ Desktop colour printers will print letter and letterheading so reducing requirement for preprinted stationery	▶ E-mail discourages business correspondence ▶ Use of fax negates need for preprinted stationery
Other drivers		▶ Letter correspondence is too slow ▶ Environmental concerns ▶ High real cost of filing and storage
Potential for electronic substitution	▶ Letterheading promotes company image and has longer-term impact	▶ E-mail and fax are successful substitutes
Indicated overall product trend	▶ Decline in use of business stationery ▶ Business stationery remains a high-quality product, but no grammage increase ▶ Greetings cards will grow in volume to 2005 but then decline as a result of the increase in use of e-mail for this purpose	
Transactional print		
General trends	▶ Increasing complexity ▶ Incorporation of machine-readable features ▶ Incorporation of security features ▶ Increased use of colour	▶ Decline in use ▶ Decline in multi-part forms ▶ Use of credit cards ▶ Development of internet and e-commerce
Technology drivers		▶ Increased use of computer systems ▶ Increased use of laser printers ▶ Electronic transactions systems ▶ Office image processing/filing systems ▶ Increased use of on-screen forms
Other drivers		▶ High cost of storing and processing forms ▶ Inconvenience of storage and retrieval ▶ Increased use of the telephone/fax in business transactions
Potential for electronic substitution	▶ Established practice ▶ Convenient for manual data entry, signature capture, etc. ▶ Substitute methods often require high capital expenditure	▶ EDI, e-commerce are faster and cheaper ▶ Electronic systems can incorporate security measures ▶ Potential to improve efficiency by reducing the volume of paperwork
Indicated overall product trend	▶ Preprinted business forms decline in use by 5% pa or more ▶ Security print increase in complexity with integration with electronic systems (based on individual's personal features such as voice characteristics) ▶ Financial print declines by 4% pa in favour of electronic transactions that replace cheques, cash, etc. ▶ Tickets acquire more characteristics of security print	

Source: Pira international Ltd

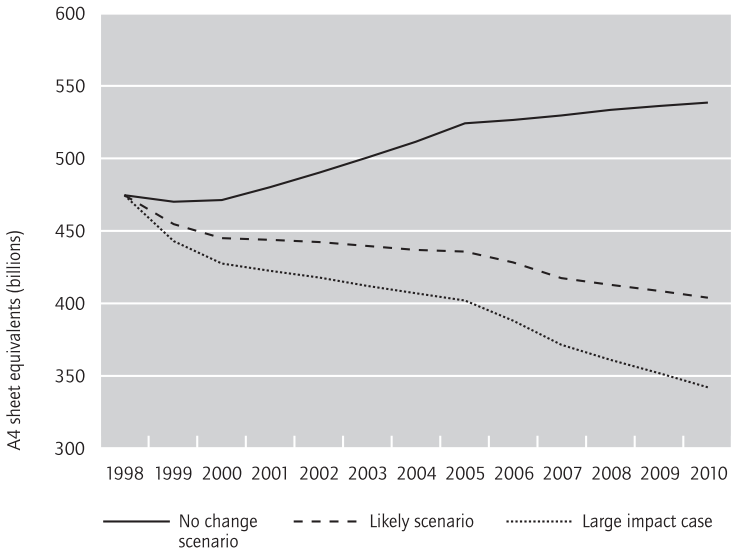
Projections

For the purposes of this projection, business stationery and transactional print has been split into:

- business forms
- other transactional and stationery products
- cut sheet paper.

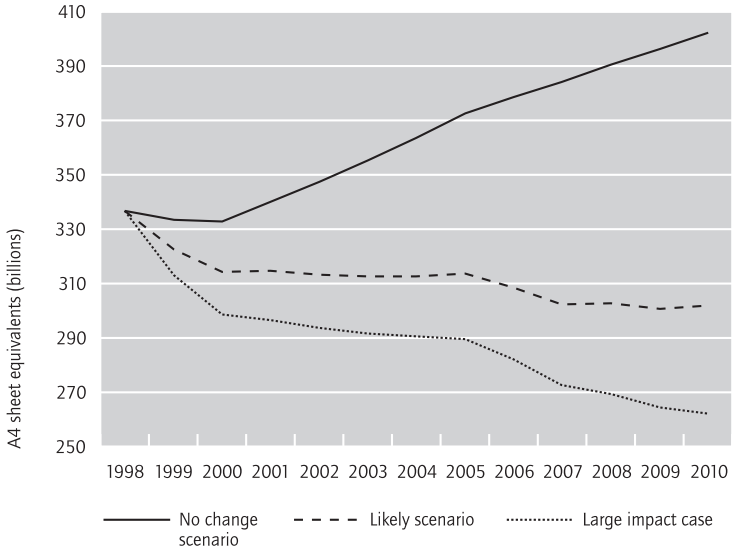
This is because the factors affecting each of these are slightly different. The predicted demand to 2010 for each of these three categories is charted in Figures 7.12 to 7.14, respectively.

FIGURE 7.12 Predicted demand for printed business forms, 1998–2010



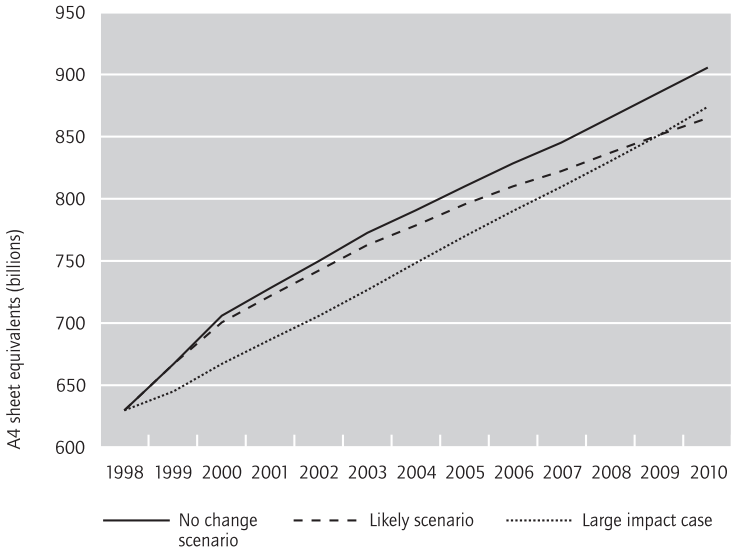
Source: Prima report

FIGURE 7.13 Predicted demand for other stationery and transactional print, 1998–2010



Source: Prima report

FIGURE 7.14 Predicted demand for cut sheet paper (printed and unprinted), 1998–2010



Source: Prima report

No change scenario

- Population growth is as predicted.
- Number of households change is as predicted.
- GDP change as predicted.
- Run length changes in accordance with Prima survey opinion.

This scenario has projected growth rates of 1–2% pa for transactional and stationery products over the decade. However, opinion was very strongly of the view that decline was to be expected, as shown in the likely scenario.

Likely scenario

As above plus:

- Take-up of internet is as predicted (33% of households by 2010).
- The percentage of internet users conducting e-commerce transactions grows to 50% by 2006, and remains at that level.
- The effect of this is that, by 2010, 16% of business transactions are conducted in this way with a consequent impact of this magnitude on all forms of business stationery and transactional print.
- Number of jobs changes in accordance with survey results.
- Cut sheet usage changes in line with survey predictions for proportion of forms and stationery printed at the desktop.

Large impact case

As above except:

- Run length and number of jobs reductions are 50% greater than in the 'likely' scenario.

This presents an overall picture of substantial decline. Typical reasons are:

- Increasing use of e-mail.
- A decline in the use and need for hard copy (hard copy is not now universally required for legal reasons).
- Telephone and PC banking, and e-commerce reduce the need for financial and transaction statements.
- An increase in the quantities of imports of educational workbooks from the Far East together with the impact of CD-ROMs in this sector will reduce the home production of these materials.
- Greetings cards will suffer from the impact of the internet and e-mail (mixed views).

Promotional print: catalogues and directories

This sector includes:

- mail order catalogues
- store catalogues
- directories
- brochures
- direct mail.

