NCVER

training for **productivity**

Leo Maglen

Sonnie Hopkins

Gerald Burke

NCVER

training for **productivity**

Leo Maglen

Sonnie Hopkins

Gerald Burke

ISBN 0 87397 671 1 print edition

0 87397 672 X web edition

TD / TNC 64.10

Published by NCVER

ABN 87 007 967 311

252 Kensington Road, Leabrook, SA 5068
PO Box 115, Kensington Park, SA 5068, Australia

Contents

Acknowledgements

The authors acknowledge the valuable contribution of many people to this research.

Firstly, the National Research and Evaluation Committee is thanked for its funding support, without which the research could not have proceeded.

Secondly, and especially thanked are all the companies, managers and personnel who gave willingly and generously of their time, and who were prepared to share, not just their successes, but also their problems. Confidentiality forbids identifying them by name, but it does not lessen the authors' appreciation.

Thanked thirdly are the members of the project reference group whose names appear below, and who looked critically at the main findings and provided valuable suggestions that have assisted the analyses.

Mr Carlo De Martinis, General Manager, Energy and Telecommunications Centre

Ms Elizabeth Fugowski, Research Officer, Engineering Skills Training Board, Victoria.

Mr Mike Long, Senior Research Fellow, Australian Council for Educational Research

Mr Edmund Misson, Project Officer, Victorian Department of Education

Dr Yi-Ping Tseng, Research Fellow, Melbourne Institute of Applied Economics and Social Research

Dr Lynne Williams, Principal Adviser Research, Productivity Commission

Ms Susan Woodward, Executive Officer, Australian Light Manufacturing Industry Training Advisory Board

Fourthly, the helpful comments of an anonymous, independent reviewer are acknowledged with appreciation.

Fifthly, we thank the industry training advisory bodies who gave their support to the project.

Lastly, the authors gratefully acknowledge the support of Ms Liz Dent, in the analysis of the findings of the research and in the preparation of this report.

Professor Leo Maglen
Director,
Centre for Human Resource Development and Training, The University of Melbourne, and
Director, Centre for the Economics of Education and Training, Monash–ACER

Ms Sonnie Hopkins
Research Fellow
Centre for Human Resource Development and Training, The University of Melbourne, and
Centre for the Economics of Education and Training, Monash–ACER

Professor Gerald Burke
Executive Director, Centre for the Economics of Education and Training, Monash–ACER, and
Professor, Faculty of Education, Monash University

Executive summary

Purpose and method

The research has investigated a method to demonstrate that Australian enterprises that invest in the training of their employees gain a return from that investment through their employees being more productive. The exploratory nature of the research has meant that it has sought to clarify what is and what is not practicable. The method, which compares enterprise expenditure on training of personnel with labour productivity across a small group of enterprises producing similar products or providing similar services, derives from one used successfully in Europe by Sigmund Prais and others in inter-country comparisons.

The case-study approach involves investigating management processes and work practices in order to assist interpretation of any correlation between training and productivity. Some overseas research suggests that the levels of productivity achieved by firms that invest heavily in training results from forward planning and a 'bundle' of human resource practices, rather than being solely the result of training. The project therefore has investigated whether the productivity levels of the case-study firms could be better explained as being the result of a set of characteristics which are referred to as 'enterprise dynamic'.

Case studies were undertaken in four industries: footwear manufacture, wire products manufacture, four- and five-star hotels (accommodation) and supermarkets, with between five and eight firms in each cluster. Enterprises were located in cities in all States of Australia. During a visit to each enterprise, senior managers were interviewed to gain information on planning, operations and resources, especially human resource recruitment, management and training. The work of operational personnel was observed. Quantitative data, for each of the three-and-a-half years, July 1995 to December 1998, were supplied as available. Personnel were invited to complete and return a voluntary, anonymous questionnaire. The quantitative data were analysed to test for a relationship between training investment and labour productivity. The qualitative data were used to interpret the quantitative findings in two ways. Firstly, they were examined to determine under what conditions the method being tested would be likely to be an effective one for demonstrating a relationship between training and labour productivity. Secondly, the qualitative data were examined to find out whether those enterprises with relatively high labour productivity also had a high enterprise dynamic.

Results

The method appears to have been employed successfully in footwear manufacturing where results suggest that each dollar invested in training of non-management personnel each year, results in an average of fifty-eight dollars in value adding. Furthermore, the outcome appears to have been a consequence of training being a subset of human resources practices in the context of overall business strategy in pursuit of quality enhancement, innovation in products and processes, and client interests. Enterprises achieving high levels of labour productivity appear to have employed one of two alternative systems of work organisation. One involved multi-skilled personnel working in teams which had achieved a degree of self-management capability. The other, as used by one enterprise, involved highly skilled specialists, working under close direction of management.

The results within wire products manufacture were less clear-cut. Of the five enterprises compared, four suggested a relationship between training expenditure on non-management personnel and productivity while the results for a fifth were quite different. It appears that the latter firm has recruited successfully for industry skills, and has employed a low-cost but

very effective training strategy—on-the-job training, especially in new technologies, combined with mainstream TAFE provision. For the rest, the correlation implies an average return of one-hundred-and-ninety dollars in value adding to one dollar spent on training; but again, this appears to have been the result of investment in training as part of business strategy rather than in isolation. So true expenditure would have been quite a lot greater.

For the service-based industries the method was ineffective except, perhaps, in relation to hotel office personnel where productivity (rooms booked per hour) suggested a possible relationship to training investment. The ineffectiveness of the method in the service sector might have been a consequence of the uniqueness of services, as typified by the nature of accommodation in top-of-the-range hotels, and the locality of supermarkets. These were factors for which it was impossible to control fully. Hence, what were estimated as labour productivities really were set targets based on those differences. Notwithstanding, the research found that senior managers in each of the hotels and in the two supermarket chains which participated in the research, considered that the future success of their company depended on having personnel trained both in technologies and in interpersonal skills.

