

**INDUSTRY
SCIENCE
RESOURCES**

COMPETITIVE AUSTRALIA

PRINTING INDUSTRIES ACTION AGENDA

Background Paper 1

Current Situation -
Profile of the Industry



Acknowledgment

The development of the Printing Industries Action Agenda has utilised information from a wide variety of sources including both the Australian and overseas printing industries. These were extremely helpful in identifying the trends that are impacting on our industry now and in the future.

The printing and related industry associations in Australia wish to acknowledge similar international studies done by their counterpart industries in the US, Britain and Europe. The Australian analysis has identified local trends impacting on our industry which in many ways mirror those being experienced overseas.

The Australian industry would like to thank its colleagues in the industry overseas for their communications and their willing cooperation during this study.

Contents

1 INTRODUCTION - APPROACH TO SIGNPOSTING THE INDUSTRY	2
1.1 Purpose of Paper	3
1.2 Defining the Industry	3
1.3 Data sources and Analytical Precision	5
2 THE AUSTRALIAN PRINTING INDUSTRY	6
2.1 Structure of the Industry	6
2.1.1 Size and Employment	6
2.1.2 Consolidation Trends	8
2.2 Products and Services	9
2.3 Contribution to the economy	10
2.3.1 Domestic Industry Activity and Consumer Demand	10
2.3.2 Industry Value Added	11
2.3.3 Geographical Distribution and Regional Significance	12
2.3.4 Trade Trends	13
2.3.5 Profitability	16
2.4 Current Operating Environment	19
2.4.1 Capacity Utilisation	19
2.4.2 Technology Analysis	20
2.4.3 Government Policy	22
3 KEY EXTERNAL DRIVERS	24
3.1 Change in Value Chain/Business Model	24
3.2 Globalisation	29
3.3 Cultural Change and Trends in Society	30
3.3.1 Consumers	30
3.3.2 The Printing Industry	31
3.3.3 Environmental Issues	32
4 KEY FINDINGS	37
5 ACTIONS AND RECOMMENDATIONS	36
6 REFERENCES	38
7 APPENDICES	39
Appendix 1 Ratio Analysis for the Printing Industries	39
Appendix 2 Macro Economic Indicators for the Australian Economy	43

1 Introduction - Approach to Signposting the Industry

Australia's print industries are at the crossroads. The pace of technological change in the industry is nothing short of phenomenal. Long gone are the images of plastic sleeved printers stooped over typeset.

What the industry has been, and what it is now, will not be what it is in the next five to ten years. The industry has the will to survive and thrive but it must transform itself in very radical ways if it is to enjoy meaningful and sustainable growth in the foreseeable future.

In moving from the Industrial Age into the new Age of Information, a vibrant and robust printing industry is fundamental for the emerging knowledge based economies. In this new world, in addition to traditional "ink on paper" printing, significant opportunities for products and services are opening up as a result of the increasing shift towards electronic and information based activity.

The Australian printing industry has recognised that it is operating in a turbulent environment characterised by rapid changes in technology. It has initiated the Action Agenda process to assist the industry and its individual companies to operate in what is becoming an increasingly more complex set of pathways.

Bearing in mind this highly dynamic environment, the Action Agenda does not aim to chart a single or narrow range of directions for the industry in a way that may have been possible in less turbulent and slower changing times; it does not aim to set out a prescriptive path for firms to take. Rather, its purpose is to identify signposts that help the industry to focus on what it needs to do today to be well prepared for an uncertain tomorrow. The Action Agenda articulates a number of possible scenarios in which the industry and firms may well find themselves in the future.

For these reasons the theme of "navigating" has been adopted by those developing this Action Agenda to present broad strategic guidelines for the industry. Businesses will increasingly need to "navigate" opportunities and threats often through "uncharted waters". To navigate successfully through the important impacts of future changes will require business leaders and managers to consider what their core competencies are, customers' values and needs and how to create and deliver value.

All the evidence points to prospects for growth. The real issue for the industry centres generally around the nature and scope of future growth and more specifically being close to its customers, understanding their needs and leveraging their growth.

The springboard for future growth lies in the industry's current capabilities and how these may be developed to create new capabilities to capitalise on the emerging opportunities.

The industry has talked about "survival". This suggests a victim mentality - this is a choice. But there are other choices:

- choose to creatively shape the future;
- choose to participate in the future;
- choose to fall victim to the future.

What this Action Agenda is about is identifying pathways for printers to either participate in or confidently shape the future.

Printers are encouraged to examine this analytical base and possible scenarios and determine for themselves their possible futures.

This paper is the first in a series of three papers which underpin the development of the Printing Industries Action Agenda. The papers reflect the work of three Working Groups.

Background Paper 1 profiles the industry. It describes what is done now and how well it is done, and examines the directional trends which appear to characterise the industry. It examines and raises issues regarding the implications for the industry of continuing along certain paths. Background Paper 1 illustrates the strengths and weaknesses of the industry at the broad industry structure level, and presents directional findings on key factors such as industry profitability, contribution to the economy, demand for services, productivity etc.

Background Paper 2 presents a strategic analysis of the industry. It builds on Background Paper 1 to provide a further depth of understanding of the industries' market and internal workings. It identifies where the opportunities for future growth are currently perceived to be and areas where contingency plans need to be developed to guard against weaknesses and threats.

Background Paper 3 builds on the work presented in Background Papers 1 and 2 to consider growth pathways for the industry. It develops scenarios for the future, and defines and signposts alternative pathways to growth in the world settings which may face the industry in the future.

1.1 Purpose of paper

The purpose of Background Paper 1 is to:

- Define/map the printing industry in Australia;
- Describe/profile the industry in detail domestically and in broad terms internationally; and
- Identify key business environment signposts/trends covering the period 1950 to 2010.

1.2 Defining the Industry

For the purposes of this study, which is to signpost trends in the industry using available Australian Bureau of Statistics (ABS) data, the core of the industry is defined according to the Australian Bureau of Statistics Australia and New Zealand Standard Industrial Classification (ANZSIC). It includes at the two digit level Total Printing, Publishing and Recorded Media (ANZSIC 24) and at the three digit level Total Paper and Paper Product Manufacturing (ANZSIC 233). At the four digit level sectors included in the study are the Paper and Paper Products sectors (ANZSIC codes 2331 -2339), and the Printing, Publishing and Recorded Media sectors (ANZSIC codes 2411-2430).

Industry Composition

ANZSIC CODE	INDUSTRY SECTOR
2331	Pulp, paper and paperboard mfg
2332	Solid paperboard container mfg
2333	Corrugated paperboard container mfg
2334	Paper bag and sack mfg
2339	Paper product mfg
2411	Paper stationery mfg
2412	Printing
2413	Services to printing
2421	Newspaper printing or publishing
2422	Other periodical publishing
2423	Book and other publishing
2430	Recorded media mfg and publishing

This definition of the industry does not include upstream activities such as logging, ink manufacture, plastic bag and film manufacture, nor does it include printing activity classified under ANZSIC codes for in-house printing such as advertising services, and commercial art and display services. In this paper, the definition of the industry used to describe what the industry has been and is now, is that of traditional boundaries based on product and process.

One of the major challenges for the industry will be the question of 'self-identity' viz we are printers now, what will we be in 5-10 years time?

Why is this important? As we have seen technology is rapidly reshaping traditional boundaries between industries. Future competition may come from many and varied sources both outside and inside the industry. An alternative approach to defining the industry which arguably recognises contemporary shifts and changes is the following: "An industry is made up of all those firms that in the mind of the customer, at a specific moment in time, compete for satisfying the customer's need in return for some of the customer's funds." The use of this definition particularly in the context of company decision making will help to avoid surprises in the form of competition coming from outside the traditional printing industry.

It should be remembered therefore that the industry as defined in this study represents an underestimate of the total printing activity in the economy. However, in terms of the number of firms, employment and turnover in the sector, the Printing, Publishing and Recorded Media group is by far the larger contributor to activity in the industry.

1.3 Data Sources and Analytical Precision

As the rationale for the Action Agenda is business strategy directions, the analysis of the data is more focussed on general directional changes that will impact on the sustainability and competitiveness of the industry. The directional changes identified in the data can be reality tested against the knowledge and insight industry practitioners have on the state and dynamics of their industry.

Therefore, while not compromising accuracy in any way, precision in data analysis is not considered to be paramount in these circumstances. Rather, the objective is to facilitate the adoption of thoughtful industry wide and firm based business strategy, ensuring the appropriate adoption and uses of technology and most importantly, the development of competencies and skills within the industry at levels of firm structure and size.

The data sources used to construct this industry profile are not exhaustive and include ABS data, industry snapshot surveys and information provided by industry practitioners. ABS data generally for the period 1992-93 to 1997-98 are used. These data are classified by the Australia and New Zealand Standard Industrial Classification (ANZSIC) and are not readily comparable with pre 1992-93 ABS data classified under the Australian Standard Industrial Classification (ASIC). Consequently, there is only six years of useable ABS information.

This relatively short period (6 years) has been characterised for the printing industries by rapid technological change and turbulent economic conditions at home and abroad.

The general directions that emerge from the analysis will form the springboard for setting out a strategy for navigating through possible futures for the industry over the next 5-10 years in rapidly changing national and international environments.

Sources of the ABS data used in current prices are:

- Turnover, Value added, Number employed, Wages and salaries - ABS 'Manufacturing Industry Australia' Catalogue No. 8221.0.
- Investment - ABS Special Data Service (unpublished data).
- Exports, Imports - DFAT STARS trade database.
- Domestic activity - imputed from turnover plus imports less exports in current prices.

The deflators used to convert the data to constant 1996/97 prices are from Table 1.7 'Expenditure on GDP - Implicit Price Deflators' in ABS 'Australian System of National Accounts - Australia - Annual' Catalogue No. 5204.0. The actual deflators used for each item are:

- Turnover, Value added, Wages and salaries - gross domestic product deflator.
- Investment - gross fixed capital formation private machinery and equipment deflator.
- Exports - exports of goods and services deflator.
- Imports - imports of goods and services deflator.
- Domestic activity - domestic final demand deflator.

2. The Australian Printing Industry

2.1 Structure of the Industry

2.1.1 Size and Employment

The industry is comprised of about 7200 establishments, of which 400 are in the paper and paper products sector (ANZSIC 233) and 6800 in the printing, publishing and recorded media sectors (ANZSIC 24).

The Australian Bureau of Statistics definitions of business sizes are used as given in ABS Product Number 8141.0. Small businesses are defined as those employing fewer than 20 people, medium businesses as employing 20 to 199 people and large businesses as employing 200 or more people. Of the printing, publishing and recorded media group, 58 companies are large with an average of more than 200 employees. The majority of companies (about 6000) are small and medium enterprises (SMEs) with an average of 10 or fewer employees.

In 1996/97 the overwhelming majority (99%) of companies were small and medium enterprises accounting for about 64% of the total employment in the industry, while the large companies (1%) accounted for about 36% of employment.

For 1997/98 employment in ANZSIC 24 was 101,800 and in ANZSIC 233 it was 17,400 giving a combined total for employment in both sectors of about 120,000.

On the basis of both employment and size distributions between the larger companies and the SMEs it is clear that both play a significant role in the economy.