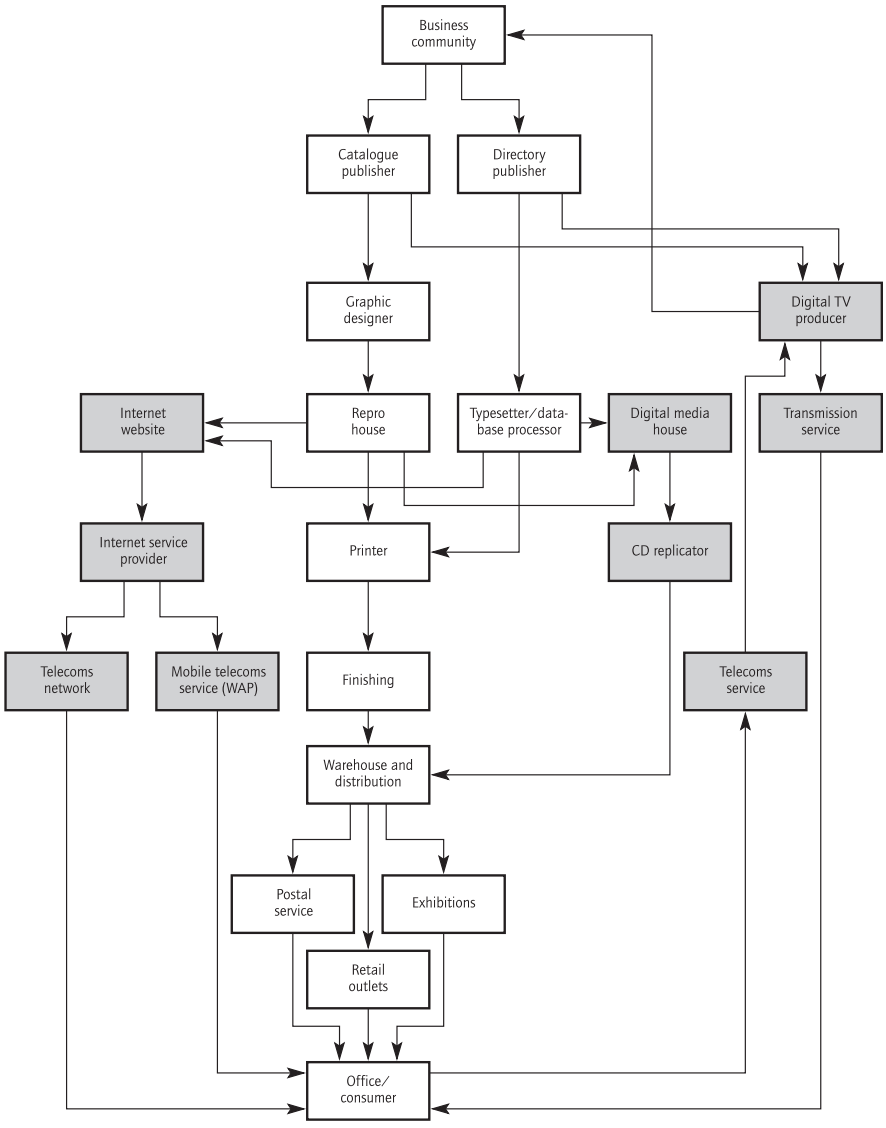
Printed promotional material, by its physical nature (paper grade, grammage, quality of printing, etc.), implies something about the quality of the product, service or company being promoted. If such advertising changes to electronic form then graphic designers will be presented with the problem of conveying the same message about quality but without any tangible media as tools. It is interesting to speculate whether the added dimensions of sound and interactivity possible with electronic media can be used to replace the physical attributes of print.

Directories are a classic example of a product that should be in electronic database form, and that is thought to be the long-term trend. However, continued growth at least to 2005 is expected. A key player in this field is Yellow Pages. The printed version is growing strongly in circulation, and will move to four-colour printing as has already happened with US versions. It is a complementary product with the electronic online version.

In the UK, direct mail is 11.6% of total advertising expenditure. Volumes have doubled since 1990. Some estimates suggest that paper communications will fall from 90% to 30% of all communication by 2010, but given that the volume of communications is said to increase by 600% over the same period, this will still result in another doubling of paper-based communication.

The current supply chain for catalogues is set out in Figure 7.15.

FIGURE 7.15 Supply chain for catalogues



Source: Pira International Ltd

Principal trends

- Fragmentation from large catalogues published once or twice per year into many 'specialogues', with much shorter leadtimes and more tailored direct marketing communications.
- Growth of electronic alternatives, especially the internet and digital television (although this is not just a one-way path as the printing of the Lastminute.com Christmas catalogue, distributed by pink-clad Father Christmases demonstrated in 2000).
- The internet and digital television provide online ordering and real-time stock levels, hence delivery time predictions.
- Growth of new channels to the end-consumer, via new-generation hand-held digital devices, such as Bluetooth PDAs.

TABLE 7.4 Trends affecting promotional print

	Positive factors	Negative factors
General trends	▶ More colour, special effects, selected substrates ▶ Shorter production runs, printed more often ▶ Increasingly occasion- or event-specific products ▶ More laminating, varnishing, personalisation and customisation ▶ Direct mail remains very successful	▶ Increased use of fax to deliver product information ▶ Increased use of internet as a promotional and selling device
Technology drivers	▶ Digital printing enables personalisation, customisation of content and short runs	▶ The internet provides catalogues and directories online, with real-time stock and delivery information
Other drivers		▶ High mail and distribution costs for bulky catalogues ▶ Environmental concerns
Potential for electronic substitution	▶ Print is easy to target ▶ Does not require proactive user ▶ Good browse characteristics ▶ Quality implies quality of product/services being promoted ▶ Tangible	▶ Advertising is intrusive on electronic media ▶ Directories and catalogues are database products lending themselves to electronic form ▶ Several user benefits to electronic versions
Indicated overall product trend	▶ Despite apparently adverse forces, catalogues are expected to increase in circulation by 2% pa although pagination may decrease. Store catalogues are expected to grow strongly, many will be circulated with direct mail ▶ Directories decline begins after 2005 ▶ Brochures will be produced in smaller quantities but more often, increasingly personalised and customised to the immediate application ▶ Direct mail will continue to grow, increasingly with content customised to the individual	

Source: Pira International Ltd

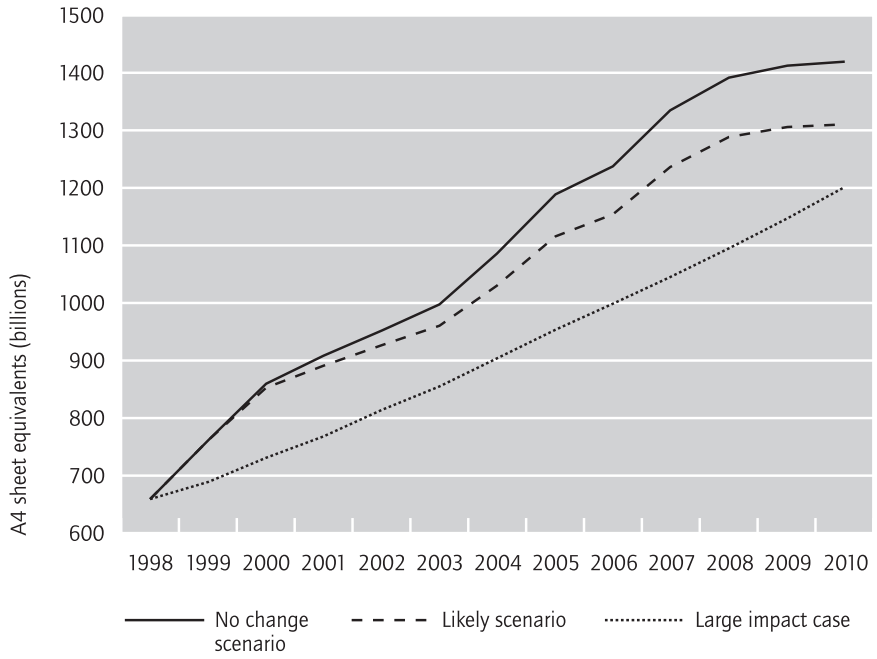
Projections

For the purposes of this projection, promotional print has been split into:

- catalogues
- directories
- brochures, direct mail and other promotional items.