For manufacturers, training appeared to have delivered increases in labour productivity by affecting work practices in a range of ways. Workers with more training appeared to maintain their machinery better with less down-time; they were more skilled in setting and using computer-based technologies, as well as more traditional production methods, and they were able to contribute more to innovation. Possibly, there were benefits too, in better relations between labour and management.

The research along the way identified a number of shortcomings in understanding and / or applying nationally recognised training:

Managers and supervisors, in enterprises with employees undertaking traditional apprenticeships, seldom had any knowledge of the training curriculum, or had spoken with teachers from the provider of the off-the-job component. The assumption was that if the apprentice had a concern he or she would ask. There was seldom any concept of complementarity as a result of collaboration.

Many of the managers in the wire products enterprises had no knowledge of industry competency standards—even that they existed. This reflects, in part, the lack of success that the sub-sector has had in the past in establishing an apprenticeship in spring-making.

A majority of trainees, especially in footwear manufacturing New Apprenticeships, appeared to be unaware of the course they were enrolled in, or even that they were enrolled in a nationally recognised course. An instance was found too, where a private provider had issued certificates for training that had yet to take place.

There also appeared to be a difference, in practice, in relation to recognition of prior learning. Most firms in the study for which industry competencies were a tool, were not recognising prior learning as much as recognising current competence. The competence of all employees was routinely assessed: for those with prior training it was expected that they would become competent in accordance with the customised standards more quickly than those who had not had previous training.

Conclusions and recommendations

The method

It is tentatively concluded that the method, when applied to manufacturing enterprises, is an effective one for demonstrating a relationship between training investment and labour productivity. This is the case where all enterprises recruiting at operator level similarly demand technical expertise or similarly assume that they will train for it, and where some of the enterprises undertake training within the framework of overarching strategic planning. The method, as investigated, has real world relevance. Businesses undertake training at the

same time as doing all sorts of other things—the method accommodates this fact. The method, too, treats training as an ongoing investment that may be in a steady state relationship with skill loss, rather than as an isolated event, the effect of which wears off. Moreover, by dealing with 'concrete' examples, the relationships between business and human resource strategy, work practices and labour productivity are fairly transparent. These attributes could make it a useful tool, not only for businesses for benchmarking purposes, but also for government in the promotion of training.

However, further testing would need to take place before it were promoted as a tool to business. It is also concluded that the method is generally ineffective in service-based industries probably because, here, there are many uncontrollable factors which affect labour productivity. Service-based enterprises tend to deliver a service that is unique in a number of ways, such as location, competition and clientele, facilities, style, and / or combination of services on offer.

Recommendation 1

That the method undergo further testing in manufacturing and related industries such as information technology, before being promoted to businesses as a tool.

Enterprise dynamic

The findings lend some support to the notion that enterprises which have high levels of labour productivity tend to have a 'bundle' or characteristics, which this research has termed a high enterprise dynamic; for example,

- work practices that empower the individual worker to exercise judgement and responsibility while working either as a highly skilled specialist or as a member of a self-managing team in a broad range of tasks
- recruitment and training practices that collectively maintain a high level of skill
- encouragement of workers to identify with their work by receiving recognition (in some form) for either high level or consistently good performance
- human resource planning that is a subset of strategic planning; business strategy that is concerned with quality enhancement, client needs, and innovation, and is informed by market and other research

Recommendation 2

That any subsequent research on the method include further investigation of the relationship between labour productivity and training investment in the context of the level of 'enterprise dynamic'.

Promotion of training

The promotion of training in Australia does not, typically, place training, explicitly, within the context of overarching business strategy. The credibility and effectiveness of training promotion by governments might be increased through communication to businesses of the probable benefits to be gained where comprehensive training is part of strategic planning.

Recommendation 3

That ANTA give consideration to recognising, in the form of policy and promotions, a probable link between training effectiveness and the human resource practices and overarching strategies adopted by enterprises.

Training standards and businesses

Drawing in part on feedback from employees, the research has highlighted the importance, for operational personnel, of one-to-one, relatively informal, work-based learning in being able to apply skills within the context of a particular enterprise. Firms that have integrated on-the-job training with class-based teaching, and with assessment and recording of achievement against customised industry standards, tend to have benefitted most from their investment in training. The research has also suggested that training must not be provided as an event, but as something which is integral to the business function by being built into everything that takes place. Further investigation into linking business planning, innovation, formal and informal work-based learning, off-the-job training, national training standards and customisation, may be able to shed light on more and less effective business practices that could assist many Australian firms.

Recommendation 4

That ANTA give consideration to encouraging research that links business planning, innovation, formal and informal work-based learning, off-the-job training, national training standards and customisation.

Increasing training effectiveness

As noted above, some firms, which have purportedly been utilising nationally recognised training, have not effectively linked learning on and off the job. Collaborative arrangements between firms and external training providers appear to have been inadequate in some cases; in others, personnel seem not to have been informed of the potential for gaining national qualifications through the training they have been undertaking. It is possible that these were isolated instances which were incidentally exposed by this research. But given that those firms which participated were more likely rather than less likely to be 'training conscious', this seems improbable.

Recommendation 5

That ANTA give consideration to mechanisms for ensuring effective collaboration between firms and external training providers with which they deal, and for ensuring that personnel undertaking any nationally recognised training are made fully aware of that recognition and any associated qualifications.

Recognition of current competence

If many firms are not really recognising prior learning, but rather, recognising current competence, it may be apt that policy accommodate this development since it is consistent with present understanding of the partial nature of the transferability of learning, and the need to redevelop knowledge and skills in context, before competence can be reclaimed.