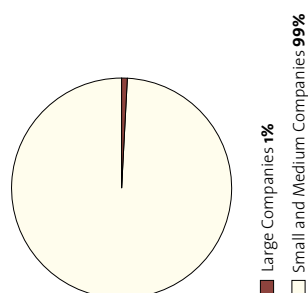


FIGURE 1
NUMBER OF ANZSIC 24 ESTABLISHMENTS
BY SIZE IN 1997/98

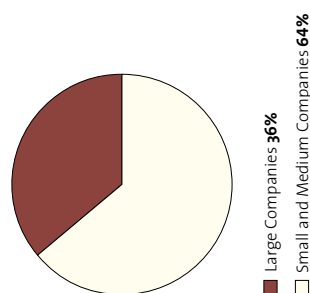


FIGURE 2
EMPLOYMENT (ANZSIC 24) BY FIRM SIZE 1997/98

FIGURE 3 - EMPLOYMENT FOR ANZSIC 24, 233, TOTAL MANUFACTURING AND TOTAL INDUSTRY

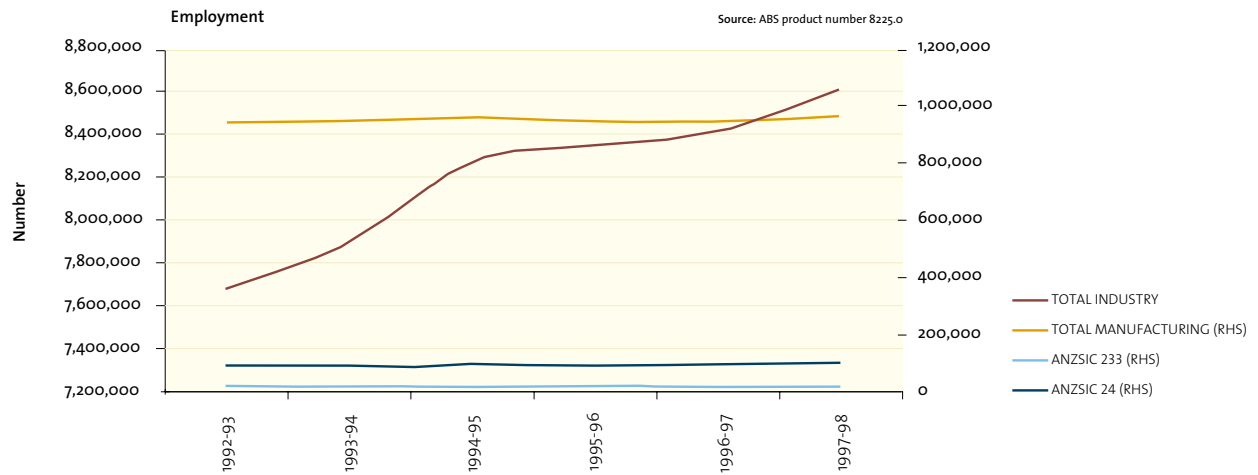
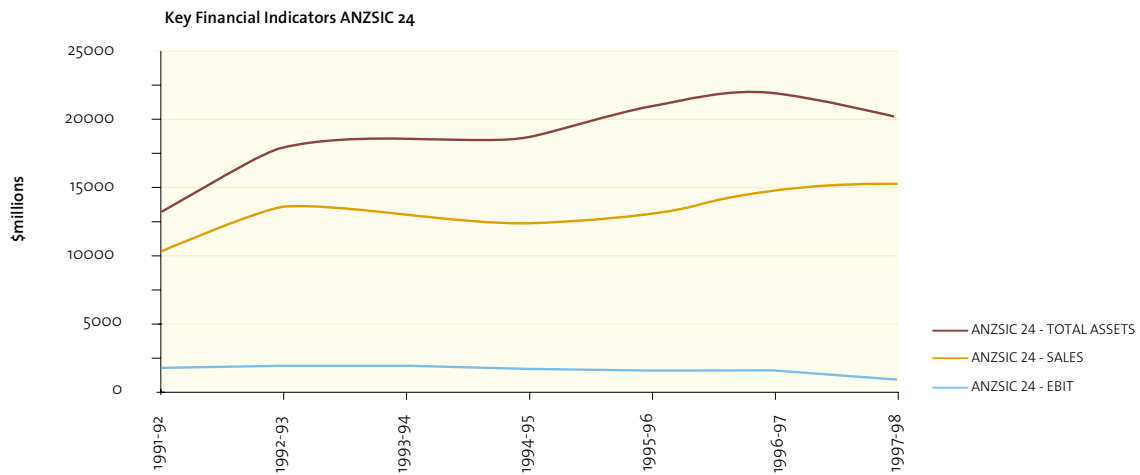


FIGURE 4 - TOTAL ASSETS, SALES AND EARNINGS BEFORE INTEREST AND TAX FOR ANZSIC 24



The data show that while total assets and sales for the industry are trending up, the industry's level of earnings before interest and tax is declining.

2.1.2 Consolidation Trends

The ABS data show that the number of businesses (small, medium and large) in the industry grew from 5000 in 1991/92 to 6000 in 1997/98. Over this same period the number of large businesses grew from 56 to 58. The percentage of large business to total businesses in 1991/92 was 1.12% and in 1997/98 it was 0.97%.

Anecdotal evidence points to some rationalisation occurring at the level of the medium sized firm. It would be expected that some medium sized firms would have grown over the seven-year period to the point where they are classified as large businesses (greater than 200 employees). This expectation coupled with the decreasing percentage of large businesses indicates some rationalisation at the bigger end of the industry also.

TREND | IMPLICATIONS

- TREND** Australia's printing and related industries are predominantly small to medium sized firms with the average number of employees of around ten per establishment.
- IMPLICATION** Total employment is divided on a 60/40 split showing that both SMEs and large firms have significant numbers of employees.

2.2 Products and Services

The industry undertakes a wide range of activities including:

- the manufacture of paper stationery;
- commercial and job printing;
- the provision of services to the industry;
- publishing and printing of newspapers, books, magazines and periodicals; and
- the manufacture and publishing of audio, video and data media.

The industry traditionally was a provider of printed material, however in recent times a range of services are provided as well. These include those listed below. The shift towards services emphasises the dramatic shift of opportunities towards downstream servicing.

Print industry services currently provided to customers include:

- | | | |
|------------------------------------|------------------------------|----------------------------------|
| • Newspaper and magazines printing | • Services to publishers | • Label and tag |
| • Quick print | • Book printing | • Finishing |
| • Commercial print | • Security printers | • Large format plotters |
| • Direct mail | • Point of sale | • Display/ Point of Presentation |
| • Forms | • Pre-press Digital printers | |
| • Stationery | • Data management | |
| • Packaging | • Services Bureaus | |
| | • Post press and fulfilment | |

In addition to the traditional forms of printing, significant opportunities are opening up as a result of the shift from the marketplace to the marketspace. The marketplace refers to the physical world of resources that customers can see, feel and touch. The marketspace is the electronic and information based world offering different types of information and communication that satisfy different types of customer needs.

The provision of information types rather than products to meet customers' information needs has become possible with the capability to 'unbundle' information from its physical carrier. Only those types of information that the customer wants, for example news, entertainment, reference, educational, promotional, need be provided.

The need for constant innovation, and responses to fundamental changes being driven by new carriers of information such as the internet and the emerging internet television will require the printing industries to rethink many fundamentals in their industry if they are to capture a share of the new opportunities.

2.3 Broad Industry Demographics and Performance

This section examines in the following broad terms:

- the contribution of the printing industry to the economy;
- the geographic distribution and regional significance;
- the domestic and international trade; and
- industry performance indicators.

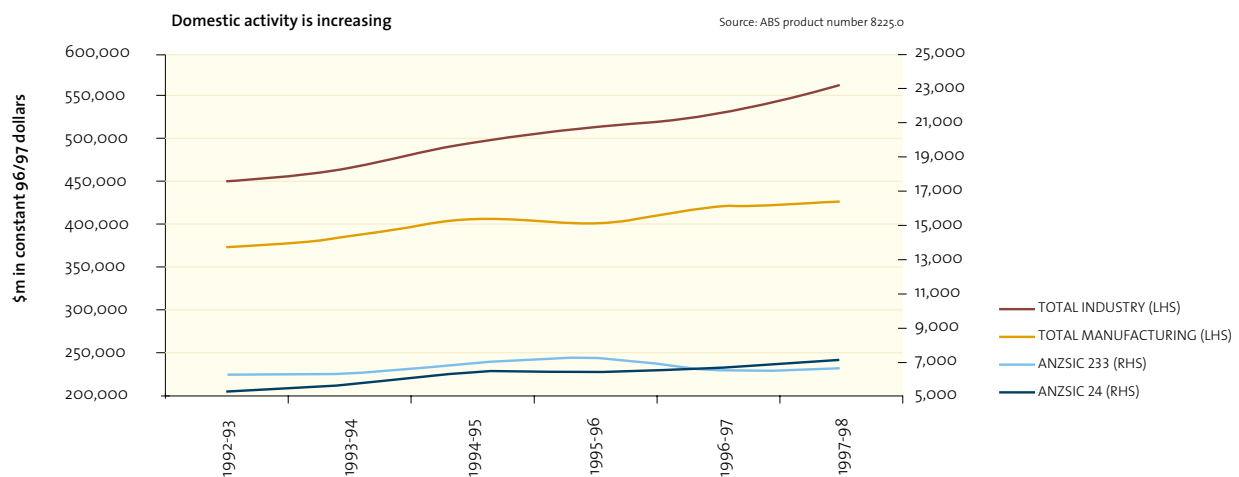
Sources of Data and Limitations

ABS data sources are used. They provide broad lag indicators and the data, by its nature, lags by some years. Nevertheless, taken as a whole, the information is sufficient to provide indicators of trends significant to the industry. The trends identified in this section were tested and verified.

2.3.1 Domestic Industry Activity

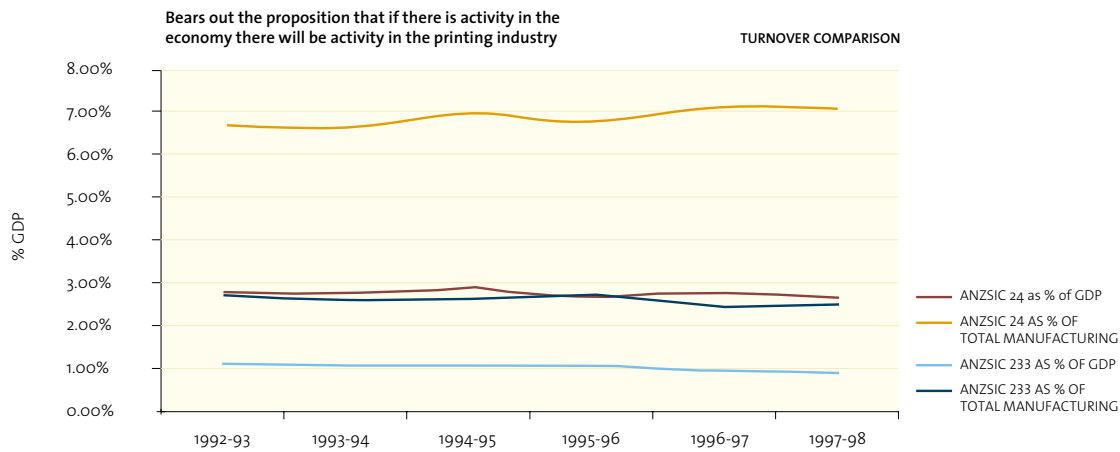
An estimate of industry activity has been imputed from ABS and other data (ABS Catalogue Nos 8221.0 and 5204.0, DFAT STARS Trade database). This has been imputed from turnover less exports plus imports, as domestic production figures are not readily available. This figure shows the overall economic activity from the industry.

FIGURE 5 - DOMESTIC DEMAND FOR VARIOUS SECTORS PLUS ALL INDUSTRY



Trend Economic activity in the paper, pulp, printing and recorded media industries showed a steady increase of around 13% over the 1992/93 to 1997/98 period. Domestic economic activity for the printing industry (ANZSIC 2412) showed an increase of 20% over the same period. **Implications** Economic activity in the print, publishing and recorded media industries continues to increase. This may be attributed to the growth of service industries that are typically large consumers of printed material. It is clear the printing industries have benefited from the expansion that has occurred in the services industries which generally are larger consumers of print than the manufacturing industries.