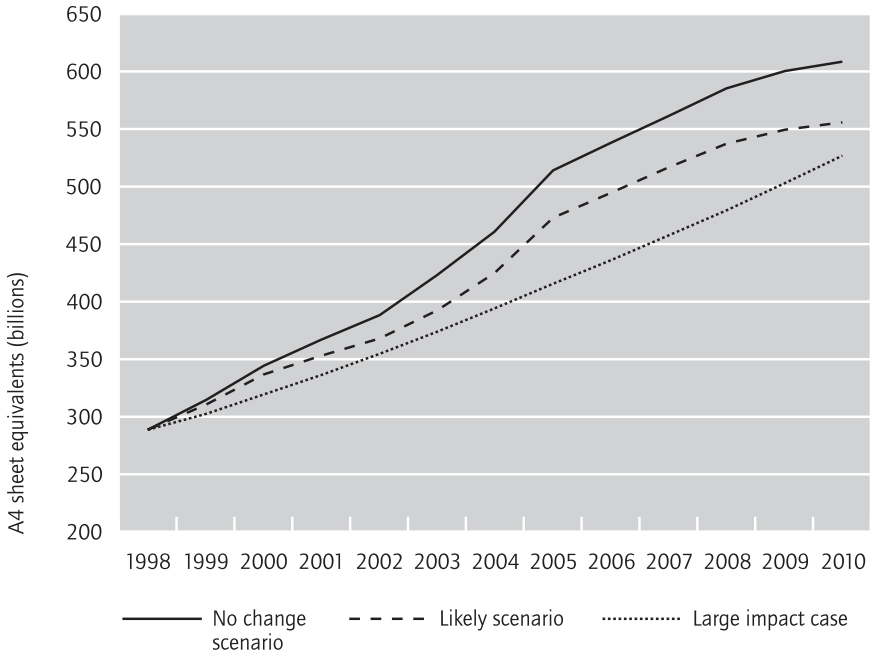
This is because the factors affecting each of these are slightly different. The predicted demand to 2010 for each of these three categories is charted in Figures 7.16 to 7.18, respectively.

FIGURE 7.16 Predicted demand for printed catalogues, 1998–2010



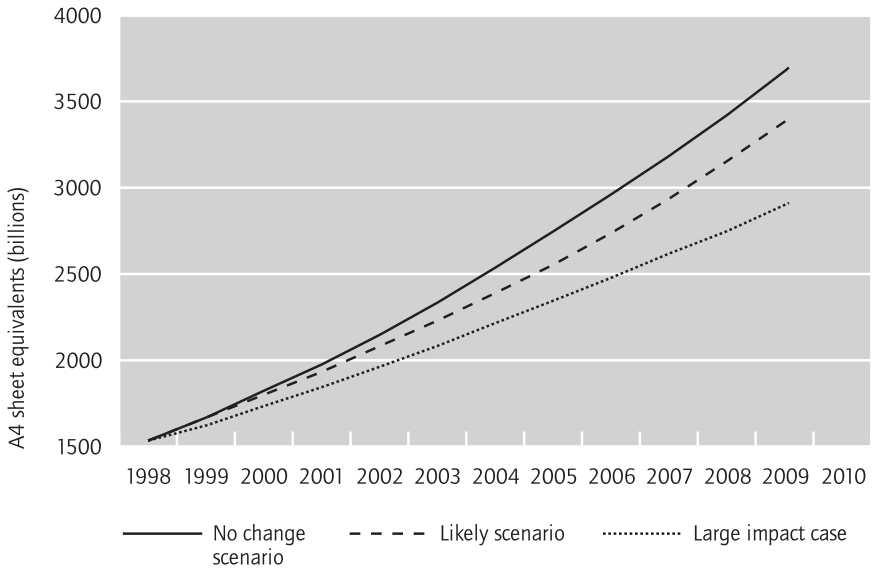
Source: Prima report

FIGURE 7.17 Predicted demand for directories, 1998–2010



Source: Prima report

FIGURE 7.18 Predicted demand for brochures and direct mail, 1998–2010



Source: Prima report

No change scenario

- Population growth is as predicted.
- Number of households change is as predicted.
- GDP change as predicted.
- Promotional print grows at twice the rate of GDP.

This no change scenario projects growth of about 8% pa for catalogues and directories (and a little higher for brochures and direct mail), a reasonable extrapolation of past trends.

Likely scenario

As above plus:

- Take-up of internet is as predicted (33% of households by 2010).
- The percentage of internet users conducting e-commerce transactions grows to 50% by 2006, and remains at that level.
- The consequent effect is to reduce the demand for catalogues from this group by 12% by 2005 and 17% by 2010.
- The percentage of internet users using the internet to access directory services rises to 60% by 2003 and remains at that level.
- The consequent effect is to reduce the demand for directories from this group by 18% by 2005 and 20% by 2010.
- The volume of direct mail and brochures grows at 2% pa above the average rate for promotional print in the no change scenario.

Large impact case

As above except:

- The effect of the internet on directories is 50% higher than in the likely scenario.
- Catalogues and brochures lose advertising revenue to the internet resulting in a 7% loss by 2005 and 9% by 2010.

For all the sub-categories of promotional print, the likely scenario has given a projection of relatively high growth (for example, about 11% for catalogues).

Figure 7.19 presents a timeline for development in the business-to-business catalogues sector for the period 1990–2004.

FIGURE 7.19 Timeline for the business-to-business catalogues sector, 1990–2004

Development	Xtensions to QuarkXPress	Use of OPI to let design reuse images to reduce leadtimes	Inkjet addressing on binding lines	Selectomatic binding	CD-ROM versions		Digital asset management systems	Internet		E-procurement	Auto-assembly database-driven make-up		New PDA devices, (Bluetooth enabled?)		
Activity		Multilanguage, cross-referencing index extraction and price merging		Personalisation of catalogues, more targeting		Multimedia catalogue versions		Distributed content available through browser-based systems			Use of XML to structure catalogue content independent of format	Direct marketing and personalisation applications grow, via web and digital print			Phasing out of CD-ROM/DVD versions
Outcome		Printers and prepress houses specialise in catalogue production								E-commerce shopping basket approach for business-to-consumer applications	Vendors offer business-to-business electronic catalogues through web and secure sites	Increasingly print is used as just one route to market Paginations and run lengths drop	Growth specialogues		
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Industry structure					Specialist catalogue prepress systems and multimedia vendors			Online catalogues following lead of Amazon.com	£/euro exchange rate makes UK uncompetitive for time-insensitive products	E-procurement		Growth in web portals and free trade zones (electronic marketplaces)			

Source: Pira International Ltd

Examples of specific company activity

8

The following examples are prepared from the interviews conducted during this study. They are anonymous and information therein is derived from the history and activities of the particular companies involved.

General printer 1

The company is a typical general printer in that its principal products are:

Activities

- promotional
- business stationery
- report and accounts

and a selection of miscellaneous products that are produced on ever decreasing timescales, sometimes next day.

Production is litho based with an extensive range of sheet-fed colour (focus on B1) and some mono web machines. The company has prepress and finishing capability in-house. It has not as yet moved from the conventional salesperson approach to selling print, although it recognises the need for development in this area.

Growth strategies

- Do not have all eggs in one basket – hence deliberately become a group of companies each with a specific focus.
- Keep size of individual companies to, say, £10–12m, since above that, the complexity becomes a management issue in itself, and destroys profitability.
- Grow by acquisition, then reorganise and consolidate. Gains customers, but also historical 'baggage' of the company.
- Or grow by setting up greenfield operations. Has advantage of no 'baggage', but downside of no customers. Better approach in the long run.