Recommendation 6

That in the further development of their policies on recognition of prior learning, governments give more weight to the common industry practice of recognising current competencies exhibited in performance on the job, assessed against employers' own specific customised standards.

1 Purposes of the research

Overview

This introduction outlines the purposes of the research addressed by this report, within a broad social and economic context. It also identifies the perceived audiences for the research outcomes.

Justification for training

Training effectiveness

As education policy increasingly reflects a belief that learning for work should be an almost lifelong endeavour, knowledge about the effectiveness of the various ways whereby adults learn is assuming growing importance. Whether in paid employment or looking for it, adults want to know that their valuable time will be utilised effectively. Furthermore, they want to feel confident that their efforts will be rewarded through increased job security, promotion, higher earnings, success in the labour market, and/or a greater sense of satisfaction in the work they undertake. Other constituencies also have an interest in learning effectiveness. Funding agents seek to ensure that the educational programs they support are likely to achieve the objectives set for them. And those who employ labour want to be convinced that investing in their personnel through training will strengthen their businesses by delivering an economic return. The program of research reported here primarily addresses this latter issue. At the same time, however, the report explores some possible implications of findings for government and for current and potential employees.

A relationship between training and productivity is fundamental to the existence of the vocational education and training system. This project has sought to demonstrate that those Australian enterprises which provide training for their staff have benefitted by increased productivity. It has also sought to find out about more and less effective training approaches. In particular, the project has been concerned to establish whether training is best treated as part of an overarching business strategy or whether training effectiveness is independent of the business environment in which it takes place. Along the way, some additional insights into work-related learning have been gained and these, too, are reported.

Employers and managers are most likely to be convinced of the effectiveness of enterprise-provided training where the evidence is transparent. Transparency is assisted by concrete example. Research can help provide these; however, single case studies suffer from lack of support for one explanation over another—zero degrees of freedom in the language of the statistician. On the other hand, small clusters of case studies have the potential to combine transparency with logical argument. Although proof can never be truly established that training has contributed to business success, the hope is that good evidence can be provided, where it is based on thorough observation and sound argument, and has supportive statistics. If, indeed, comparative case studies have the potential to demonstrate training effectiveness through increased productivity, perhaps they could be used by enterprises themselves.

A business tool

Hence, the primary purpose of this research has been to explore, in depth, whether a method employing comparative case studies can be useful to business managers for measuring training effectiveness.

Efforts of governments to engender a training culture are undermined by management information systems that recognise only the costs of training and not its returns. A training culture would value learning as increasing the stock of human capital. But implicit to notions of human capital is the understanding that it, like physical capital, can be mobilised to produce a product or service. Valuing potential depends on measuring realisation. Furthermore, effective business decisions concerning training are not just about whether to train or not to train, and if so, the quantum of training to provide. In addition, they address who learns, what is learnt, how and where learning will take place, and how else training effectiveness can be optimised. Business managers may call on educational consultants to advise them on such matters. But for them too, empirically based knowledge about learning strategy is important. And for both groups, being able to evaluate the effectiveness of chosen approaches provides the opportunity to find out what works best in the context of the particular enterprise.

Ideally, any method that is promoted as a potential management tool, should be usable in any enterprise. This means being applicable to any industry sub-sector and to any size business. This research attempts to evaluate a possible method in terms of the first criterion by investigating two manufacturing and two service-based sub-sectors. On the issue of size, enterprises that are investigated are, in the main, medium to large ones. Possible application of the method to small businesses is, however, explored in discussion.

Audiences for this report

This report has been prepared for three major audiences:

- the funding agent: the report aims to demonstrate that its contracted requirements have been met, with the rider that, subsequent to the signing of the contract, the manager of the National Centre for Vocational Education and Research's (NCVER) National Research and Evaluation Committee indicated in face-to-face meeting that the project should be iterative. That is, the approach should be modified on the basis of experience rather than adhering rigidly to the proposed method. This was readily agreed to given the exploratory nature of the project. Nevertheless, the researchers have stayed with the general intentions of the original proposal
- vocational education and training (VET) authorities (ANTA and State training authorities): from both a policy and a promotional perspective they have an interest in research that seeks to demonstrate a relationship between training investment and labour productivity
- the VET research community: other researchers have an interest in considering the method and findings in relation to their own research, critiquing them, and building on them where appropriate

Other groups who would be interested in the findings of this report include:

- enterprise managers / owners who employ labour: as indicated in the previous section, the prime objective of the research has been the development of a method that could be used by enterprises to measure the impact of training expenditure on productivity. However, a research report is not seen as a suitable vehicle for communicating results to this audience, especially given that it must serve as the major report to the funding agent. Rather, material should be prepared for the purpose; it should be in the form of a manual rather than a report. It is expected that subsequent liaison with the funding agent in regard to dissemination of this and three related research projects funded by it will result in a decision as to how to proceed on this matter
- staff of VET providers: for those other than researchers (as above), brief articles in the sector's more widely circulated journals / magazines seem to be the best approach

2 Background to the research

Overview

The research literature, as relates to this research project, is reviewed, and the project rationale explained.