FIGURE 6 - TURNOVER COMPARISON AS % OF GDP FOR ANZSIC 24 AND 233



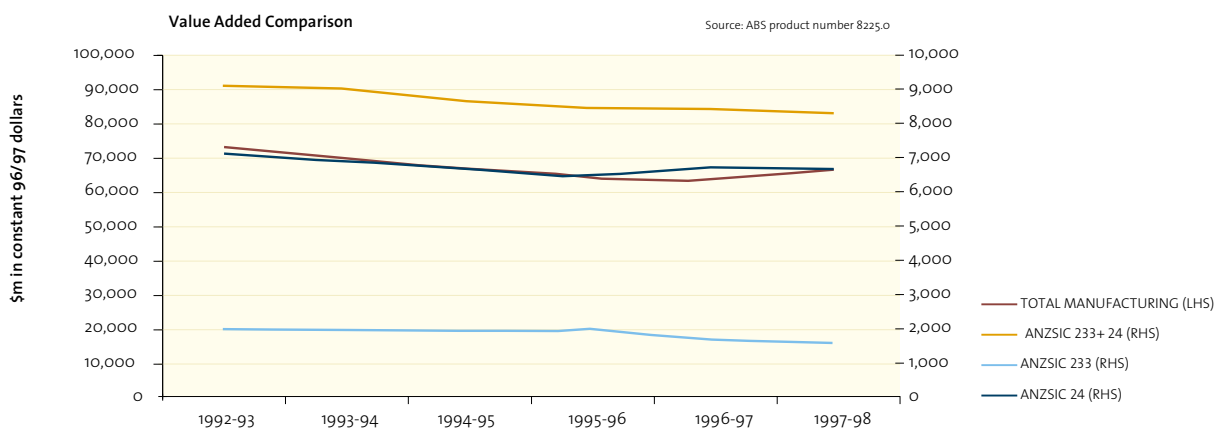
TREND | IMPLICATIONS

Trend In dollar terms turnover for ANZSIC 233 + 24 (paper, pulp, printing, publishing and recorded media industries) increased by around 12% over the period 1992/93 to 1997/98. All manufacturing turnover during the same period increased by 10.7%. The level of industry sales change is in line with the aggregate of Australian manufacturing industry. However, in terms of percentage of GDP, ANZSIC 24, 233 have decreased by about 10% over the past five years. This change can be explained by the rapid increase in the service industry component of GDP, in particular in the more recent years. **Implications** Although turnover is seen as trending up, empirically these sectors are decreasing as a share of GDP. This is in line with what is happening to manufacturing generally as the growth in services takes an increasing share of GDP.

2.3.2 Industry Value Adding

Value added is defined (ABS 8225.0) as turnover, plus closing inventories less opening inventories less intermediate input expenses.

FIGURE 7 - VALUE ADDED COMPARISON ANZSIC 24, 233 AND TOTAL MANUFACTURING



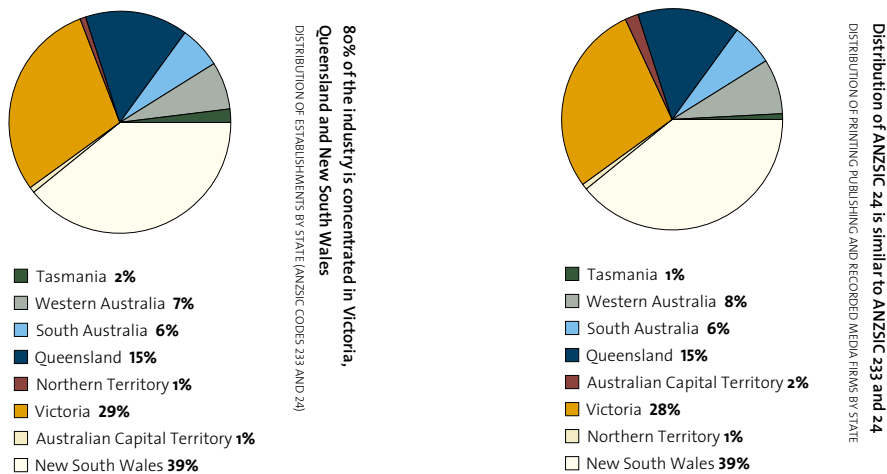
TREND | IMPLICATIONS

Trend The data show value adding in the industry is declining (note that data points for 1993/94 and 1994/95 are interpolations and data post-1997/98 is not available). **Implications** Over the past decade the industry has been faced with circumstances where it has chosen to provide more product at ever increasing speed. Under these conditions the industry has not been generating sufficient value. This trend is expected to slow and reverse as industry moves to provide higher value solutions to customers.

2.3.3 Geographical Distribution and Regional Significance

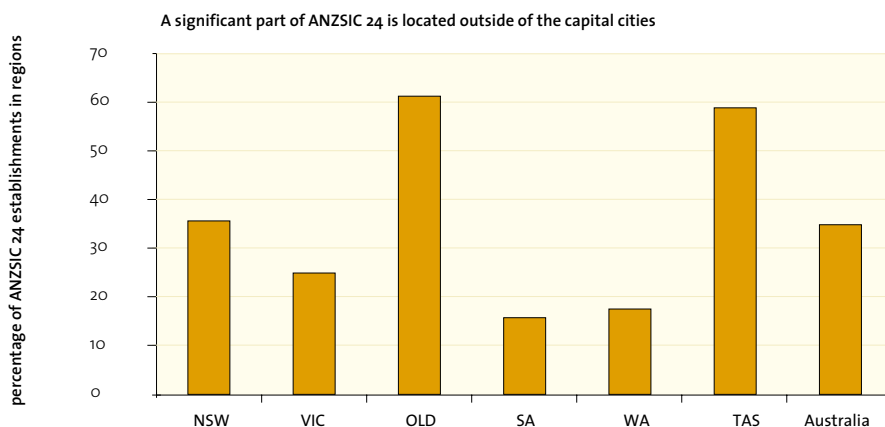
For ANZSIC 24 and 233, 83% of establishments in the industry are located in New South Wales (NSW) Victoria and Queensland, with 68% in NSW and Victoria.

FIGURE 8 (LEFT) - DISTRIBUTION OF ESTABLISHMENTS BY STATE (ANZSIC 24 AND 233)
FIGURE 9 (RIGHT) - DISTRIBUTION OF ESTABLISHMENTS BY STATE (ANZSIC 24)



Based on an Australia-wide snapshot survey of 4,686 customers to one of the large suppliers to the industry undertaken for Paper 1 in late 1999, 34.8% of graphic arts establishments (ie ANSZIC 24) are located in regional Australia, ie outside the capital city and its suburbs.

FIGURE 10 - REGIONAL ANZSIC 24 INDUSTRY DEMOGRAPHICS BY STATE



Trend Tasmania, Queensland and New South Wales are above the national average in regionalised locations, while South Australia, Western Australia and Victoria fall below. **Implication** These statistics demonstrate the importance of this industry for regional Australia. The printing industry follows the location patterns of other industries. The trend for businesses to re-locate from the regions presents both opportunities and threats for the industry. If the trend for businesses to relocate from the regions continues, the printing industry may also suffer some decline regionally. On the other hand there may be opportunities for the printing industry to transform itself into a significant contributor to regional Australia by growing the scope of its activities regionally in activities that are not distance dependent.

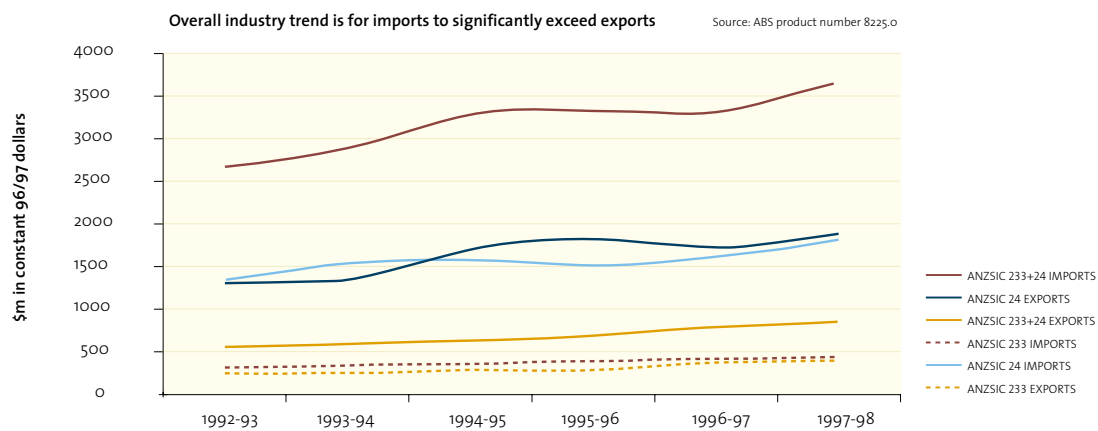
Action/Recommendation

It is recommended that the industry undertake a study to identify opportunities for the printing industry in regional Australia and to identify ways in which the printing industries can contribute more to regional Australia. The study will include the development of scenarios for dissemination to the industry.

2.3.4 Trade Trends

The analysis shows that the Australian printing industry is, to a large measure, a domestically based industry.

FIGURE 11 - TRADE TRENDS FOR ANZSIC 24 AND 233



TREND | IMPLICATIONS

Trend The overall industry trend is for imports to significantly exceed exports. The deficit is made up of a component from each of the ANZSIC 233 and ANZSIC 24 sectors, although there are some trade surpluses in particular areas such as corrugated paper-board container manufacturing (2333) printing (2412), services to printing (2413), and newspaper printing or publishing (2421).

Implications Developing markets is an area for industry focus and could leverage the learnings from the successes of the emerging and increasing export activity in the sectors listed above.

Whether or not the Australian printing industry remains domestically focussed or develops an export orientation, the industry will be affected increasingly by global forces. Of principal concern to the industry's future are:

- the impact of globalisation
- the rapid pace of technological change
- the changing cultural trends
- the growing importance of environmental concerns both as social and biophysical concerns.

In this highly dynamic world the industry faces three choices regarding its future:

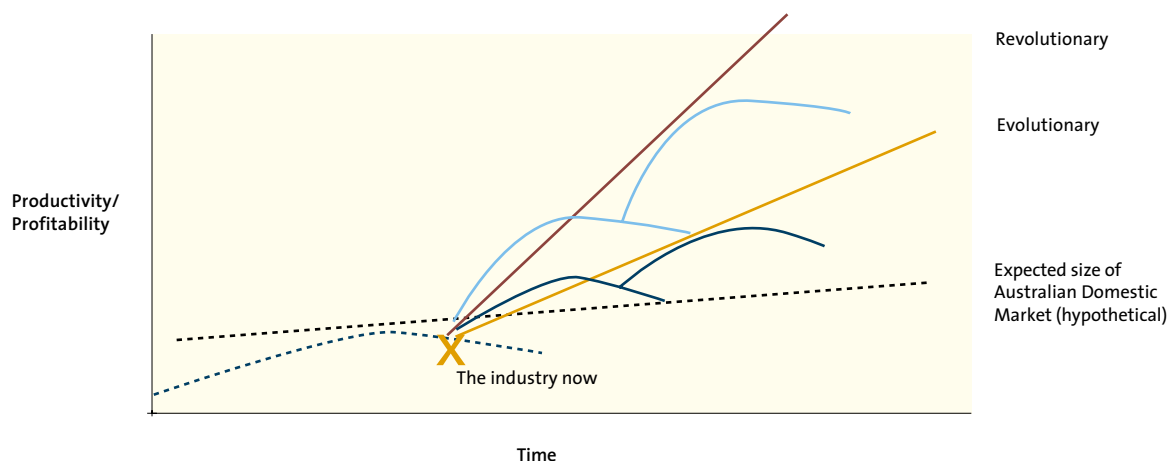
- stagnate and die, or
- maintain and survive, or
- grow and sustain.