Other strategies

- Centralise administrative activities to minimise overhead costs.
- Keep operating costs to a minimum.
- Focus and specialise – don't be everything to everybody; but this is difficult in general print. Can focus on size (B1) and so gain economies of scale and standardisation, i.e. keep production complexity to a minimum.
- Aggressively pursue efficiency. Drive down costs. Invest in the latest equipment for automation and efficiency.
- Have a well-defined internal structure that provides clear performance accountability – ensure costs are clearly traceable.

External forces driving investment

The company sees increasing competition as a result of the following.

- Productivity increases have not only provided a means of responding to the need for lower prices (which have in the main been passed on to customers), but also given rise to overcapacity. Overcapacity leads to lower prices. Pricing is now said to be as competitive as in the depths of the last recession in 1991/92. Peaks and troughs of demand are more pronounced now making it difficult to fill a fixed capacity effectively.

- Technology development has brought automation. Since 1980 there has been a greater increase in productivity than in the whole of the industry's previous history. Another step change in productivity is expected as a result of automation of the ordering process (through to platemaking).
- Companies which are struggling attempt to gain work through low pricing which does not benefit them in the long run, and causes other companies to have difficulties.
- Large print buyers are rationalising purchasing arrangements – they are wanting 'approved' suppliers – and this is used as a mechanism to obtain competitive prices.

Other external forces:

- paper prices
- e-print companies are viewed as parasitical.

Labour

- Printing technology is becoming easier. Production processes are being deskilled. This makes it easier for anyone to start a company and produce quality work.
- Salaries for salespersons are rising and demand for them is fierce. The revenue per salesperson is falling. Net effect is to increase selling costs.

Competitive position

USPs are:

- Whatever the job, the company can do it, and do it well.
- 'Firepower', that is, the ability to throw lots of production capacity at a job if it is needed to produce something quickly.
- Unusual, although in the main not unique, press configurations.

The overall market is perceived as being flat. Corporates are diverting advertising expenditure into website development, hence suppressing print expenditure. However, a renewed boost to direct mail print is expected to promote the existence of websites. In the USA it is said to have increased by 15%.

Impact of legislation

Increased regulation increases overheads:

- packaging waste regulations
- energy saving schemes
- health and safety legislation
- employment law
- working time directive.

Other factors increase costs too:

- demand for 'frivolous' tribunals
- increased union activity
- insurance premiums (doubling in three years).

In a small company, these matters all have to be dealt with by the managing director (or equivalent) and have the effect of diverting attention from the real business. A larger company has to employ someone to keep pace with the implications of all this.

Responses

- Drive down unit costs.
- Minimise administrative costs.
- Invest in most productive equipment.
- Cut production capacity or at least reduce number of machines.
- Introduce night-working.
- Focus on B1, but possibly also B2.
- Continuously reinvent yourself.
- Greenfield operations that come with no 'baggage' can redefine wage rates, working conditions, etc. Many health and safety and environmental issues are more easily dealt with on a new site, with new equipment, than in an old established site. Usually easier to keep clean and tidy. Equipment can be driven hard and replaced more often.

Company developments

Developments from 1990 to those predicted for 2005 are presented in Table 8.1.

TABLE 8.1 Outline developments at a printer interviewed for this study, 1990–2005

	1990	1995	2000	2002	2005
Company profile:					
Turnover (index 1990)	£x million	£3x million	£6x million		£8x million
Profit (% of sales)	8%	20%	12%		10%
Capital expenditure (% of sales)	15%	20%	26%	Much lower	Lower
Employees (index 1995)		n	2.3n	2.5n	2n
Structure				Expect reorganisation	Smaller units to gain efficiency
M&a activity	New premises	Acquired companies	Acquired company and created others	Organic growth Greenfield start-up	
Company activities:					
Product mix	General print	Expanded specialisms	Expanded specialisms	New product development	On-demand products
Customer interface:					
Customer service		Reliance on personal relationships with customers	Gain approved supplier status with key customers		Automated ordering into MIS
Production					Digital interface with customers
Administration					Contract arrangements as customers rationalise number of suppliers
Selling and promotion techniques:					
Salesforce	Salesforce	Salesforce	Salesforce with diminishing revenue per salesperson, while salaries increase + website		Fewer

TABLE 8.1 Outline developments at a printer interviewed for this study, 1990–2005 (cont.)

	1990	1995	2000	2002	2005
Timescale for production:					
File to print			12hr–3 days		
Technology in use:					
Design/creativity					
Prepress	Started 5 years previously	New system installed		Fully digital	Prepress in every company but all networked Direct to machine
Printing	Litho, predominantly B2 but mixed		Focusing on B1	Eight-colour machines but fewer of them	DI presses CIP4 implemented
Finishing			Automation of materials handling		
Prepress		Trade repro disappearing	Trade repro gone	In-house	
Administration			Surge of the internet farmer, but currently ignored		

Source: Pira International Ltd

Business stationery etc. printer

Activities

A multi-site litho print company employing a mixture of machines of varying ages, mono and two-colour, producing business stationery, forms, multi-part sets, business cards, and simple promotional material. Most runs are in the region of 1000–2000, although some are much longer.

The company has an MIS that it uses for all the usual functions including estimating.

Growth strategies

Substantial growth has occurred since 1990, organically (by gaining more customers) as well as by merger. As a result of the merger, rationalisation and consolidation have been possible, to reduce the number of print sites to two. This has generated some economies of scale enabling higher-productivity equipment to be purchased, hence reducing costs and thereby improving competitive position.

Growth has resulted in the need to move from crisis management to 'planned production'. New appointments and restructuring of the management team was necessary.

External forces driving investment

Substantial decline in business forms has taken place requiring growth elsewhere to make up the shortfall. The result has been a move into four-colour promotional print.

Investment has been in highly automated printing machines to provide quick turnround and save labour through higher productivity (since good labour is difficult to recruit).

Labour

Difficult to recruit appropriately skilled staff to what is a fairly undemanding production task (technically), but where high quality and high productivity are still required.

Competitive position

The company has worked to develop several USPs:

- Its relationship with an office supplies business provides an excellent sales vehicle and contact with a large potential customer base.
- It has become a one-stop shop, taking the order whether or not the company can produce it. This has resulted in a considerable volume of promotional print being handled, much being outsourced. The company has now invested in suitable production equipment, for which it had a ready-made workload.

The company faces competition from the general print trade and recognises that e-procurement (particularly by corporates) might affect its business. However, it believes that personal contact of sales personnel with customers is a key strength of its position.

Responses

- Decline in business forms has led to development of software product for on-screen forms.
- Decline in business stationery run lengths has influenced choice of production equipment, with a move to highly automated small litho machines with automatic plate change, washup and so on.
- Examination of the product and service offering – especially to consider a stock management service on behalf of some customers.
- Expansion of promotional print business, principally to existing customers.

Company developments

Developments in this company from 1990, and as forecast to 2005, are set out in Table 8.2.

TABLE 8.2 Outline of developments at a stationery printer interviewed for this study, 1990–2005

	1990	1995	2000	2002	2005
Company profile:					
Turnover (index 1990)	£x m	£1.6x m	£6.7x m		
Output		5400 job/yr	30,000 jobs/yr		
Average order size		£300 Typical run 1000	£200 50% of jobs 1000–4999	Typical run <2500 (declining)	
Employees		13	80		
Structure	Single site	Multiple sites	Fewer sites		
M&A activity			Merged, rationalised and consolidated		
Company activities:					
Product mix	Business stationery, letterheads, forms	Business stationery, letterheads, forms	Business stationery, letterheads, forms plus legal forms One-stop shop philosophy	Diversification into promotional print One-stop shop philosophy even more important	
Customer interface:					
Customer service	Sales personnel	Sales personnel	Sales personnel	Sales personnel	
Production	Telephone	Telephone	Telephone		
Administration	Telephone	Telephone	Telephone		
Selling and promotion techniques:					
Salesforce	Sales personnel	Sales personnel	Sales personnel	Sales personnel	
Timescales for production:					
File to print	5–7 days	5 days	4–10 days	<3 days	
Technology in use:					
Design/creativity			In-house		
Prepress	None	None	In-house Mac systems, plus CTP		
Printing	3–4 mono, 2 colour presses	Added small auto-platechanging machine	Several more auto-presses Sheet-fed mono digital		
Finishing	Basic				
Administration		Computer MIS	Computer MIS Shift in production management from progress chasing to work planning		
Production issues:					
Supplier base	Used 3 repro houses, including platemaking Paper merchants	Used 3 repro houses, including platemaking Paper merchants	Paper merchants	Paper merchants	
Profile of skills:					
Direct/indirect	1 fully trained press operator				
Training	Rest trained in-house				
Skill shortages			Difficult to recruit		

Source Pira International Ltd

General printer 2

A medium-sized general printer using a range of litho machines (and some digital) with a broad product mix although with emphasis on high-quality promotional print.