Returns to training

Employee performance

In a recent review of international research into the relationship between investment in human capital and its returns, Blundell et al. (1999) observe:

> *Employers fully or partially fund the training of workers in the hope of gaining a return on this investment in terms of being a more productive, more competitive and consequently more profitable firm in the future. In practice it is very difficult to measure this return…[T]raining results in workers receiving higher real wages. These real wages have to be paid out of productivity gains and therefore should provide a lower bound on the likely size of productivity increases. In practice productivity gains are likely to be higher than this…There are numerous difficulties in measuring the returns to education and training for firms. In the first instance, it is extremely difficult to obtain data on firm productivity, competitiveness and profitability. Furthermore there are problems in identifying empirical counterparts to general and specific training* [which economic orthodoxy has as each delivering different returns to the employer and employee], *and in identifying whether and how much of the costs are borne by workers and by employers. Finally, there are difficult questions regarding causality (does company training cause the firm to improve its performance or does a better (poorer) firm performance foster (require) expenditure on training?) Because of these difficulties, there is a paucity of studies that have directly assessed the effects of education and firm training on company performance.*

Barron, Black and Lowenstein (1989) sought employer opinion on the productivity levels of their workers at various points during the first three months following training. In the view of those surveyed, training improved performance, with about half the return to training being received by workers.

Bartel (1995) studied the employee records of a large company. Using employee performance rankings, she found that individuals who received training during 1989 were significantly more likely to receive increases in their performance rankings between January 1989 and January 1990.

A large survey of employer opinions on the performance of employees with and without prior training under a previous employer was undertaken by Bishop (1994). He found that those whose training had been relevant to their new job performed more productively and needed less training than those who had received no or irrelevant training.

These studies were American. Australian employers, too, believe that training of their workforces improves business performance. Using the Australian Bureau of Statistics (ABS) Employer Training Practices Survey, Long and Burke (1998) found that over sixty per cent of employers provide training, with about three-quarters of employers seeking to achieve improved worker performance in the current job.

Effect of training on productivity

Studies in the literature which have sought to determine whether training investment affects productivity levels by measuring them are few.

Dockery et al. (1997) measured costs and returns for enterprises with indentured apprentices, using Australian case studies. They conclude that there are returns, especially late in the indenture period, but that the returns are less than most employers of apprentices believe them to be. Returns can be increased by having apprentices spend more time on tasks requiring less skill. But they also note that employers prefer to recruit tradespersons by training their own apprentices rather than recruiting ones who have been trained by others. This would suggest that employers expect to be able to accrue longer-term returns from their better apprentices than provided during the indenture, giving an incentive to provide practice in higher-level skills for those they intend to retain post-apprenticeship.

Black and Lynch (1996) used a large longitudinal survey of US manufacturing and non-manufacturing firms, that provided training input figures for 1990 and 1993. They found in manufacturing, a positive association between enterprise productivity levels and time spent by employees in formal, off-the-job training, but not in service-based enterprises. Nor did the number of employees who undertook training appear to have an effect in either group. On the other hand, the findings suggested a positive effect of computer training on the productivity of the service-based firms.

Using panel data for 36 steel finishing lines in the US, Ichniowski, Shaw and Prennushi (1997) conclude that the effect of training on productivity depends on its being one of a set of complementary human resource practices. Their study is revisited below.

A survey of over two hundred Taiwanese automotive parts manufacturers (Lyau & Pucel 1995) found value added as sale price minus materials cost to be positively associated with both the direct cost of enterprise training and indirect cost (back-filling etc.). They estimate that $28 spent on training a worker on average returned $430. They also made the important point that the investment level assumes other resources such as increased capital investment would not be required to achieve it.

Income effects of education have provided the main source of evidence for returns to enterprises from signalled ability and/or higher level skills and knowledge, based on the assumption that the returns to individuals result from reward for higher productivity contribution. Maglen (1993), and McNabb and Richardson (1989) reviewed the situation in Australia in relation to the rest of the world. However, there are few similar studies that address enterprise-based training, and those that do, fail to provide a consistent pattern. Lynch (1992) using US survey data on youth found, for young non-college graduates, that previous off-the-job training had a positive wage effect, but not current off-the-job training, nor current, or previous, on-the-job training. Krueger and Rouse (1998) undertook case studies of a US manufacturer and a service-based company that looked at the effects of a basic education short course on job performance. In the manufacturing company, a small positive effect on wage level was observed but not in the service-based company. In the latter, those who undertook training received more nominations for firm awards but this was judged to be explainable in terms of individual characteristics rather than as a consequence of training. Those in the manufacturing company who undertook the training were more likely to apply for new positions and more likely to get them, although again self-selection is a possible explanation. Veum (1999), also in the US, using National Longitudinal Survey of Youth data over the period 1986 to 1996, finds employer-provided training to be positively associated with wages growth, whether provided by the current or a previous employer. But self-provided training had no effect.

Other productivity factors

A complication in studying training effects on productivity is the multiplicity of other factors that may affect productivity levels. What is more, they may affect them in fundamentally different ways. Factors affecting productivity as demonstrated in various studies are brought together in a paper by Dawkins and Rogers (1998). They emphasise the importance of distinguishing between level of productivity and growth—'A level effect can be defined as moving towards a production frontier, whereas a growth effect concerns the outward movement of the production frontier itself' (see table 1).

Table 1: Determinants of productivity

Factors affecting productivity		
Affecting level	Affecting level and growth	Affecting long-run growth
Scale of firm	Industrial relations	R&D and innovation
Scope of firm	International openness	Growth of factor prices
Cyclical factors	Competition	Capital investment
Work practices	Training	Human capital investment
Capital intensity	Infrastructure	

Source: Dawkins & Rogers 1998

Clearly, the factors in table 1 are not necessarily independent of each other. For instance, training that aims to deliver skills required for immediate application may contribute to the quality of human capital in the longer term; increase in price of machinery may shift investment away from non-human capital to investment in personnel, reducing capital intensity.

Decisions within a firm about each factor are therefore complex, and form a major part of what constitutes business strategy. It follows that factor-productivity studies at the level of the individual firm are likely to be more informative where they examine changes in the context of strategic planning rather than when examined in isolation.