The premise on which this Action Agenda rests is that it is the responsibility of all those committed to the future of the Australian printing industry to choose to grow and sustain.

In order to grow and sustain growth on a long-term basis, careful analysis of intermediate and long-term market opportunities is essential.

The following diagram examines the basic dynamics of future growth strategies for the industry.

It shows that the Product Life Cycle dictates that the market for current products/ services will decline over time. Along with this the Australian domestic market will remain relatively small. Therefore the objective to grow can only be met by strategies focusing on combinations of 'revolutionary' and 'evolutionary' business development options. By going international the printing industry will have access to a larger market, helping them sustain and grow individually and en masse.



- Evolutionary - Same markets (domestic) serviced better*
Revolutionary - New markets, products and services at a higher value added.
Domestic + International

Going International

Firms which choose to make the transition from a predominantly domestic focus to greater export orientation create the potential to generate larger returns. Internationalisation could bring the following major benefits for firms in the printing industries:

- access to bigger markets and the potential to gain economies of scale;
- potential value chain improvements, and increased networks;
- gaining some protection from Australian economic cyclical impacts.

Issues for firms considering going international

Going international can lead to significant opportunities and increased returns but it also holds significant risks and barriers (tariff and non-tariff) for those who are inadequately prepared. Any firm considering expansion into international markets should consider the following set of threshold issues.

- Strong financial foundation. Will the company survive losses in the first few months? Can it withstand any negative foreign currency translation?
- Potential markets are well researched. Major competitors (both domestic and foreign) are discovered and their strengths and weaknesses analysed. Is there demand for your product?
- Legal and regulatory framework is researched. Can you buy land? Is foreign company law different to local? Will it disadvantage the company? Can you reappropriate your money, change currencies? Are you on a fixed lease or required to engage a domestic company as a partner to do business. Will your intellectual property be effectively protected and your rights upheld by the foreign government.
- Awareness of cultural and language differences. Will it be easy to break into the market? Have you considered issues related to training of both domestic and foreign staff?
- Mode of transportation (if required) researched. Time lags. Can the company be competitive if there is a relevant time lag?

Expansion overseas may be difficult for many small to medium sized firms. Creating networks would aid in giving companies greater leverage and ability to penetrate foreign markets. Firms need to be well researched and have a specific goal in mind before acting. First time exporters need to inform themselves of the opportunities and risks and should access assistance from those Government programs designed to help firms in this area.

Actions/Recommendations

To promote further internationalisation of the printing industries, it is recommended that the industry

1. Undertake studies on the potential for Australian industry to reverse the trade deficit in printed products and disseminate the findings to industry and government. In particular:
 - The factors that have led to successful exporting activity in some sectors of the industry with a view to developing an exporting culture in those sectors where export opportunities may not have been fully exploited.
 - The approaches other Australian industries have taken or are taking to lift their international competitiveness. These industries could include the Wine Industry (track record for export growth) and the Building and Construction Industry (small and medium emerging exporters).

- The approaches other national printing industries and selected overseas firms have taken to lift their export performance in those countries whose printing industries have a significant impact on the global printing industry and those countries whose industries have similarities (and notable differences) with the Australian industry.

2.3.5 Profitability

So far we have examined the basic structure of the industry.

Ratio analysis is a commonly accepted technique for characterising financial performance.

The Australian Bureau of Statistics publishes this data for the Australian print industries (ABS 8140.0) at the 2 digit ANZSIC level.

Profitability is an essential indicator of a successful business and/or successful industry.

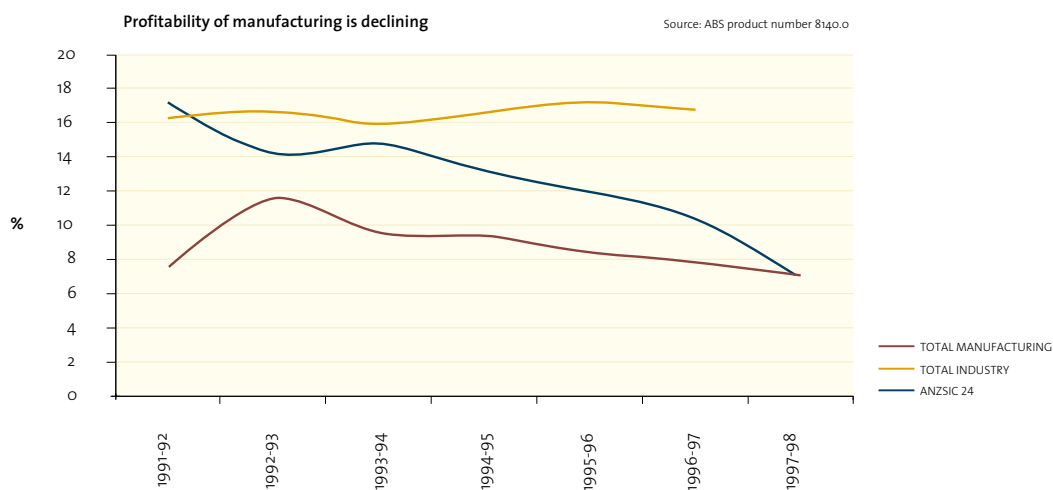
ABS has data for profit margin and return on assets which are covered below.

Profit Margin

The financial performance of the industry, particularly the industry profitability is a cause for concern and warrants consideration here.

The Profit Margin represents the return on sales from an industry's operation before tax and interest/gearing.

FIGURE 12 PROFITABILITY IN THE PRINTING INDUSTRIES IS DECLINING



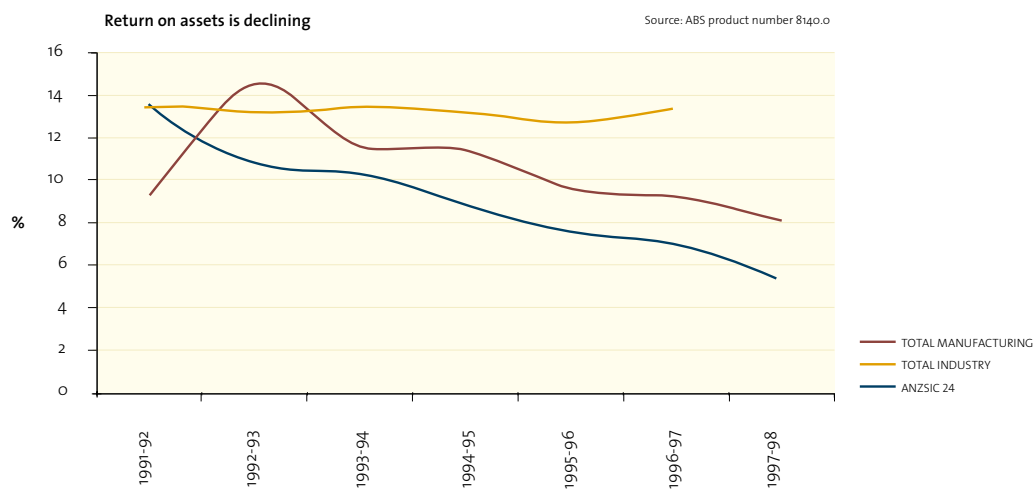
Trend ANZSIC 24's Profit Margin has been declining markedly over the six-year period. Total Manufacturing has also experienced a decline in Profit Margin over the six-year period, but to a much lesser extent. The Profit Margin for Total Industry has remained relatively constant. Issues that may be a cause of decline and hence related to corporate failure and corporate recovery include:

- poor management ;
 - inadequate financial control;
 - competitive pressure;
 - high cost structure;
 - not identifying and responding to changes in the business environment;
 - changing market demand;
 - adverse movement in commodity prices;
 - lack of marketing effort.
- Implications** ANZSIC 24's Profit Margin has fallen beneath that of Total Industry and Total Manufacturing. The data suggest that the industry is competing on price/volume and less so on services and product differentiation. ANZSIC 24's Profit Margin trend bears out the proposition that the industry needs to give more attention to the development of strategies for high value differentiated products and services and close attention to return on assets employed.

Return on Assets

This ratio is also known as return on investment. It measures the amount of profits generated per dollar worth of assets.

FIGURE 13 - RETURN ON ASSETS FOR THE INDUSTRY IS DECLINING



TREND | IMPLICATIONS

Trend ANZSIC 24 ratio is showing a significant decline, falling below that for both Total Manufacturing and Total Industry. In 1997-98, ANZSIC 24 was only making five cents for every dollar worth of assets compared to thirteen cents in 1991-2. **Implications** The data shows that profits are decreasing and expenditure on assets is increasing. This is cause for concern as no industry can maintain such a decline in profitability on a long term basis.

Earnings before interest and tax are decreasing, sales are increasing, and total assets are increasing rapidly. Together this means that companies under ANZSIC 24 are making less profit, getting smaller returns from their asset base, and are slowly becoming less able to meet their interest payments.

Industry data normally reflect whether investment strategies are sound. In the case where investment strategies are sound, return on assets and profit margin should be trending up. However, the analysis presented here indicates they are not. If sound investment strategies are not in place, then future industry strategy must assist firms in decisions about where to invest for future growth. Investment issues to be addressed include:- Is investment in capital equipment sufficient to guarantee growth? How is the industry handling investment in intellectual property, customer share growth etc?

Having a well developed business strategy which drives company activities and asset utilisation based on hard financial considerations and including training, marketing and customer service etc will enable firms in the printing industry to achieve increased profit margins and return on assets (see Papers 2 and 3 for further discussion).

To assist in the formulation of business strategy, industry averages are an essential tool for individual firms to allow comparison of company progress against the industry norm, thereby highlighting any areas that need to be addressed. The use of ratios as a business planning tool are most effective when industry averages are determined for specific sectors as the healthy range for the ratios differs between industries.

Calculation of the relevant ratios for the printing industry in Australia shows that it is generating too few sales for the asset base it sustains. While sales are increasing, the cost of production is also increasing, leaving the earnings before interest and tax relatively unchanged.

Financial figures that enable the calculation of additional ratios should be sought to enable improved business planning. These ratios may include accounts receivable turnover, accounts payable turnover, and cash flow to sales.

One useful tool which could be adopted for the purposes of industry-wide analysis and planning is known as the "Z formula". It provides an indication of how effective a company is at generating sales from its asset base as well as predicting its vulnerability to corporate failure. It was developed in 1968 by Dr E. Altman for the United States scene and is still used today by finance companies to measure corporate risk.

The Z formula proved useful in the United States in that it was found to have a 95% accuracy rate in predicting corporate collapse for up to two years prior to the event. Since every industry is different, the benchmarks used in the United States are not transferable to Australian industry. A set of parameters specifically for Australian industry would need to be developed for use by the printing industry. However, we do not yet have the necessary information for Australia to enable the development of these parameters.

An approximation of the formula is:

Z = Sales/Total Assets (which, in accounting, is also called the Asset Turnover ratio).

Actions/Recommendations

It is recommended that the industry:

Collate industry-wide statistical information on a quarterly basis;

- Investigate the current sources and levels of value-adding in the industry;
- Produce and disseminate annual reports on industry performance;
- Develop key operational benchmarks to assist firm based planning and adjustments. This may involve:
 - (i) surveying the industry for relevant data and information; or
 - (ii) developing and validating parameters for the industry and its sectors.