Activities

The company has grown by acquisition during the 1990s, but is now in a consolidation phase. Organic growth is not possible, partly because of the shortage of good sales personnel. So the strategy is to buy small companies and add them in (although about 30% of the business is lost in the process).

Growth strategies

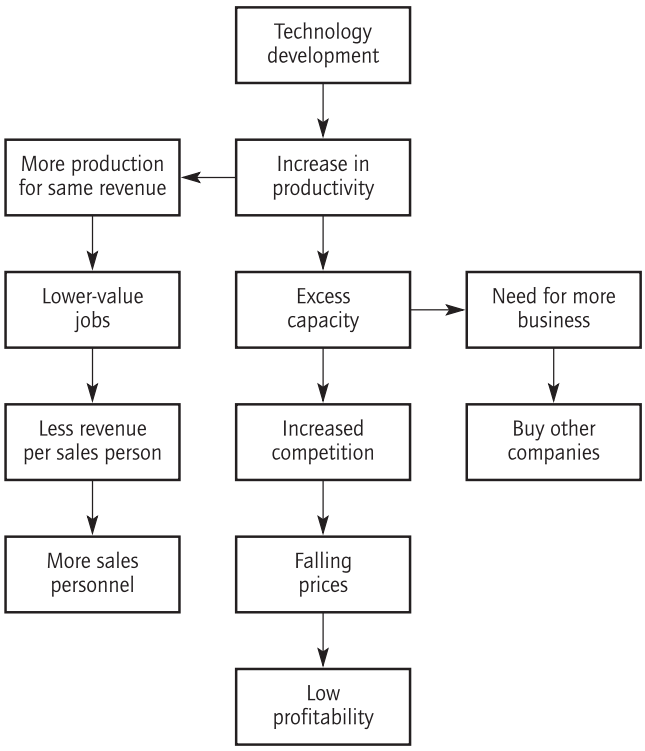
External forces driving investment

Technology has resulted in a reducing cost base of production. Increased productivity also leads to excess capacity, hence more competition, hence falling prices, hence low profitability.

Excess capacity leads to the need for more business, hence other companies are bought.

Increased productivity leads to more production for same revenue, hence lower-value jobs, hence lower revenue per salesperson, hence the need for more sales personnel. This is shown schematically in Figure 8.1.

FIGURE 8.1 The practical impact of technology developments on a small printer



Source: Pira International Ltd

Other external forces

Rapid change of technology and in the marketplace is reducing the business planning cycle. Business plans used to be three years ahead in outline, one year in detail; they now work to three- and six-monthly objectives.

Paper prices seem artificially high when put in the context of the high value of sterling.

Labour

The industry has lost a lot of professionalism. To maintain standards and culture it is necessary to grow own managers. However, it is very difficult to find leader/managers. There is no basic training of press operatives any more and the quality of applicants is poor.

Print companies have become top heavy with non-productive staff, increasing overheads. This is a result of:

- reduced sales turnover per salesperson, hence more sales staff;
- reduced hit rate on quotations, hence more quotations, more estimators;
- reduction in the value of typical job, hence more jobs, hence more order processing, production planning and so on, and more administrative staff.

Competitive position

The company's USP may be the ability to produce very short run colour (for example, 100–500) cost effectively on litho print machines.

Impact of legislation

Legislation discourages mergers and takeovers.

Accountants need to take a different view to the valuation of companies, and there should be agreed approaches to this.

Responses

Partnerships are very important for the future, each partner focusing on its core competence.

Company developments

Developments at this company since 1990 and as forecast to 2005 are presented in Table 8.3.

TABLE 8.3 Outline of developments at a printer interviewed for this study, 1990–2005

	1990	1995	2000	2002	2005
Company profile:					
Turnover	£5m	£7.5m	£10.5m	£11m Reduced margins	£11m
Output					
Average order size			Much reduced run length and job value More jobs Run lengths down to 50 on B1 presses Typical run 1000–3000, possibly to 5000 500 run of 4-col is common		
Employees	60		145		
Structure			Reorganise and consolidate		Restructure to gain economies of scale
M&A activity		2 acquisitions	1 acquisition		

TABLE 8.3 Outline of developments at a printer interviewed for this study, 1990–2005 (cont.)

	1990	1995	2000	2002	2005
Company activities:					
Product mix	Promotional material, business stationery, forms, etc.	Promotional material, business stationery, forms, etc.	Promotional material, business stationery, forms, etc., with the addition of training materials	Added service component	Expects some promotional print to be lost to the internet and desktop printing
Customer interface:					
Customer service					
Production					
Administration	MIS implemented		No change	Addition of internet Online ordering and schedule viewing – but standards required	
Selling and promotion techniques:					
Salesforce	>£500,000/rep 80% of quotations convert to jobs		£300,000/rep More sales personnel 20% of quotations convert to jobs	More and more sales personnel but different type – need to sell services, concepts and benefits as well as product	
Timescales for production:					
Design/creativity					
Film to print	14 days		<8 days always		
File to print			<5 days always, also <24hr		
Technology in use:					
Design/creativity	8 designers	No designers			
Prepress	Analogue drum scanners	DTP	CTP		
Printing	B2 presses	B1 presses	B1 presses. Auto-plate change regarded as crucial Digital print	B1, B3 and digital presses	Plus digital colour press
Skill shortages			Managers, printers and sales personnel all in short supply		
Supply chain developments:					
Design/creativity	In-house	Outsourced			
Prepress			E-print immature – more standards required	E-print crucial to the future. Dotcoms 'own' customers	
Administration				Introduce own e-print system	

Source: Pira International Ltd

General small printer 3

A small, independent commercial printer founded in 1976, there are now three working partners, turning over some £4.7m profitably. The key measure taken is gross profit, it has reported improvements in margin since 1992. This is seen to be more important than growth; it will not enter the competitive B1 market. The company is certified to ISO 9000 and ISO 14000, and sees early adoption of these standards as beneficial in attracting new clients and providing opportunities to quote for new business. The firm is structured into five divisions:

Activities

- Two instant-print and high volume copyshops in Buckingham and Milton Keynes. These were the original businesses; they still pay for themselves and are seen as good initial customer contact points for new clients.
- Offset division, running Heidelberg B2 machines with sophisticated prepress operation as a film-free zone. It runs a Shuttleworth MIS but has considerable experience with PrintChannel e-commerce. Print products vary from colour brochures through to business stationery. The client base includes local businesses through to Mercedes-Benz (15 years, stationery fulfilment through e-commerce and short-run brochures) and Diagio (from digital asset management through print and stationery).
- Design – three people providing print design, together with website design from 1998.
- Digital – an operation using the Xerox Docucolor 100 started up in late 1999. After taking some nine months to understand the machines and build up volume, the business is successful. The company is considering a second machine (probably sheet-fed) to provide a wider range of substrates.
- Two new start-ups are businesses that will use the internet as a sales front. It sees specific market opportunities coming from using sophisticated prepress and internet technology.

The internal accounts department monitors each division; the strategy is to use a portfolio approach to benefit the whole group rather than work separately. The company acts as a jobbing printer, providing whatever products and services are demanded.

E-commerce

The company uses Printchannel to provide e-procurement for various clients, both large and small, as well as serving customers' e-procurement channels (particularly Ariba). PrintChannel was chosen after a study visit to the USA. The company is very pleased with the technical side but is looking to an alternative to avoid the percentage payment.