The presence of cyclical factors means that comparisons between firms should be contemporaneous—it is not enough to just adjust to achieve price parity—and that longitudinal studies should account for them. Nor do cyclical effects operate uniformly across sectors, meaning generalisations across sectors cannot be made with any assurance. For the US, Hart and Malley (1996) find that about two-thirds of sectors at the four-digit level are pro-cyclical with respect to labour productivity while the balance are mainly acyclical with a few being counter-cyclical. The latter appear to be mainly machinery and component manufacturers who benefit from firms using recessions to upgrade their plant.

Scale effects translate into wage effects. Wooden and Bora (1999), using the ABS 1995 Australian Workplace Industrial Relations Survey (AWIRS) data, find a positive association between the size of the work site and the wages level of employees, consistent with positive returns to scale.

Variation in productivity levels

Rogers (1998) has studied productivity levels across Australian industry using ABS 1995 Growth and Performance Survey data. Labour productivity levels measured as value added per unit of labour varied widely across industry, with the highest levels ten to twenty times the lowest levels. Larger enterprises on average had higher levels than smaller ones but the spread was as great.

Breaking down by industry sector at the 2-digit Australian Standard Classification of Occupations (ASCO) level and comparing medians, Rogers (1999) found large firms to be more productive than their smaller counterparts in all sectors except 'services to mining'. Variation between enterprises remained high. Table 2 shows figures for the four sectors investigated in this research project. It is apparent from the figures that the distributions, particularly for the smaller groups, are strongly positively skewed.

Table 2: Annual labour productivity in four industry sectors

Sectors	**Productivity levels** ($000)			
	Small-to-medium sized firms		Large firms (100+ employees)	
	Median	*IQR**	*Median*	*IQR**
TCF manufacturing	33.7	42.0	66.5	85.6
Metal products manufacturing	44.9	33.3	79.2	43.9
Accomm., cafes and restaurants	39.7	37.1	77.6	88.1
Food retailing	29.5	21.4	38.8	18.5

Source: Rogers 1999

Productivity is defined here as sales (net of change in stocks) less materials purchases and motor vehicle expenses

*Inter-quartile range

While firms have an interest in maximising their labour productivity, it does not follow that high labour productivity is synonymous with high profitability. Rogers finds for micro enterprises (1–4 employees), that although they have relatively low labour productivity, they enjoy high profitability. This he explains as probably reflecting small businesses' relatively low capital-to-labour ratios. That is, small businesses as compared with larger ones tend to invest more in people than in advanced technologies, and the latter they often hire rather than buy. Both these strategies reduce up-front costs which is important for small businesses with low startup capital levels.

Contrasts between productivity and profitability underscore the importance of interpreting figures cautiously by being aware of what is behind them. Case studies have the advantage of providing insights into the complex of factors operating, including comparisons in the use of technologies. They also allow for greater control of variables—size and nature of product or service for example—that is, if the population of enterprises available for study includes sufficient numbers of ones that are, indeed, similar with respect to factors other than the variables under study.

Productivity measures

A further issue is the nature of the productivity measure itself and how useful it is. Fred Hilmer (1991) points out:

> *The essence of all competitiveness and productivity concepts is the relationship between output and input. Yet most discussions of these concepts tend to concentrate on the way in which inputs are identified and classified. Thus, typical prescriptions for becoming more productive involve 'cutting costs', or 'reducing the number of employees'. While this concentration on inputs is understandable, it is too narrow. We need a broader notion of competitiveness and productivity that recognises the importance of increasing volume, value and timeliness*.

Hilmer considers that strategic productivity measures should include cost productivity (not wasting materials, labour, inventories etc.); value productivity (enhancing the basic product or service); and time productivity (being among the first to innovate, being responsive to existing and potential customers, being reliable). Harris (1996) stresses the importance of focussing on what is most important—for example, for electricity services, lack of interruptions and power surges are the main concerns, while for rail freight it is on-time delivery and lack of loss or damage.

More practical problems are associated with training—gaining reasonably accurate measurements of it. Barron, Berger and Black (1997) who compared employer assessments of hours of training for their employees with the employees' own assessments found that the former group reported 25 per cent more hours of training than their workers but that the numbers of reported training incidents were similar. They conclude that there is not much evidence for formal training being more accurately measured than informal training, which is surprising given that the latter is less distinguishable from normal work. Indeed, one issue is deciding what deserves to be called training; another is firms' recording of it and in a form that provides comparability over time or with other firms. On the issue of recognition, it is interesting to note that Krueger and Rouse (1998) found a potential source of error of about ten to twenty per cent of employees who had not taken training, reporting that they had.

Then there is the issue of selection. As Ashenfelter and LaLonde (1996) point out, firms do not offer training to their employees randomly; they provide it where they believe it will deliver the greatest benefit. That will usually be as productivity improvement in the current job or through promotion; but it can be for other reasons such as reward. This makes comparisons with and without training difficult to interpret. For those who look at wage effects, minimum wage levels can give misleading ideas of relative productivity since wage level differentials are more compressed than are the associated productivity differentials (Acemoglu & Pischke 1998). The result, incidentally, is that firms have an incentive to increase the skill level of their workforce.

Interrelatedness of business practices

Strategic decision-making

As discussed (above), business decisions that contribute to achieved levels of productivity are complex and interconnected. While day-to-day decision-making typically relates to factors that are amenable to small adjustments, strategic decisions in the allocation of capital for plant and infrastructure, and about the core level of labour and human capital, are longer-term.

Changes in products or services may only take place through minor adaptations to the existing range and dealt with in the short run. But more innovative changes in products or services constitute major business strategy. Furthermore, decisions aimed at increasing or maintaining levels of productivity and profitability through technological innovation can, at the same time, involve substantial risk. Yet it is innovative capability, either as a leader or as an early follower, which is essential to the survival of many businesses.