2.4 Current Operating Environment

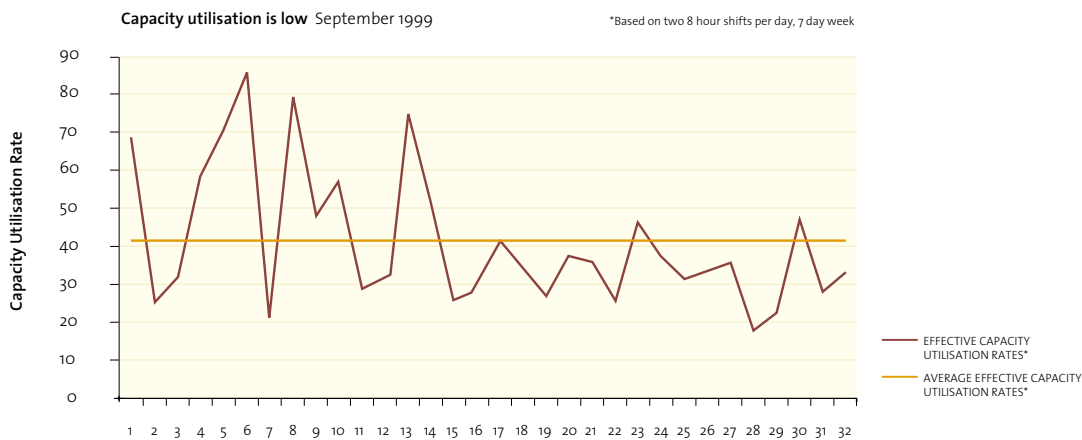
2.4.1 Capacity Utilisation

Australian printers perceive themselves as traditionally strong adopters of new technological innovations, and they pride themselves on being at the forefront in the acquisition of technology. However, this same strong tradition and culture may be contributing to an over-investment in equipment and under-utilisation of capacity.

A snapshot survey of small, medium and large printing companies was conducted during the month of September 1999 seeking information on capacity utilisation rates.

The reported industry average of 46.4 hours translates into an effective capacity utilisation rate of 41.4%.

FIGURE 14 - EFFECTIVE CAPACITY UTILISATION RATES* DERIVED FROM A SNAPSHOT SURVEY OF THE INDUSTRY IN SEPTEMBER 1999.



Observations

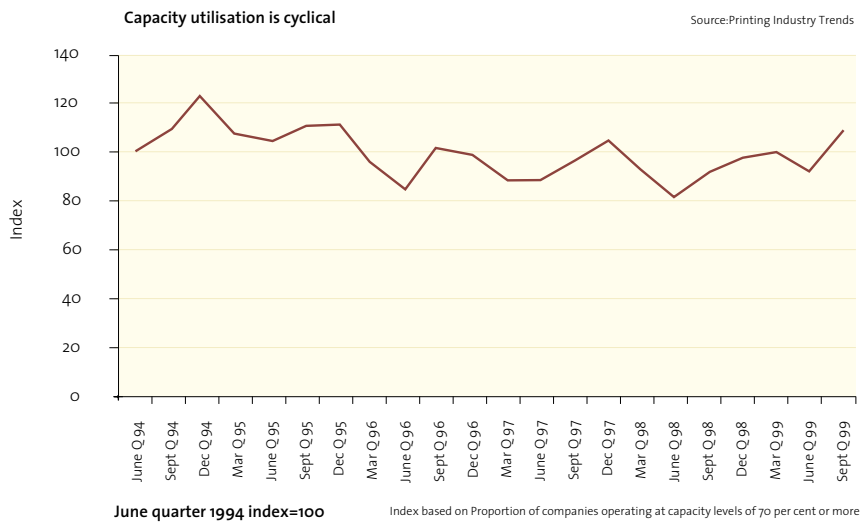
The effective capacity utilisation rate* was determined by using a definition of full capacity utilisation as being based on two 8-hour daily shifts and a 7-day week (ie a full weekly capacity of 112 hours).

The average weekly chargeable machine hours for all respondents (32) was 46.4 hours. The average is derived from average chargeable machine hours for small companies of 35.4 hours, medium companies 45.9 hours, and large companies 67.6 hours.

In addition to the snapshot survey undertaken in September 1999, an analysis was done of capacity utilisation over the past five years as reported in the quarterly survey of members of the Printing Industry Association of Australia. The analysis indicates that capacity utilisation follows a six monthly cycle with low utilisation in the first six months of the year followed by increased utilisation in the second half of the year, the period covered by the snapshot survey.

The six-monthly cycle, with expected higher rates of utilisation in the second half of the year coupled with the reported 41.4% utilisation rate in September of 1999, underscores the issue of low capacity utilisation in the industry.

FIGURE 15 - QUARTERLY SURVEY RESULTS FOR CAPACITY UTILISATION OVER THE PERIOD 1994 TO 1999 AS REPORTED BY THE PRINTING INDUSTRIES ASSOCIATION OF AUSTRALIA.



TREND | IMPLICATIONS

Trends Australian printing industries significantly under-utilise existing printing equipment capacity. **Implications** Careful consideration of future business strategy based on strong customer input is required to underpin decisions on appropriate acquisition and utilisation of printing technology equipment. Continued capacity underutilisation will dampen profitability and consequently innovation.

Actions/Recommendations to address low capacity utilisation in the industry

It is recommended that the industry assess the nature and extent of low capacity utilisation.

1. Develop an accurate measure of capacity utilisation.
2. Assess whether there is a sub-optimal or misallocation of capital investment in the industry viz the opportunity cost of current levels of investment in technology.

Actions/Recommendations to improve capacity utilisation in the industry

It is recommended that industry determine a range of actions that could be taken to improve capacity utilisation:

1. Investigate mechanisms to address industry overcapitalisation and the degree of urgency for implementation.
2. Disseminate across the industry, information on the issues and implications of industry over-capacity, and the suggested mechanisms for its management.

2.4.2 Technology Analysis

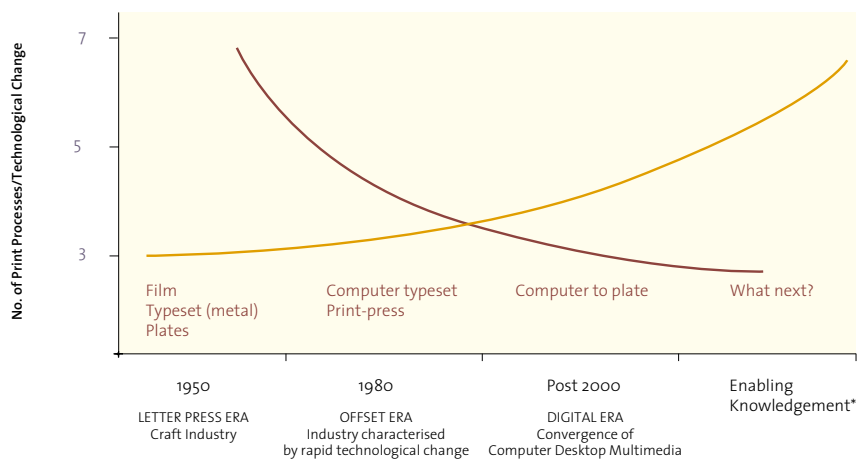
Since the 1950s, the printing industry has undergone a series of rapid technological changes that radically altered and rationalised printing production processes. For many years hot metal typeset formed the basis of the printing process. Computer typeset was introduced into the industry in the 1970s, taking over from hot metal typeset by the 1980s. In the late 1990s technology rapidly shifted to what has become known as computer to plate printing or digital printing. Figure 16 below depicts the technological changes that have occurred in the industry and poses the question as to what is the next major shift.

The 70s heralded a decade of significant technological innovation. The growth in automation in the printing industries accelerated further during the late 80s into the 90s. In the overheated economic environment of the late 80s and 90s the industry was pressured to deliver more product at lower costs.

A new paradigm is now emerging. Customers are demanding high quality high value added products. Business based only on simple price-volume competition will not guarantee survival or success in this new operating environment.

In addition each paradigm shift in technology has been accompanied by what is known as disintermediation the process by which there is substantial reduction in the number of stages of production.

FIGURE 16 - CHANGES IN THE TYPE AND PACE OF TECHNOLOGY SINCE THE 1950S.



Knowledge - Advising customers on effective and efficient approaches to meet presenting, organising and deriving value from creative content, information and

What next?

The increasing imperative for businesses to manage knowledge for competitiveness will provide an opportunity for printers to assist the knowledge management process by positioning themselves as enablers of "knowledgement" where they advise customers on effective and efficient approaches to meet needs for presenting, organising and deriving value from creative content, information and data.

The future business operating environment will be driven by three key external drivers - technological change, globalisation, and further culture change especially in consumer preferences. The next paradigm shift in technology cannot be easily envisioned at this time. Digital technology will continue to play a dominant role in printing technology for the foreseeable future (ie 5-10 years).

2.4.3 Government Policy

Government Policy Decisions during the course of the Action Agenda

Introduction of the GST and Special Support for Book Production

Australia's New Tax System (ANTS) came into effect on 1 July 2000. Whether or not GST should apply to book production was a live issue during the course of deliberations of the Action Agenda.

Prior to the introduction of ANTS, books were not subject to wholesale sales tax. The new arrangements however, included provision for GST on books. During the negotiations leading up to the introduction of the GST, industry argued that a GST on books would have an adverse impact on book production and hence the dissemination of, and access to knowledge. The Government accepted that there was a special case for encouraging book production in Australia but did not accept that books should be exempt from the GST.

The Government's decision was to introduce the Enhanced Printing Industries Competitiveness Scheme - Book Production EPICS Grants (EPICS). The purpose of this program was to provide grants to facilitate the development of the Australian book production industry. The Government required that the Scheme be consistent with the findings of the Printing Industries Action Agenda. EPICS also came into operation on 1 July 2000 whilst deliberations on the Action Agenda were continuing. Given the Government's stipulation that EPICS be consistent with the Action Agenda, further deliberations also focussed on how this might be achieved.

The Steering Committee felt that whilst the two initiatives differ in primary purpose, they serve related printing industry development objectives and it was therefore important to ensure not only consistency but also complementarity between them.

The purpose of the Action Agenda is to assess the printing industry's performance and to identify opportunities for sustained future growth of Australian printing. The primary objective of EPICS as a program of government grants to industry is to encourage the development of the Australian book production industry.

Parallel Importation of Books

On June 27, the Government also announced that it proposed to amend the Copyright Act to allow for the parallel importation of legitimately produced books, periodicals, printed music and software products.

The announcement made it clear that the amendments would be implemented 12 months after the passage of amending legislation and the timeframe was to assist industry make the transition to the new business environment.

Whilst the remit of this Action Agenda does not encompass specific or detailed analysis of the impacts of this particular government decision on the industry, it would be fair to say that the issue will continue to remain alive for at least the first 12 months of the implementation phase for this Action Agenda.

The passage of the legislation will be subject to consideration by the Parliament.

Implications

Quite apart from the polemics that may be associated with both these recent developments, they serve to highlight the importance of pro-active, strategic thinking on the broad range of operating factors that will, or are likely to, impinge on the industry's shape and future directions.

More needs to be done in the industry to inculcate a stronger culture of "What If" thinking. Arguably, the decisions on the GST and parallel importation rules carry a degree of inevitability and the changes should have been anticipated. In the current world economic and trade climate, regulations that maintain price imperfections are unsustainable. Attempts by Governments to maintain such domestic conditions may well put at risk the country's international standing on trade policy.

It is to be expected that the industry seek to maintain the status quo. At the same time it is however, also important for the industry to have 'ready-at-hand', mapped out alternative pathways (scenarios) aimed at turning any challenges (including those that may be posed by necessary changes in Government policy) into future business development opportunities.

It is largely for these reasons that this Action Agenda strongly advocates that the Australian printing industry adopts methodologies such as scenario planning to assist in formulating plausible pathways for development in a highly uncertain and dynamic world.

3. Key External Drivers

3.1 Change in Value Chain/Business Model

General Trends

Over the past 30 years technological change has been and continues to be the most significant influence in the growth and development of the world's printing industries.

The printing industries will become an ever-increasing part of the information industries and an enabler of the knowledge-based economies.