The service offered is a personalisation into predesigned templates. The customer inputs details and a PDF is generated and sent to the client. When approved, the PDF is passed to the prepress for imposition and printing, with order details, etc. Benefits are significant labour savings and increase in prepress capacity (particularly with the CTP), and the ability to offer improved service to clients to help retain loyalty.

There is no link with the Shuttleworth system. The company is looking to generate the administration details automatically by the third quarter of 2001. The other link that is missing is with client Ariba systems, a standard would be beneficial. The increasing e-enablement of print procurement is both a threat (more transparency) and opportunity (to attract more clients). The transparency issue is critical on open procurement sites (Ariba) where other parties may see pricing and capacity information openly.

The strategy is to attract and pull clients, rather than demand from customers. Timing of the development is important: providing customers with e-empowerment is a useful selling tool to allow buyers to demonstrate new capability with their companies. The company classifies customers as 'golden clients', offering them the preferred channel to develop the relationship and provide new services.

Prepress

The company has consistently invested in prepress, to remove bottlenecks and improve service. It invested in CTP (screen with Lithostar plates) in late 1998, and since 1999 has been film free, successfully persuading customers to supply digital files. There is no requirement for copydot scanning. The website provides a PDF preparation guide; it has a PDF workflow enabled. The company provides a Go-Team: a customer interface group including skilled prepress technicians that will visit and train customers in preparing suitable data. If customers supply problematic files, the team will try to repair and sort out the file at no charge unless there are persistent problems.

There were several initial teething troubles (particularly with continuity of plate supply and calibration) but all are now sorted out. The new presses take set-up data and have significantly reduced make-ready and set-up using Heidelberg's CPTronic and CIP3 data. Clean, correct plates have improved the efficiency of the print room.

The company has a Picdar digital asset management system offering online browsing and repurposing of files. These services are offered to clients, and four have signed up. The model of charging for asset management is not yet mature.

There is no formal training scheme across the company, which is a BPIF member and has followed the NVQ 1–5 for various personnel. Prepress people tend to become interested in topics and the company supports these interests. Current hot topics include XML and the internet. The company has good skills and suffers poaching and staff turnover. Because it sees staff retention as a future problem, it wants to become a high productivity, high wage company in order to hold on to good people.

Future

The company is bullish about its future prospects. It is moving manufacturing out of the town centre to a greenfield site, keeping the copy shop sites.

The biggest pressure facing the business is the pressure on customers to cut costs and time. This puts huge pressure on established customer relationships so it continually innovates products and services for customers. The next opportunity may be with multimedia; the emerging Bluetooth technology may also offer advantages.

Partnerships are a way forward, particularly in non-core areas, so outsourcing carriage is taken while a more careful make/buy decision is taken on other activities closer to print. It uses trade printing services to manage peaks but likes to control the added value internally wherever possible.

The company sees threats from developing facilities management/outsourcers and is trying to do part of those services themselves. It sees problems in attracting highly skilled new entrants: print does not compete well against alternative media.

Large independent web offset printer

Company background

An independent single-site operation, the owner has 60% of the shares. The company turned over £36m to March 2000, on course for £38m in 2000/2001. It buys some 12.5% of the paper used. Currency fluctuation has resulted in £10m of exports in 1995–96 declining to less than £1m in 2000. Its chief market sectors are magazines and catalogues (consumer catalogues and holiday brochures).

Competitive position

Concern about the recent market activities of competitors offering significantly lower prices to woo work. The decline in the value of the euro has meant significant pressures on the UK to increase efficiency. The company has, along with much of the UK and the less efficient producers (in terms of equipment and access to capital), suffered. The industry will generally offer improved turnround and flexibility, with much reduced wastage. In terms of paper prices there is a generally level playing-field across Europe so it is relative efficiency and flexibility that determine the location of print work. The paper market has generally settled down; there will be more stability but it mourns the opportunity to make money when prices increase.

Sales and customer services

There is a great deal of multi-level selling activity and much personal contact in developing a relationship with customers. The salesforce has increased, reflecting the increasing number of customers. In magazine and catalogue production the company does not foresee significant impact of e-commerce on the customer contact and administration. The reality is that there are many enquiries and changes to the product throughout its gestation and production; flexibility is a key source of advantage. There is difficulty in obtaining and retaining good experienced production staff at publishers and other customers, and much of the training is carried out by the printer, who also finds good staff difficult to train and develop.

Magazine marketplace

The company produces consumer and contract printed magazines; it is not involved in the business-to-business sector. There is administration, web printing, wire and perfect binding but no personalisation or individual product wrapping and mailing capability.

The great unknown is the impact of the internet on ad revenue. The company believes this will not be significant until fast internet access is available to all, and even then the model will have to change to provide a significant user benefit. The company

claims that the magazine is competing for the time of the individual; the internet would have to provide a similar time-fulfilling experience to compete.

Catalogues The company benefits from offshoots of the large mail order catalogues and many holiday brochures. These markets are developing.

Digital workflow The amount of digital final pages is increasing (100 out of 14,000 pages in October 1999 were digital, rising to 1000 out of 15,000 in November 2000). It operates a significant prepress department of assembly and platemaking (30 staff). The big issue for the company is the costs associated with having to handle both analogue and digital material. To financially justify suitable investment the department would need to shrink to nine staff. The answer is to work closely with a friendly outside repro supplier which provides the necessary plates (quite successfully in trials).

Cost The recent success that publishers have enjoyed in reducing the repro and production costs means that there is little scope for further savings by not outputting film and proofs.

Time The potential time saving by submission of digital files to the printer will be achieved only when a totally digital workflow is in use. Time will be saved at the printer through no requirement for customer services to check the completeness of film and to sort it into sections for assembly and platemaking. Using electronic imposition and CTP will reduce the time spent in prepress and will allow hours to be removed from the schedule at the front end. However, when the overall manufacturing is considered, printing is carried out on multiple presses at speeds of up to 50,000cph (copies per hour). The sections are stored until all are ready (together with any bound and loose inserts) then the binding starts. Typically, plants have fewer binders, these have much slower cycle speeds and will take much longer to produce than the print, especially with some of the very innovative samples and inserts that may be included. In many cases the publisher requires some promotional cover mounting, the majority accomplished by handworking at a contract finisher before distribution. So, a saving of a few hours at the start may not be significant in the overall schedule, particularly of a monthly magazine where the benefits in automating and speeding up the binding process would gain far more time for the publisher. There have been significant strides made in mounting common items to covers (for example, CD-ROMs), but publishers use cover mounts to differentiate and increase sales of a particular title so will continually change and innovate to increase the impact. These changes will prevent automation.

Book printer

Activities

A printer of short- to medium-run specialist books (including looseleaf publications), journals, newsletters, particularly where production timescales are very short, and where typesetting or data conversion/processing is required. Production is based around sheet-fed litho machines supplemented since 1995 by digital mono and colour machines.

Growth strategies

- To expand customer base and hence reduce vulnerability of too few customers.
- To change customer base from government departments to publishers.
- To gain more work of the same type from existing customers.
- To gain more work of a different type from existing customers.
- To gain new work from new customers, especially in the corporate sector.

External forces driving investment

- Changes in the marketplace create new opportunities which require new equipment (for example, mailing line).
- Changes in the marketplace reduce demand for existing products and encourage diversification into new markets requiring new equipment (for example, move into promotional print and hence five-colour press with spot varnishing).

Labour

Labour is recruited on the basis of a good level of intelligence and an aptitude to production. The required training is given as an ongoing process. A person is employed one day per week to manage the training programme of every individual in the company (including all directors), so that continuous improvement takes place.

Competitive position

USPs are:

- Typesetting, data conversion, SGML, XML, data storage and other prepress services based on in-house expertise.
- One-stop shop service within the scope of the requirements of the client base.
- Fulfilment services – direct mailing to consumers.
- Superb customer service.