Dosi (1997) emphasises that differences in this capability constitute a key factor in deciding winners and losers:

> *[A] 'stylised' fact emerging from studies on innovation and diffusion is the persistent heterogeneity in knowledge and problem-solving capabilities that firms embody, their relative stickiness over time, together with wide asymmetries in performance, highlighted also by the persistence of 'inferior' techniques and product characteristics—given the prevailing relative prices and demand patterns—and of significant profitability differentials.*

As noted by Long and Burke (1998), firms in Australia are inclined to increase training when introducing technological change. Similarly, Lynch and Black (1998) conclude that employer-provided training complements rather than substitutes for physical capital. But it does not follow that all training for technological change is well planned and equally effective. As noted by Smith and Hayton (1999) in relation to their case studies of Australian enterprises undertaken in 1994–95: 'The process of strategy formulation was only in its infancy in most of the enterprises investigated and the direct connections between strategy and training were, to all intents and purposes, non-existent'.

Yet planning capabilities of firms and the production and service delivery capabilities of operational personnel are linked. Insightful planning at senior levels by knowledgeable and skilled leaders leads to the development or selection, and implementation, of technologies and outputs and the skilling of personnel that achieve high levels of productivity with those

technologies and outputs. Less strategically directed choices about human and physical resources, on the other hand, even where they include training for personnel, are unlikely to deliver the same level of benefits. To illustrate, one of the research team was invited by a firm owner to explore why a program of training purchased for people on the shop floor appeared to have had no impact on productivity levels. Interviewing the participants revealed that the great majority already had the skills delivered by the course. In fact, it had made the few others more productive, but the effect would have been too small to be observable at plant level—and may have been counteracted by what appeared to be alienation suffered by some of the others. This is not to suggest that the best training is narrow, highly targetted training. In some circumstances it may be. At other times it will be broad-based but still consistent with the needs of the organisation.

It follows that research into the effectiveness of enterprise-based training should not only examine whether the level of effectiveness relates to the amount of training provided, but to whether provision of training results, at least to some degree, from strategically based, comprehensive business planning. At the heart of such an approach is the ongoing drive for improvement—in client service, in quality, in new ventures, in the functioning of the organisation. Hence, these are likely to be characteristics of firms that are the best planners and users of training.

Human resource management

Various authors over recent years have argued that the human resource function of enterprises cannot be disengaged from the business settings in which it operates.

Arthur (1994) classified human resource systems as ones aimed at reducing cost of labour through tight control of workers and ones that seek improved performance through committed, discretion-exercising personnel. In commitment-orientated firms, in contrast to controlling firms (US steel mills in Arthur's study), work practices required a high level of decision-making by operational personnel. In them there was a preference for higher wage levels rather than bonuses; there was a higher proportion of skilled maintenance and craft workers; and training was more likely to address new skills, communications and problem-solving. On average, too, decision-making and problem-solving were more participatory. By contrast, in controlling mills, employee behaviour was closely monitored and rewarded on the basis of output. Engendering a commitment to the values of the organisation was not important. Arthur found that productivity as tons of steel produced per labour hour, and scrap rate, were both more favourable in the mills whose management strategies sought committed employees.

Greater productivity also was found by Macduffie (1995) to exist in US automotive plants that employed a set of related worker-empowering practices as part of flexible production—in contrast to mass production systems. Those practices integrated with manufacturing practices that sought to reduce inventories and stocks, and demanded that operative personnel be skilled and adaptable, team-based problem-solvers. Somewhat different to Arthur, Macduffie found financial reward that was linked to plant performance to have contributed to productivity under flexible production.

Macduffie links the 'bundling' of human resource practices to overarching business strategy:

> *Overall the evidence strongly supports the hypothesis that assembly plants using flexible production systems, which bundle human resource practices into a system that is integrated with production/business strategy, outperform plants using more traditional mass production systems in both productivity and quality.*

Strong support is provided for bundling by Ichniowski, Shaw and Prennushi (1997) in their findings with steel finishing lines, where innovative human resource practices appeared to be synergistic—their effect on productivity collectively was greater than the sum of each practice operating individually. Those included incentive pay schemes such as 'pay for knowledge', flexible job design, participation in problem-solving teams, training for and application of multiple skills and job security. Productivity in these circumstances was found to be higher

than where production involved closely supervised, narrow jobs with no participation in decision-making.

A study that sought to examine the relation between human resource practices and business strategy in a service industry is that of Hoque (1999). In a survey of over two hundred medium-to-large UK hotels, Hoque looked at the match between business strategy and human resource strategy—'external fit', and the synergy between the various human resource practices—'internal fit'. Each hotel was categorised as a 'cost reducer', 'quality enhancer' or 'other'. Human resource management practices were taken to include staff-friendly terms and conditions, recruitment that aims to ensure match to the values of the organisation, a learning culture, team work and role flexibility, focus on quality in work and merit-related pay. Human resource outcomes considered in the research included organisational commitment, job satisfaction, staff flexibility and quality of work. Human resource practices of the quality enhancer group appeared to have been somewhat more effective in delivering the human resource outcomes; however, the practices were strongly related to the group's financial and quality performance, although not its labour productivity. By contrast, human resource practices were judged as ineffective where cost-cutting was the overriding objective. Hotels that had a human resource strategy and implemented their human resource practices as a coherent package, outperformed those that did not. Interestingly, for the research described in this report, the 'other' group behaved much more like the quality enhancer group than the cost-cutter group. The lack of relation to labour productivity in any of the three groups is also noted and may have had something to do with the way it was measured. Hoque concludes that the findings lend support to the importance of both external fit and internal fit for hotels.