Traditional boundaries that existed between industries have now become markedly blurred. This trend is set to continue for the foreseeable future. This phenomenon has become known as 'convergence' or more specifically 'digital convergence'.

As a result of the emergence of new technologies, continued change has occurred with companies merging, re-organising, and re-focusing. A high level of awareness of production costs has also resulted in higher demand for output at lower costs which is normal in industries reaching maturity. Hence the need to shift to new generation products and services based on staying close to and understanding the changing needs of the industries' customers.

Sheet fed and web presses have dramatically increased speed of production and automatic make-ready systems have cut times to those not thought possible even 10 years ago.

The advent of desk-top publishing has opened new horizons and expanded rapidly from the traditional pre-press companies to printers reclaiming pre-press and new styles of operations.

New production approaches in digital cameras, computer to plate, digital proof and digital print are now industry standards. Data communication from site to site, and continent to continent is now well established.

In recent times computer to plate has emerged and digital print has created market awareness with more than 5000 installations world wide signalling that the digital age has indeed arrived in printing.

The obvious question that needs to be answered is how best does the printing industry align itself to benefit optimally from the inevitable technology changes?

Trends in Technology Niches

- *Print-on-Demand (POD (Ref: GATF 1999 Forecast)*

One of the most significant new niches to emerge as a result of technological innovation is Print-on-Demand (POD).

A large variety of print engines suitable for POD markets is now on the market. Xerox offers five models, Agfa and Xeikon three models each.

In this technology, printing equipment suppliers are moving away from the traditional approach of one-size-fits-all, according to Frank Kanonik (GATF 1999, p 16).

Personalised and variable printing is an emerging market niche fuelled by the digital colour printing revolution. With these technologies, printers are now able to offer customers high levels of personalisation.

These new market niches offer printers the opportunity to reach the individual customer with personalised products and services. In a number of instances, products may be ordered, pre-paid, manufactured just-in-time and shipped overnight. They will be driven by what has become known as 'push/pull' models of publishing.

'Push' publishing is driven by customer profile and preference information held on databases. 'Pull' publishing operates on the basis of customers requesting products sent to them or products that are personalised according to customer's preferences or requirements.

These developments, to be successfully integrated, need to be part of detailed business plans with a primary focus on customer input and value consideration.

- ***Quick Printing (QP)***

QP is primarily a business-to-business service to small and medium firms. It capitalises on the trend to towards electronically generated projects by customers who then seek print services. QP operators are usually positioned to accept work in any format.

- ***Sheetfed Lithography***

Technological innovation will also see many significant developments in lithography in the coming years. Commentators believe lithography will lose out ground to digital printing in the short-run colour market over the next five years; particularly where customers desire variable printing (GATF 1999, p 10).

Nonetheless, the view seems to be that Lithography will remain as the most economically significant image transfer process into the 21st century.

- ***Web Offset***

Web offset is seeing many of the sheetfed and newsprint features being adapted to it. The main thrust is to one-stop-shop/ totally closed loop systems. These printing systems will, in future, follow the trend away from requiring fewer skilled press operators to higher electronic systems management and maintenance.

- ***Flexographic Printing***

There is considerable scope for technological innovation in flexographic printing over the next five years or so. The main issues are concerned with achieving consistency and predicability of print on any substrate.

- ***Gravure***

In Gravure, the trend continues to be towards bigger, better, faster (GATF 1999, p13) web widths of nearly four metres are now available and press speeds of 3000 lfp/m are imminent. Handling issues however, are an area where further improvement may be possible in the next few years.

- *Newspaper Printing*

Technology is moving towards keyless, inking, single fluid inking and shaftless presses.

Trends in Market Segments

The matrix below shows the interaction of consumer product demand and available print technology in forming particular market segments.

The effect of the various combinations for individual firms is shown either as one of, or a combination of the following:

- = Efficiency gains sought through new equipment and improved processes.
'Do what you do now better- more efficiently, in the marketplace
- = Market expansion, through developing new markets, in the market space,
where trends in consumer demand show opportunities for high value growth.

For example, the applications of holography technology are currently expanding opportunities in the security print market. In the short run however, applications of holography are not likely to generate production efficiency gains, as economies of scale will not yet be established. In contrast, newspaper printers are seeing gains in efficiency from utilising offset web printers in existing markets. In the case of digital print, new technology is being applied to expand a market opportunity, while also increasing production efficiency in those markets.

The matrix is a useful tool for understanding the impact of acquiring the latest technology and entering into certain markets. It shows the acquisition of the latest print technologies lowers marginal cost and increases efficiency. This may often result in a short-term increase in profitability, as competitors usually acquire similar technologies and match the reduced prices.

Opportunities for growth exist where print products and technologies can be combined to meet emerging or growing consumer needs. The trend, as seen in the matrix, has been toward consumer demand for the more knowledge-intensive products. Growth opportunities are further explored in Paper 2 "Achieving Competitive Advantage".

Products/Technology Matrix

Product / Technology	Market Place							Market Space			
	Magazines	Books	Newspaper	Security Printing	Warehousing/ storage	Packaging	QuickPrint	On-line products	Web site Maintenance	Image Management	Business to Business
Sheetfed Offset	■	■	■				■ □			□	□
Heat Set Web Offset	■	■	■		□		■ □			■	
LetterPress	■	■	■								
Gravure						■					
Cold Set Offset											
Flexography					■ □		■	■ □			
Screen Printing			□						□		
Digital - laser and ink jet combo				■ □						□	
electronically stored		□						□	□	□	□

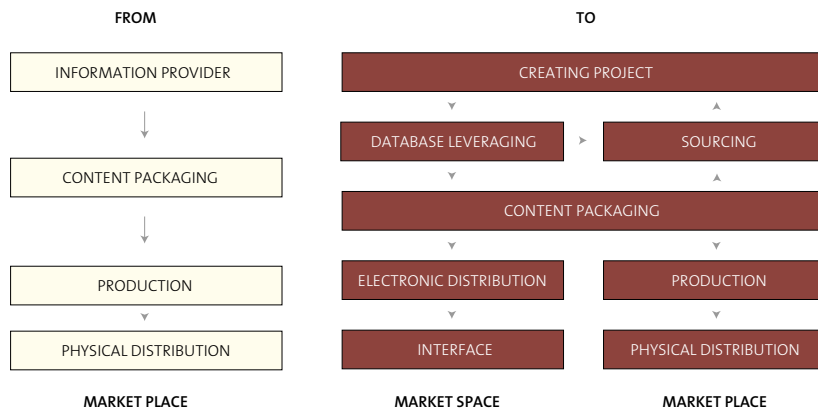
The major technological trend impacting on printing industries is the move towards digitalisation. In general terms, innovations in printing technology are moving towards even higher levels of computerisation, faster make-readies, more sophisticated colour management and further disintermediation of process steps requiring fewer skilled operators.

The technological issues of the future for printers to manage will be the move towards:

- moving information - data transmission (infrastructure, high-rate data transmission, greater bandwidth), file transfer, web based access for customers and their data;
- content creation, dissemination and integration methods including the unbundling/versioning of information;
- digital content management and its implications; and
- digital printing.

The diagram below illustrates the change from a sequential value chain model to a circular, networked value chain that will be the basis for future value creating activities .

Change in value chain / Business Model



(Roos G, Intellectual Capital Services, May 2000)

Two issues warrant close attention regarding printing technology. First, the immediate future of digital electronics, seems assured. However there will be a limit to this particular technology and a new technology/technologies will emerge. Intel Corporation has recently flagged that the technical limits of their microchip technology are being reached and that further miniaturisation will become increasingly difficult in the next few years. Thus further miniaturisation and computing speed may be gained only through the development of other technologies such as bioelectronics.

The second issue relates to lifting profitability. Should the Australian printing industry continue to be driven by the latest developments in technology or does a more customer focussed approach to business planning need to be adopted throughout the industry which better reflects the role of technology within the context of adding value to a customer? Technological change is a given - the issue for printers is not so much in keeping up with the latest technology but in the appropriate acquisition and management of it. A few Australian printing firms have demonstrated that utilising the latest technology is not necessarily a prerequisite for profitability and market leadership, but that the mandatory prerequisite is understanding and responding to customers' needs.

This latter issue of the appropriate acquisition and management of capital equipment has been identified by the Working Group as one of the key issues needing further investigation.

It is clear that for the industry to develop appropriate business strategies for investment in the twenty-first century, it needs comprehensive knowledge and understanding of the success drivers for its customers together with reliable data on investment to provide for better strategic judgements and decisions both at the industry and the firm level preferably by sector.

3.2 Globalisation

Followed by advances in information technology and other scientific advances, globalisation is now a commonly used term which attempts to describe the level of interdependence and inter-connectedness that exists in international commerce. In this new environment it is not uncommon for large multi-national enterprises to have located various branches of the business or businesses in countries deemed most economically advantageous.

It is also common to now be able to access sources and markets direct from firm to firm and region to region. As economies of scale become less crucial for firms' competitiveness, there are more opportunities for SMEs to exploit new technologies and develop new products and market niches.

Traditional boundaries and borders to commerce, be they geographic, institutional or economic have fallen away over the past 20 years and the pace of this change will continue to be rapid for the foreseeable future.

The strength of printing industries has traditionally depended on the strength of national economies. When economies are doing well, it has been observed that the printing industries also do well.

Australia is no exception to this rule. The fact is that the Australian industry operates in a global economy. If the Australian economy is growing, then so too, we might expect, is the Australian printing industry. The fact that the industry is to a large extent domestically based does not insulate it from the cycles of the global economy.

The question is whether printing industries are inextricably tied to the cycles in the global economy. Whilst it is not possible to achieve complete insulation from downturns, this does not need to be set in stone as perhaps some traditionalists might maintain.

Traditionally, the main competitive strategies chosen by operators have focussed on cost competition and investment in the latest press. There is now, however, a growing trend in both the American and European printing industries away from short to longer term business thinking based on strategic plans. These plans are focusing on customer based competitive strategies which aim to help insulate firms from the traditional economic shocks that have impacted on the industry. These plans involve:

- identifying growing customers who need what can be offered by these strategically based operators and then devising ways to better meet these needs than anyone else; and
- developing very close value adding relationships with customers. This approach helps strategically based operators to identify when a slow-down is coming thus giving them time to effect contingency plans.

For the Australian Printing Industry global commerce poses challenges in the short term and also offers opportunities in both the short and the long term.

The challenges are:

- increased competition from other industries eg IT
- greater mobility of customers through e-trading
- need to keep abreast of emerging global developments

- increasing risk of erosion of cost base
- customers moving work offshore.

However, the opportunities are also substantial and include:

- emergence of knowledge based economies providing opportunities for higher value printing activities
- access to potentially huge global markets through increasing uptake of internet based business
- much more scope to develop and exploit niche markets
- focus on increasing literacy levels in developing countries
- emergence of loyal customer bases through the provision of total business solutions.

One of the most significant opportunities for printers in the future is the increasing need for firms to manage knowledge. Printers have skills and competencies in manipulating, presenting and organising information that will complement the development and growth of knowledge management in the new knowledge-based economy.

While the Australian printing industries currently have a predominantly domestic focus, they are, and will continue to be, impacted upon by ever increasing globalisation. Even if the industry chooses to remain a domestic player, it will be forced to respond to international influences simply because its customers expectations will be influenced by products and services obtainable in the international market.

The global market will inevitably become more competitive, and the Australian printing industries will need to develop and maintain their international competitiveness or risk being left behind.

That the Australian Printing Industry must become an international player seems beyond dispute. The real issue is how this objective is to be best achieved within the next five to ten years.

3.3 Cultural Change and Trends in Society

Cultural changes are likely to impact on the printing industry through changes in consumer preferences, the ongoing changes and developments in the printing industry and general trends in society.