Company developments

Developments since 1990 and those forecast to 2005 for the company are set out in Table 8.4

TABLE 8.4 Outline of developments at a book printer interviewed for this study, 1990–2005

	1990	1995	2000	2002	2005
Company profile:					
Turnover	£5.4m 65% of turnover with 2 companies	£7.0m	£8.4m 15 key customers	£9.2m	£11m
Customer base	Government depts	Govt depts plus publishers	Publishers	Publishers and corporates	Publishers and corporates
Output	2400 tonnes	2400 tonnes	2400 tonnes but many more jobs		
Average order size					
Employees	190	187	184	180	175

TABLE 8.4 Outline of developments at a book printer interviewed for this study, 1990–2005 (cont.)

	1990	1995	2000	2002	2005
Structure		Moved to custom designed site/ building			
M&A activity					Possible Possible
Company activities:					
Product mix	Typesetting, repro, mono and 2-colour print, books, journals, leaflets, school brochures	Typesetting, data conversion	SGML coding, typesetting. 2- and 4-colour litho. 2 mono digital, 1 colour digital Warehousing and fulfilment services	Plus data conversion, XML, digital web Promotional print Warehousing and fulfilment services	
Customer interface:					
Customer service	Fax + 1 works manager	Fax + 2 works managers	E-mail + 5 account managers	E-print + 5 account managers	E-print + 6 account managers
Production					
Administration					
Selling and promotion techniques:					
Salesforce	1	2	3	4	5
Timescales for production:					Yes
Design/creativity					
Film to print	3 days	2 days	1 day		
File to print	10 days	7 days	3 days	1 day	0.5 days
Technology in use:					
Design/creativity			1 designer x1 Mac	2 designers	3 designers
Prepress	Film, step-and-repeat projection platemaking	Large format imagesetter	CTP and large-format imagesetter	CTP	CTP
Printing	Mono, 2-colour print	Mono, 2-colour print 1 DocuTech	50% increase in no. of plates from 1995 Mono, 2-colour print 2 DocuTechs 1 Docucolor B2 4-colour	Mono, 2-colour print 2 DocuTechs 1 Docucolor B2 4-colour B3 5-colour Digital web	Mono, 2-colour print 2 DocuTechs 1 Docucolor B2 4-colour B3 5-colour B1 5-colour Digital web
Finishing			Mailing line (does in 3 hrs what took 3 days)	Short-run case binding	
Administration	MIS installed 1987	SFDC added			E-commerce interface with customers and suppliers
Production issues:					
Supplier base					
Waste	Everything down the drain	Waste collection tanks	50 tonnes packaging waste to be accounted for		
Profile of skills:					

TABLE 8.4 Outline of developments at a book printer interviewed for this study, 1990–2005 (cont.)

	1990	1995	2000	2002	2005
Direct/indirect	Typesetting person just needed to type		Prepress person needs keyboard and mix of IT skills		
Training	In-house training	In-house training	In-house training Look for staff with basic intelligence, a production aptitude and then train Employ a person 1 day per week to manage staff training	In-house training	In-house training
Skills					
Skill shortages					
Supply chain developments:					
Design/creativity					
Prepress					
Printing			On-demand book production mailed direct to consumer		
Finishing					
Distribution			Fulfilment services	Warehousing and fulfilment services	Warehousing and fulfilment services

Source: Pira International Ltd

Book publisher

Book publishing, with growing electronic media, are undertaken by this company, as well as warehousing and distribution on its own behalf and that of other publishers.

Activities

Growth strategies

- Geographic diversification using core product of conventional book resulted in steady growth and return on assets of 5–10%. Resulted in 75% of sales being non-UK.
- Geographic spread and range of products made company attractive for 70% takeover in 1995, raised to 100% in 1999.
- Accelerated internationalism resulted in divestment of some UK activities.
- Investment in electronic media.

Other strategies

- Create a central services support department for online publishing while maintaining all actual product development within mainstream publishing activity (so keeping it integrated, with common interest in exploiting content). Central department responsible for reference books (which tend to be very large projects), informing everyone else of electronic media developments, licensing deals on behalf of everyone else (because it is a complex area), and e-books.
- Implement end-to-end production tracking, i.e. from author to end-customer. In this context, production tracking includes estimating, costing, marketing blurb and so on.

External forces driving investment

- Customers will not wait.
- Wholesalers meaner, more demanding, want a bigger slice of the cake, longer credit terms (implemented formally or by imaginary complaints.)

Other external forces

Changing prepress technology, and now digital print technology is making the established role of production departments obsolete. New functions and structures are being designed.

Dramatic cost reduction in prepress processes for books over the past 20–30 years makes short-run books viable that previously would never have been considered.

Company developments

Developments that have taken place in this company since 1990 and that are predicted to 2005 are set out in Table 8.5.

Legal publisher

Activities

This company is a publisher of books (case bound, limp bound, looseleaf), journals and newsletters, and electronic media, predominantly to the legal and financial professions, but also to businesses in general.

TABLE 8.5 Outline of developments at a book publisher interviewed for this study, 1990–2005

	1990	1995	2000	2002	2005
Company profile:					
Turnover			97% of profit from traditional printed products		
Customer base					
Output					
Average order size			Trying to reverse trend of more titles and shorter runs		
Employees					
Structure			Created central service department to support and coordinate online publishing		
M&A activity			Acquired another large book publisher		
Company activities:					
Product mix	Books Conservative approach to new media	Books	Books and e-books Aggressive move to new media	Strong branding essential to avoid customers' confusion about integrity of information in electronic form	Printed books remain a stable product but no significant growth since 2000
Customer interface:					
Customer service	Provide minimum possible		Website for sales	Manage relationship with customer more effectively	

TABLE 8.5 Outline of developments at a book publisher interviewed for this study, 1990–2005 (cont.)

	1990	1995	2000	2002	2005
Production					
Administration					
Selling and promotion techniques:					
Salesforce					
Timescales for production:					
Design/creativity			3 months		
Film to print					
File to print					
Technology in use:					
Design/creativity					
Prepress			Use 2–3 companies Content management a serious problem, but now external suppliers available who are racing to digitise content		
Supply chain developments:					
Prepress			Typesetting in India		
Printing			Print buying operations overseas On-demand production of 1000 titles.		
Finishing					
Distribution			Only 5–6 publishers do their own distribution in UK	Streamline distribution – on-demand production is part of this	
Retailing					Many more sales will be direct sales
Administration					End-to-end, i.e. author to customer, production tracking

Source: Pira International Ltd

Growth strategies

- Basic market is saturated, hence grow by acquisition – this gains titles and some customers.
- Diversify product base, for example, into training materials and courses, some delivered as distance learning courses. (This makes the business more complex.)

External forces driving investment

- Competition from other companies in the business.
- Electronic media developments, especially the internet, e-books and on-demand book production.
- Cost reduction.
- Customers demanding immediate despatch.
- Changing demands for selected products (for example, decline in demand for mono reference books).

Other external forces

There is considerable uncertainty with electronic media: the key issue being how readers/customers will adapt and whether they will adopt new methods. Associated with this is the question of whether effective new business models can be found to be applied to electronic media that provide the same levels of financial return that print media still does.

Company developments

The company's development since 1990 and as forecast to 2005 is set out in Table 8.6.

TABLE 8.6 Outline of developments at a legal publisher interviewed for this study, 1990–2005

	1990	1995	2000	2002	2005
Company profile:					
Turnover			£120m	Higher	Higher
Output	Slow growth				
Average print order size	Run lengths static ~1500		20% lower than 1995		
Employees			1000		
Structure			7 sites	Corporate internet	
M&a activity			4 acquisitions in last 2 years	2 acquisitions	
Company activities:					
Product mix	Books, hard and limp covers, journals, newsletters	Books, hard and limp covers, journals, newsletters 36 diskette products	Books, hard and limp covers, journals, newsletters, directories CDs and online products	Little change in the nature of products expected, but proportions may change, as printed books feel impact of electronic versions Addition of training services	
Customer interface:					
Customer service				New business models required for new forms of electronic products and delivery	
Production				£ multi-million investment in web services	
Administration				Introduction of e-commerce	Automated order processing

TABLE 8.6 Outline of developments at a legal publisher interviewed for this study, 1990–2005 (cont.)