A fairly consistent picture emerges across the studies, except for the issue of financial incentive and performance payment. McNabb and Whitfield (1998), using data derived from the UK Workplace Industrial Relations Survey, found matching enterprise financial performance to the system of employee involvement in it to be complex, with the provision of profit-related pay consistent with upward decision-making. Ben-Ner and Jones (1995) address the issue from a 'rights of ownership' perspective—ownership of an asset delivers right to control its use and to enjoy its returns. Worker empowerment passes on to personnel some of that control right, and various financial incentive systems provide for some sharing of the returns. But whether control is exercised in the interest of the organisation is another matter. An individual's high productivity level might be achieved at the cost of others' output, and so inconsistent with the interests of the organisation; broad-based profit-sharing does not discourage the free rider. Recognition of high-level performance of employees appears to be an important ingredient in bundling human resource management practices, but the way to best do it appears to be problematic.

This research

Enterprise dynamic

The research reported here has sought to examine whether training that is associated with high labour productivity—measured in either physical or monetary terms—is associated also with the sorts of enterprise characteristics which the previous research has suggested to be important, namely:

- work practices that empower the individual worker to undertake a broad range of tasks, and to exercise judgement and responsibility
- work that, to a significant extent, is team-based with team-based problem-solving
- encouragement of workers to identify with their work by receiving recognition (in some form) for either high level or consistently good performance
- human resource planning that is a subset of strategic planning
- business strategy that is concerned with quality enhancement, client needs, and innovation, and is informed by market and other research

For convenience, the above 'bundle' will be referred to as a 'high dynamic' in contrast to the 'low dynamic' of enterprises wedded to the status quo of routine, closely supervised tasks in the production / delivery of standardised products and services. The term, 'high dynamic', has been chosen in preference to 'innovative work practices' and 'high involvement workplaces' so as to capture overarching business strategy, and in preference to 'flexible production', 'lean manufacturing' and the like in order to include service-based enterprises.

It cannot be concluded from the studies cited above that the human resource practices of low dynamic enterprises will, on average, always be less financially rewarding than those of high dynamic ones in the same industry group. Indeed, Macduffie (1995) expressed the opinion that:

> *Innovative work practices are likely to contribute to improved economic performance only where three conditions are met: when employees possess knowledge and skills that managers lack; when employees are motivated to apply this skill and knowledge through discretionary effort; and when the firm's business and production strategy can only be achieved when employees contribute discretionary effort*.

Albeit, there is increasing acceptance in Australia that the country's economic future is dependent on the growth of knowledge-based firms producing high-quality, customised products and services (the high skills route of Finegold and Soskice 1988). Those businesses that concentrate on long run, mass production of identical outputs run a greater risk of losing out to copiers—possibly offshore—who are able to deliver the same outputs at lesser cost and cheaper price, or being displaced in the market by providers of more innovative products and services. Of course, as Finegold (1999) has recently acknowledged, mass production is not inconsistent with high quality, the achievement of which almost certainly demands highly skilled labour. But the threat from innovators remains.

With these factors in mind, this research report attempts to examine findings regarding individual firms in the context of the conditions of the industry sub-sectors in which they operate and their relationships to the broader economy.

Methodological issues

In choosing to employ comparative micro-studies to investigate the effectiveness of firms' investment in training to achieve high levels of labour productivity, the research has especially drawn on the work of Sigmund Prais in the UK and his extensive network of colleagues in Europe and elsewhere. That work, that extended over nearly two decades, has been reviewed by Maglen and Hopkins as a precursor to this research (1998). The projects within that program of research relevant here have been international comparisons of small numbers of enterprises that investigated labour productivity and skill levels. Industry sector products / services examined in this way and reviewed by Maglen and Hopkins were:

- metal products, in the UK, Germany and Netherlands (Daly, Hitchens & Wagner 1985, Mason, Prais & van Ark 1992)
- fitted kitchen furniture in the UK and Germany (Steedman & Wagner 1987)
- women's garments manufacture (Steedman & Wagner 1989)
- hotels (Prais, Jarvis & Wagner 1989)
- biscuit-making (Mason, van Ark & Wagner 1994)

More recently, banking services have been compared in the US, Germany and UK; and a further study has been undertaken with hotels (Keltner et al. 1999).

The attraction of that research program has not been just that Prais and colleagues made comparisons between enterprises producing similar products and services—paired enterprise studies that examined productivity effects had been undertaken before by others; for examples see Bailey and Hubert (1980). Rather, the key ingredient in the studies that this research has sought to emulate has been the investigation of work practices as the link between learning and productivity levels. Correlations between a proxy for learning (or skills) and productivity are made more intelligible by being coupled with an explanatory chain that

links learning and skills to work practices that in turn link to labour productivity. In the Prais studies the independent variable (as the proxy for learning and skills) was the level of academic and vocational qualifications held by personnel. In this research it has been enterprise expenditure on training. At the same time however, it has been viewed as essential to collect information on recruitment so as to avoid the possibility of equating productivity effects with training differences that could more easily be explained by differences in formal qualifications at recruitment.

The research program of Prais and colleagues involved intercountry comparisons, with the objective of explaining the (then) low productivity of the UK relative to that of other major economies, in terms of a comparative lack of skills as conferred by vocational and general education. In contrast, this research has been undertaken only in one country, Australia. Certainly, two of the industry sub-sectors investigated are similar to ones included in the work of Prais and colleagues. However, the objective has neither been to reproduce their techniques nor to attempt comparisons with their results. In reality, the latter would be impracticable. Even if it were realistic to allow for the intervening period accurately in dollar terms, changes in the nature of products, materials and processes (manufacturing industries) and in expected level and nature of services (service-based industries) would invalidate comparisons. Furthermore, Prais and colleagues published ratios of means, rather than actual measures, necessitating access to unpublished data before any comparison could possibly be made. In applying a comparative case-study approach to enterprises within one country where they are to be differentiated by level of training expenditure, the aim has been to see if this has any apparent relationship to the level of labour productivity achieved. Therefore, it has been necessary to examine distributions rather than means. Of course, Prais and colleagues undertook comparable studies within the country, but because of the thrust of the research, did not focus on intra-country differences. In one instance, however, they alluded to differences in qualifications between similar firms within the UK as relating to productivity differences (Daly, Hitchens & Wagner 1985). However, no information was published on the relationship.