The main trends in society affecting the printing industries will be the

- increasing thirst for knowledge and information;
- rising demand for targeted information due to many and varied interests competing for time, and
- concern for the environment and corporate responsibility.

3.3.1 Consumers

Consumers are becoming increasingly discriminating - people around the world have high, and increasing, levels of access to information, services and products. Products are now being tailored to the specific needs of individual consumers, blurring the boundary between 'products' and 'services', as relationships between buyer and seller become more important as a basis for competitiveness.

The promised emergence of the "electronic superhighway", the new media, is expected to have a strong impact on how consumers purchase, receive and store information. The current media trends in Australia indicate that newspaper reading is steady and usage strong, magazine reading is lifting for the electronic media (AdNews, 1999), TV viewing continues to be flat and radio weaker, there remains a surge in cinema attendance, and Internet usage is booming (RMR Single Source survey to June 1998).

In the 12 months to May 1999, nearly 5.5 million adults (40% of Australia's adult population) accessed the Internet with 18-24 year olds having the highest level of Internet use (74%). Ironically, of the estimated 3 million purchases for private use made on the Internet in this 12 month period, 38% were for books/magazines (ABS, 1999).

As one example of the new media, electronic books have emerged as a contender to traditional printed books. E-books currently on the market can be downloaded from the Internet into a computerised reader about the size of a normal book page, storing around ten books of data. The Japanese publishing industry is supporting e-books with roughly 5,000 titles being available from kiosks in bookshops and stores from November 1999.

If consumers wish to retain the feel and the (currently) higher quality resolution of printed books, one alternative is for publishing-on-demand, which also helps to reduce the costs of production and distribution for publishers. It is expected, although not certain, that consumers will prefer the familiarity, convenience and portability of paper for actual reading, however the electronic media will increasingly be used for the storage, searching and delivery of information.

The main challenge of these new media in the near term is to existing electronic media, especially broadcast TV, rather than print media. By and large, they will provide more opportunities than threats to traditional printers, in two ways:

- proliferation of new products and services means increased demand for marketing information, much of which will be printed matter; and
- new communications networks and packaged media present opportunities to produce and deliver information in non-print ways (PIA, 1999 Bridging to a Digital Future).

Changing demographics may require a refocussing of target markets, as Australia and the developed world shifts to an aging population. Knowledge about cultural differences may also be used to establish new markets and help industry become more competitive overseas through:

- different ways of perceiving, and different cultural norms, creating specific cultural preferences which may apply to printed material (eg, in terms of colour, form, texture and spatial layout); and
- cultural knowledge as a key factor for success in conducting business overseas.

3.3.2 The Printing Industry

A recent survey of printers and pre-press trade shops in the United States indicated that 70% plan to expand product and service offerings during the next three years (GATF Technology Forecast, 1999).

Printers and pre-press trade shops are diversifying beyond film and ink-on-paper - because of customer demand and increasing competition from within the industry. The majority of companies surveyed (52%) plan to diversify by creating a fully integrated one-stop shop, offering customers a range of services. Most of the remaining businesses, however, see partnering, merging or acquiring as the most profitable route to diversification.

The survey indicated that what most influences a printer's decision to add new products and services is customer requests (90%), better service to existing customers (90%), a desire to keep pace with the market (70%) and competition (72%). The services they typically plan to add during the next three years are:

- facilities management - having some product and customer interface at the customer's site;
- photo CD capture - the capture, storage and distribution of images in the photo CD format;
- digital printing - printing by a direct digital press;
- database management - management and storage of digital data to create an additional revenue stream;
- web page design; and
- CD authoring.

As part of the process of developing this Action Agenda, the Australian printing industries conducted an interview survey of a range of its customers. While its findings were not dissimilar to the findings of the US survey, the Australian survey identified clear messages that a significant part of the future for the Australian industry would lie in providing customers with total business solutions and in leveraging opportunities which combine the industries' information technology and printing expertise.

It is expected that Australian printers will continue to add new products and services according to customer requests and to better service existing customers.

3.3.3 Environmental Issues

Commentators within the printing industries have said that the industry has come a long way in its understanding of, and commitment to, environmental issues. This includes supplying recycled products, and ensuring compliance with environmental standards through cleaner technologies and environmental management systems. It is likely that the range and level of environmental requirements will continue to grow, and ongoing industry commitment will be instrumental in meeting these challenges. Key environmental issues for the printing industries include:

- recycling and waste management
- chemicals inputs and releases
- energy use
- consumer expectations
- compliance with imposed regulations
- self-regulation.

- **Emissions control**

Currently, printers are employing a number of methods to reduce emissions of volatile organic compounds (VOCs). Oil and water-based inks, solvents with higher flash (boiling) points, and emissions control technology (such as incinerators) are all helping to reduce VOC emissions. Advances in the effectiveness of emissions control options, as well as the recent introduction of voluntary solvent reduction targets in Victoria (and proposed in NSW), will further reduce VOC emissions.

The Commonwealth Government is committed to meeting its international greenhouse commitments and continues to make a strong contribution to negotiations on the Kyoto Protocol. The Protocol is an agreement between signatory countries on what should be done to reduce global greenhouse gas emissions. If ratified, the agreement would see Australia committed to a target of limiting national emissions to 108% of 1990 levels for the period 2008-2012. The Australian Government has already committed almost \$1 billion to reducing national greenhouse gas emissions. A national greenhouse strategy has been developed and endorsed by all the State and Territory governments throughout Australia. This comprehensive package of measures is a national effort, representing a commitment by governments, industry and the community to take action and reduce greenhouse gas emissions.

- **Recycling and waste management**

The current level of 64% recycling of old newspapers represents a significant success for the printing industries. The printing industries are now working towards the newly agreed recycling rate target of 74% by December 2005. Oil, ink, lead acid batteries and photochemicals are also recycled. This trend is being reinforced by rising costs for landfill, as well as increasing requirements for documentation and approvals for off-site waste disposal.

The Packaging Covenant is one example of how industry is working towards these targets. The Covenant is a co-operative agreement signed on 27 August 1999 by the Australian and New Zealand Environment and Conservation Council Ministers, Local Government and a broad range of industries in the packaging supply chain. It establishes a framework for packaging industry commitments to recycling and waste management and encourages firms throughout the supply chain to develop voluntary recycling action plans, or potentially be subject to the National Environment Protection Measure on Used Packaging Materials. This legislation, which will be in force in most States by the end of 2000, can require firms to arrange for the collection and recycling of their packaging. Measures such as the Packaging Covenant will create impetus for developing new markets for recycled and waste products.

- **Codes of Practice and reporting requirements**

Environmental reporting requirements are progressively increasing for all industries. Currently, the National Pollutant Inventory requires some printers to report on a range of pollutants, and the number of reportable substances will increase almost threefold by July 2002.

Environmental Codes of Practice for industry are also becoming common and consumers will continue to press for implementation of those standards right across industry. In Victoria, the Code of Practice for Flexographic and Gravure printers is being revised to account for a range of environmental requirements.

In general, the growth of the printing industries appears to be directly linked to national economic growth, which in turn is dependent on consumer confidence. Although some printers have managed to insulate themselves from the effects of the economy, such as cycles, the spending patterns of Australian consumers does impact on the industry as a whole and demand for printed matter is projected to rise over the next few years. This is demonstrated by the current increase in orders matching the present, healthy economic outlook (Printing Industry Trends, PIAA, March Quarter 1999).

World population growth, increasing prosperity and growing demand for goods and services is creating significant pressure on the global environment. Communities are increasingly expecting business to play a role in addressing these pressures, along with governments and the community. In particular, some modern businesses are focussing on their triple bottom line: their financial, environmental and social accountability.

Major Cultural Changes and Trends:

- The new electronic media will have an increasing impact on consumers, but it should provide significant opportunities for printers.
- Printers will continue to be strong adopters of the latest technology with new technology based products and services being offered due to perceptions of customer changing needs. The critical question is whether this actually is an appropriate response to customers needs or whether it is the way printers tend to solve articulated or unarticulated consumer needs, in which case there may be other or equally good or better ways which are less capital intensive and offer better utilisation of existing equipment.
- Consumers will increasingly focus on the social and environmental responsibilities in assessing the industry's worth.
- Environmental regulations will continue to increase.
- Printers will continue to improve their environmental performance in line with regulatory requirements and consumer preferences.
- This will involve the printing industries making environmental management part of the way they do business. Improved technology and environmental management systems will assist in achieving this.

Action/Recommendation

In order for the Printing Industries to have the capability to respond to emerging issues and trends impacting on them in a timely and effective manner, it is imperative that comprehensive and accurate information and intelligence is available for strategy building and decision-making.

It is recommended that industry:

1. Develop a service to the industry to gather, interpret and disseminate information and knowledge on emerging issues and trends, both domestic and international, that may impact on the industry in the medium and long term.
2. Conduct annual or bi-annual review of possible scenarios for industry's future growth and development, and disseminate to industry.

4. Key Findings

Industry Parameters

- Currently the printing industries' growth is closely linked to the general economic activity but is forming a diminishing component of GDP.
- The industry is experiencing declining profitability.
- Capacity utilisation is low.
- Continued investment in capital equipment appears to be exacerbating the low capacity utilisation.
- Imports significantly exceed exports in several sectors of the industry.

Future Operating Environment

- The general domestic macroeconomic environment in which the printing industries will operate is predicted to have a steady GDP growth rate of about 2.5%.
- The global market will inevitably become more competitive, requiring the Australian printing industries to develop and maintain international competitiveness, regardless of whether they operate domestically or internationally.
- Technological change will continue at a rapid pace.
- The new electronic media will have an increasing impact on consumers and should expand opportunities for printers.
- Printers will be required to respond to environmental concerns either through self-regulation or continuing external regulation.

5. Actions and Recommendations

It is recommended that:

On the issue of low capacity utilisation, the industry:

Assess the nature and extent of low capacity utilisation.

1. Develop an accurate measure of capacity utilisation.
2. Assess whether there is a sub-optimal or misallocation of capital investment in the industry viz the opportunity cost of current levels of investment in technology.

Determine a range of actions that could be taken to improve capacity utilisation:

3. Investigate mechanisms to address industry overcapitalisation and the degree of urgency for implementation.
4. Disseminate across the industry, information on the issues and implications of industry over-capacity, and the suggested mechanisms for its management.

On the general level of industry information available, the industry:

Collate industry-wide statistical information on a quarterly basis;

- Investigate the current sources and levels of value-adding in the industry;
- Produce and disseminate annual reports on industry performance;
- Develop key operational benchmarks to assist firm based planning and adjustments. This may involve:
 - a) surveying the industry for relevant data and information; or
 - b) developing and validating parameters for the industry and its sectors.

On further internationalisation of the printing industries, the industry and government (where appropriate):

Study the potential for Australian industry to reverse the trade deficit in printed products and disseminate the findings to industry and government. In particular:

- Undertake a study into the factors that have led to successful exporting activity in some sectors of the industry with a view to developing an export culture in those sectors where export opportunities may not have been fully exploited, and disseminate the findings to industry and government.
- Undertake a study of the approaches other Australian industries have taken or are taking to lift their international competitiveness. These industries could include the Wine Industry (track record for export growth) and the Building and Construction Industry (small and medium emerging exporters).
- Undertake a study of the approaches other national printing industries and selected overseas firms have taken to lift their export performance in those countries whose printing industries have a significant impact

on the global printing industry and those countries whose industries have similarities (and notable differences) with the Australian industry.

On the industry capability to respond to emerging issues and trends, the industry:

Develop industry information and knowledge to enable it to respond to emerging scenarios issues and trends, particularly:

1. Develop a service to the industry to gather, interpret and disseminate information and knowledge on emerging issues and trends, both domestic and international, that may impact on the industry in the medium and long term.
2. Conduct annual or bi-annual review of possible scenarios for industry's future growth and development, and disseminate to industry.