	1990	1995	2000	2002	2005
Selling and promotion techniques:					
Salesforce	Direct mail	Direct mail and telemarketing	Direct mail and website	Direct mail and website	Website and direct mail
Timescales for production:					
Design/creativity	Long – weeks	3 weeks			
Film to print					
File to print		3 days	48 hours	24 hours	On-demand
Technology in use:					
Prepress	Conventional typesetting (external supplier)	System in-house Intro of SGML Oracle database archive	System in-house SGML established Oracle database archive	System in-house XML Oracle database archive Formal content management system	
Printing		Few digital print products	External digital print used extensively		
Finishing		Conventional warehousing and distribution	Printers have to provide fulfilment services		
Administration		No contracts, everything on a per job basis	Contracts with preferred suppliers		
Production issues:					
Supplier base	30–40 printers		6–7 printers	View printers' production schedules	
Waste					
Profile of skills:					
Skills	Dependence on external suppliers for typesetting and production	Typesetting in-house	SGML in-house	XML in-house	
Skill shortages					
Supply chain developments:					
Design/creativity					
Prepress	Dependence on typesetter	External author, internal typesetting system	External authors, in-house editors edit on-screen /SGML	Typesetters bypassed, CTP at printer	CTP at printer
Printing					On-demand production services grow, but traditional print suppliers retain strong position
Distribution	Warehouse/mail				
Retailing		Watching the internet – perceived as insecure, lacking billing facilities, awful to use	Operational website e-commerce	Introduction of e-commerce Redefined business rules/models Online delivery	Online delivery equals print sales

Source: Pira International Ltd

Corporate information outsourcer

Company background

The company developed as a private City printing company; in 1991 it was very badly hit by the recession and changed tack. Now it is positioned as the leading 'corporate information outsourcing' operation, with no dedicated printing facilities in the company (although it manages print centres on behalf of clients). Turnover is now some £150m, with 40% growth reported in the six months to December 2000. The growth prospects are excellent in the outsourcing marketplace. This activity affords a significant boost to P/E ratio and flotation is planned for the end of 2001, provided the City conditions are favourable. Its website provides its profile:

The Group is a collection of business units, each with specialist skills. The Group's structure provides an integrated approach to the management of the corporate information lifecycle. This allows clients to consolidate a total solution with one provider or select individual elements that are appropriate to their needs.

Central to the approach is a managed solution. This encompasses all on-site services, structured with vertical market focus to gain the greatest synergies between clients with similar needs. This vertical focus is replicated with regard to the support functions for our on-site services.

The majority of clients opt for the provision of on-site services, but many also draw on the services provided by our support divisions, which each focus on a particular area of specialisation. And an increasing number are benefiting from the close working partnership with a US player, which provides a global capability for clients.

We have structured our business along with our clients' needs. Operating under a vertical market focus means we can ensure you receive exceptional service, designed to meet specific requirements, at all times.

Growth strategy

The business has grown by managing customers' communications more effectively than the client is able to. The selling approach is strategic, with high-level contact to sell the idea of corporate information outsourcing. The benefits are to save cost and improve the effectiveness of all corporate communications through aligning its documentation under a single banner. Benefits accrue through pooling and organising the content, managing the process and e-enabling (re-engineering the administration process electronically) to drive out cost. This process is attractive to clients who have exhausted their attempts to buy fragmented purchases cheaper.

The company targets four specialist particular market sectors, with experience and specialist knowledge of the requirements of each sector. The in-plants of the clients provide much of the resource, taken over and managed. Additionally, the group bought a sophisticated design company and has purchased other support organisations. Further purchases of similar specialists are likely. It is reluctant to go outside the sectors where it cannot provide the specific skills. There are significant opportunities for expansion across Europe by following a similar strategy, particularly as European employment terms are more stringent than in the UK and companies will be open to the outsourcing offer.

To aid the process, the group has developed and bought the following capabilities:

- word-processing
- graphics make-up and high-end design
- e-design
- web and internet skills
- personalisation and database manipulation
- managing digital output (at clients' premises).

Most clients are multinational organisations and the group provides a total outsourcing service. This includes managing their in-plants and taking over the staff. It employs a dedicated team of TUPE (transfer of undertakings protection of employment) specialists to handle employee transfer issues.

The group is convinced of the future capabilities of high-quality digital colour production for short-run and personalised material. It is Xerox Corp's second largest customer for digital print engines (mono, highlight and colour) in the UK.

The only printing is at client premises, although it procures over £45m of traditional print. The carrot for the printer is guaranteed regular volume and fast payment terms; in return the group gets very good pricing and service. It deliberately decided to get out of all dedicated printing and warehousing. The reason is strategic: to allow it to differentiate itself from the competition and take up a position to provide the best service to the customer. While a printer will act to fill its capacity and equipment supplier needs to shift equipment, the group acts to provide a totally unbiased solution in the best interests of the client. Seldom will these supplier and customer drivers be the same, so not having printing or warehouse capacity supports the client solution. This position is a good one for developing new business, and rapid growth in large chunks has ensued.

Future outlook for printing

The company has divested its printing activities and has rebranded itself as a corporate information outsourcer. This is partly a reflection on the way the City views printing, where the sector has not performed well for some time. A significant issue in future will be the poor perception of printing (and manufacturing in general) companies in the eyes of the City, and the raising of investment capital.

The group does not see future profitability in print manufacturing and feels there must be a shake-out, possibly exacerbated by any economic downturn, resulting in significant loss of capacity. It is better positioned now to ride (and maybe prosper from) any recession.

E-commerce will be widely used to save time and cost, from administration and also workflow collaboration, particularly remote proofing.

Repro house/ advertising agency

A few years ago this company was a repro house, and it still is, with 70% of its turnover still related to prepress and printing, but with this proportion slowly reducing. As a result of a decision to expand outside of print, the company now has departments, units, or companies within its overall umbrella which provide the following services:

Activities

- design, copywriting etc. for advertising or marketing purposes in two particular market sectors
- photographic studios
- creative retouching and illustration
- page make-up
- repro services
- video production
- new media production.

The aim is eventually that 60% of revenue should be derived from non-print activities.

Many other repro companies have found the business increasingly difficult and many have closed. However, this one has close links with an advertising agency which has provided it with a steady stream of work even during difficult economic times.

Growth strategies

As is evident from the range of services now provided, a major growth strategy has been to expand the range of services. This has been achieved partly by change within, and partly by bringing other companies in and, where advantageous, keeping the brand name associated with the specialist service.

A second strategy has been to enlarge the customer base, in particular expanding away from advertising agencies into areas such as corporates and the property industry.

Forces driving investment

The company is clearly very dependent on having the latest technology, and since 1998 has put tremendous effort and resource into upgrading its network infrastructure, software and so on. The current focus (but coming to a conclusion) is on workflow (network, servers and so on) which is clearly related to production efficiency and high quality capability.

The next phase demonstrates the growing recognition across all the companies interviewed of customer service: 'it's not just what is delivered, but how it is delivered'. Developments in this area will include a contact management system, and a system to permit customers to track the status of their jobs (which should also reduce their use of the telephone for update enquiries which are relatively costly to deal with). This has become necessary as customers have progressively become accustomed to using e-mail, and the instant response that it provides. These developments will also enable better management information to be made available internally and hence improve the management of clients.

Future trends

Despite the strategy to diversify the customer base to reduce dependence on advertising agencies, there is no question that the company will remain very much in the advertising business. Future trends in advertising are therefore significant. The view was that, despite all the competition to print advertising arising from the internet and other media such as

digital TV, print-based advertising will remain at least until 2010. Electronic media have distinct weaknesses as advertising vehicles: for example, digital TV makes it far too easy for the viewer to turn the ads off. In any case, digital TV is taking off only rather slowly at present – it has no 'killer application' which will make it indispensable.

There is expected to be more and more advertising, but then there are more media, which may result in a reduction in cost per placement. As in some other supply chains, production is not the expensive part of the overall process, so the net effect is likely to be even more advertising. Also, it is worth noting that attractive as the concept of an interactive advertisement might be, such an advertisement might take ten times as much work to produce. The general effect of all these considerations seems to be to support the view that print-based advertising is and will remain a popular and effective medium.

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