On the issue of printing industries in regional Australia, the industry in consultation with relevant State and Commonwealth agencies:

Undertake a study to identify opportunities for the printing industry in regional Australia and to identify ways in which the printing industries can contribute more to regional Australia. The study will include the development of scenarios for dissemination to the industry.

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7. Appendices

APPENDIX 1

Ratio Analysis for the Printing Industries

The definitions for these ratios are generally taken from ABS 8140.0, 8225.0, *Analysing Company Accounts* by Martin Roth, Wrightbooks, 1995, and *Financial Accounting* by Carnegie, Jones, Norris, Wigg, and Williams, McGraw-Hill, 1999.

Caveats on the Use of Ratios

Financial ratios are indicators only. They do not present a complete picture of the business or industry. Other important factors may be determinant on performance and not captured by financial ratios.

A ratio is a comparison of two figures, a numerator and a denominator. At times it may be difficult to determine whether, in comparing ratios, the differences are due to the numerator or the denominator or both.

Comparison between companies can be difficult due to the adoption of different valuation methods.

Ratios are interconnected and should not be treated in isolation (see Figure 1 Appendix 1).

Net Profit Margin and Profit Margin

The Profit Margin ratio is an indicator for corporate efficiency. More explicitly it reflects the return on sales from the operations of the organisation.

The ratio is given by: **Profit Margin (%) = (EBIT/ Sales) x 100** EBIT = Earnings Before Interest and Tax

Return on Assets

This ratio is also known as return on investment. It measures the ability to generate profits from assets and is defined as operating profit before tax as a percentage of the total book value of assets. (ABS 8225.0)

The ratio is given by: **Return on assets (%) = (EBIT/ Assets) x 100**

Financial Stability

Financial Stability ratios focus on assessing the amount of risk for an entity. They fall into two categories:

- Measures of short term liquidity:

Current Ratio

- Measures of financial structure and long term solvency:

Debt to Equity Ratio

Interest Cover

Current Ratio

Source: Analysing Company Accounts by Martin Roth, Wrightbooks, 1995 and ABS 8225.0.

Can the industry pay its bills? - Keeping liquidity as low as possible while ensuring that short term obligations are met. That is the number of times current assets cover current liabilities, ie. the value of current assets divided by the value of current liabilities. This liquidity measure indicates ability to meet immediate financial obligations from current assets.

The convention usually adopted is that there should be a two to one difference between current assets and current liabilities.

The current ratio is given by: **Current ratio = Current assets/Current liabilities**

" A strong cash flow, with a high stock turnover rate and speedy collection of debts, may mean that a company can operate safely with a current ratio nearer to one or lower. a company's working capital - surplus of current assets over current liabilities- should be sufficient to pay bills and give credit as necessary."

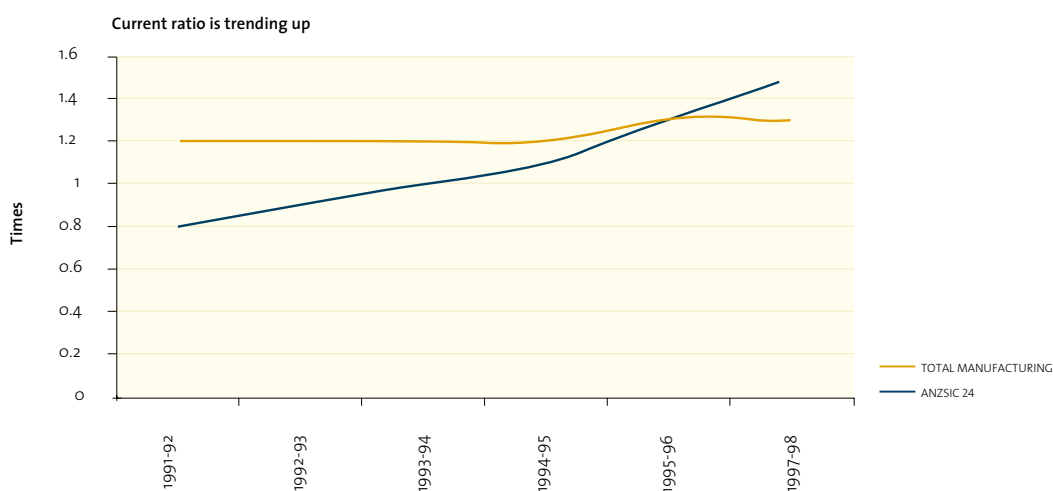
It may be useful to consider the proportion of cash represented in current assets - cash to liabilities ratio.

Have to watch that the enterprise is not over-burdened with debt. Profits will not mean much if it is.

But debt is also a path for growth especially if interest rates are low and the economy is growing.

If industry is competing in a stable predictable environment then liquidity can be low.

FIGURE 1 - CURRENT RATIO IN THE PRINTING INDUSTRIES



Debt to equity ratio

Measures debt exposure and generally the higher the ratio, the more likely it is that there may be difficulty paying debts; especially if interest rates rise.

There is no "safe" figure though the practice seems to be that if the ratio does not exceed 100%, there should be no difficulty.

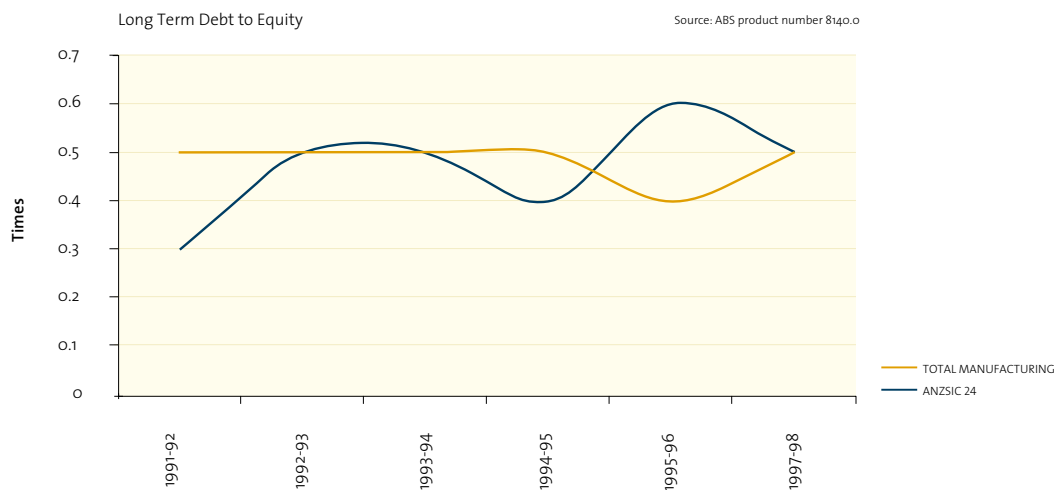
Too much equity can mean that management is not taking advantage of the leverage associated with long term debt.

Outside financing will become more expensive as the debt to equity ratio increases. Therefore the degree of leverage has to be considered in light of profitability and industry volatility.

The ratio is given by: **Debt to Equity ratio = Total Debt/ Equity***

* Shareholder's or Owner's Equity depending upon whether the company is public or private

FIGURE 2 - INDUSTRY DEBT TO EQUITY RATIO



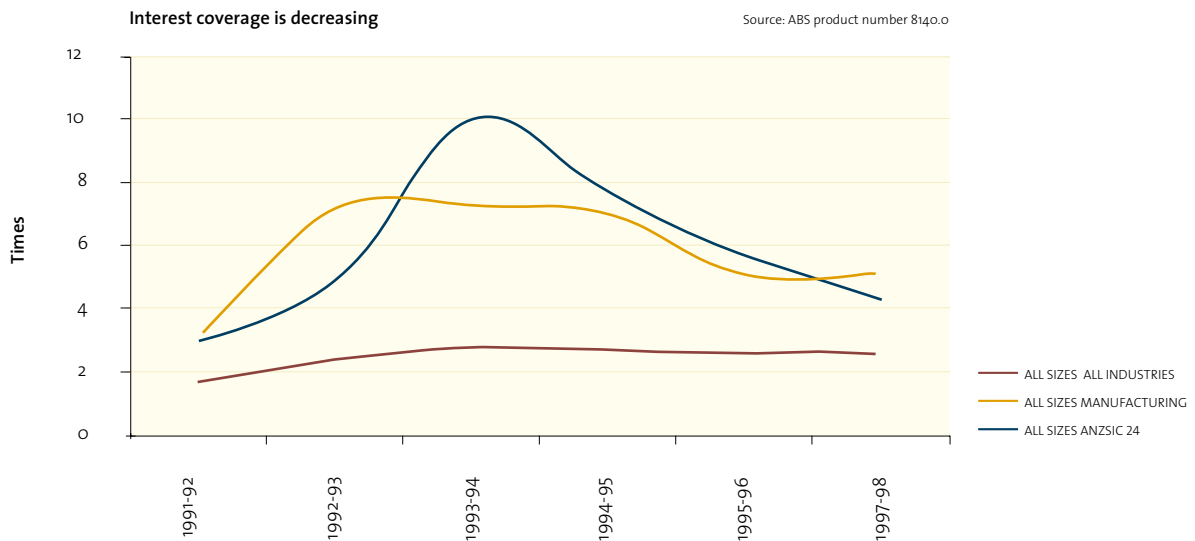
Interest Cover

The ratio reflects the relationship between interest payments and profits to show if there is a good margin of profit to ensure against downturn or sharp interest rate rises. That is the number of times over that business can meet their interest expenses from their earnings before interest, ie. the value of earnings before interest and tax divided by the value of interest expenses (ABS 8225.0).

The ratio is given by: **Interest Cover = EBIT/ Net interest payments**

The rule of thumb is that enterprises should be able to cover interest payments at least three times.

FIGURE 3 - INTEREST COVER IN THE PRINTING INDUSTRIES



APPENDIX 2

Macro Economic Indicators for the Australian Economy

Information on predictions of the main macro economic indicators into the next decade is given below. They are from the latest report published by one of the major economic modelling houses, Econtech. All the figures for 1998-99 are historical, and subsequent figures are forecasts.

Essentially, in the general medium to longer term macro economic environment in which the Printing Industries will be operating, GDP is predicted to be growing at a rate of about 2.5-3%.

Our previous analysis suggests that if the economy generally is growing then the printing industries will also be growing.

It also suggests that for profitability to increase, there will need to be a shift downstream in the services offered by printers. They will need to manage their cost structures better particularly the capacity utilisation.

Macro Economic Indicators*

	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Private consumption % change	4.2	4.4	3.0	1.6	1.1	2.2	2.3	2.5	3.1	3.7
Govt consumption % change	4.7	4.0	2.6	1.5	1.7	1.9	2.0	2.2	2.3	2.4
GDP % change	4.7	4.1	2.2	3.4	2.3	2.7	3.1	3.6	3.8	4.2
CPI % change	1.3	2.4	6.0	2.2	2.2	1.6	1.8	2.4	2.9	3.2
90 day bill yield % change	5.32	4.93	6.41	6.22	5.36	4.69	4.26	4.34	5.12	6.17
10-year bond yield % change	5.58	6.27	6.23	5.86	5.72	5.80	6.08	6.49	6.92	7.24
Unemployment rate % change	7.7	6.8	6.7	6.2	5.8	5.5	5.3	5.2	5.1	5.0
Employment % change	2.1	2.9	2.4	2.6	2.4	2.0	1.7	1.4	1.3	1.1
Current account % change	-5.5	-5.4	-5.1	-4.8	-4.8	-4.9	-5.0	-5.3	-5.5	-5.2
M'fg exports % change	0.1	23.8	8.6	7.2	4.6	5.5	4.8	4.3	4.9	6.4
M'fg imports % change	6.1	15.1	5.6	4.8	6.4	6.4	6.2	6.6	6.5	5.2

Based on Econtech's Mid-Quarter Update 3 August, 2000