Some authors have suggested that the observed differences in productivity between countries could just as easily have been explained as arising from technology and management differences (Cutler 1992; Chapman 1993; Shackleton 1995), or cultural differences between countries along with differences in the associated attitudes to work (Köhler & Woodard 1997). The technology explanation has some validity in some of the comparisons, but not in others where the authors found little difference to exist. It also must be acknowledged that Prais and colleagues intentionally avoided controlling for technologies with the rationale that skills availability is a factor in decisions made by firms in relation to introducing them. The cultural explanation has more validity but would be less applicable to comparisons made within one country, as in this research.

As mentioned earlier in this chapter, a precondition to studies of this type is gaining sufficient numbers of similar enterprises in order to be able to make meaningful comparisons. Prais and colleagues had the advantage, with a few exceptions, of studying firms in large economies. Albeit, they note, with respect to international comparisons:

> *The difficulties of undertaking 'controlled comparisons' of national samples of establishments are well known, in particular, care needs to be taken to ensure that the samples are not only well-matched for product (service area and mix of employment sizes) but are also adequately representative of national populations of establishments in respect of these and other key criteria. At the same time, the matched-establishment methodology has obvious limitations arising from its focus on narrowly defined product/service areas and the heavy costs of field work which necessitate reliance on smaller samples of establishments, and shorter periods of time in each establishment, than might be possible with alternative methods of enquiry* (Mason, Keltner & Wagner 1999).

The representativeness of samples for international comparison purposes was a concern of Mason and colleagues but is not an issue for this research. But the gaining of suitable productivity measures and the confinement of costs associated with the undertaking of case studies are. Furthermore, in Australia, there are likely to be fewer firms than in the UK,

Germany, France or the US that are sufficiently similar in their output, and even less where it is attempted to control for other variables such as size, technologies and location.

There is also the problem of self-selection. It is probable that those who agreed to participate in this study manage organisations in which training is rated as important or is, at least, conceived of as possibly important. While self-selection would not invalidate comparisons between the studied enterprises, it may disallow generalisations being made about the nature of a sub-sector as a whole. It also may mean that the observed spread in training expenditure levels is likely to be skewed towards the upper end of the population distribution.

3 Method

Overview

The detailed objectives of the research are listed and the method used to address them, explained. Additional information is given in the following chapters concerned with the individual sub-sectors.

Objectives of the research project

The project has been undertaken in order to:

- determine whether use of case studies in Australia to compare similar enterprises can yield a method for measuring the effect of training investment by enterprises upon their levels of labour productivity. The method was tested in two manufacturing and two service-based industry sub-sectors
- provide evidence to enterprises, government and other interest groups of training effectiveness
- develop the method so that it could be used by enterprises themselves, and in the process
  - provide information on costing training and estimating returns
  - provide indicators of the need for and suitability of training that could be used by an enterprise
  - identify issues that might deter enterprises from using the method and suggest ways that their concerns might be addressed
  - explain the conceptual and practical issues relating to measuring productivity in various industry sectors and identify factors in an industry or sub-sector that should be considered in application of the method
  - provide guidelines for interpreting training's impact on profits and competitiveness
  - suggest further research, in particular into how the method might be modified for application by very small businesses, community service, primary and information sectors

Sub-sectors

In order to test the proposed method effectively, it was judged that the selected industry sub-sectors should:

- provide contrasting examples of industry types
- have large numbers of similar enterprises operating across Australia
- produce products or services that are clearly distinguishable from their respective inputs and that are measurable

As a consequence it was decided to undertake studies in two manufacturing sub-sectors—a metals and engineering sub-sector, and a light manufacturing sub-sector, and in two service-based sub-sectors—hospitality and wholesale or retail. In consultation with the respective national industry training advisory bodies (ITABs) the particular sub-sectors for study were then selected.

The chosen sub-sectors were:

- footwear manufacture
- wire products manufacture
- accommodation sections of four and five star hotels
- chain-based supermarkets

For each of the three national ITABs which were based outside Victoria, the respective Victorian State ITAB worked with the project team on behalf of its national body. Each ITAB assisted in obtaining the agreement of seven or eight enterprises in each sub-sector to participate in the study. Enterprises were selected with the objective of achieving reasonable comparability in relation to:

- size—with a preference for medium-to-large enterprises—it was considered that individual personnel characteristics would be more likely to yield atypical results in very small enterprises
- location—all urban-based, and with the aim of balancing costs against the national nature of the project by having about two-thirds in Victoria and one-third elsewhere in Australia

Strictly speaking, work sites were selected rather than enterprises. Hence, a case study could be of one site of a firm that operates out of a number of different locations. A number of different case studies could be of different sites of the one firm. The latter applied with supermarkets, each of which belonged to one of two chains; it also applied for two of the footwear studies, where each site was known commonly by different brand names but belonged to the same company.

The confidential nature of the research

The project required and was granted the approval of the University of Melbourne's Human Research Ethics Committee. Given the sensitive nature of the research and the commercial in-confidence nature of some of the material, approval committed the team to exclude the identities of the enterprises against individual case studies in any reports or published materials. Approval also committed the team to ensuring that any survey of personnel was anonymous, and to requesting, in each case study, an opportunity to brief the enterprise's union representative (if there was one), on the project.

The case studies

Setting up the case studies

Initial contact was made by phone with the chief executive officer or human resources manager of those enterprises that an ITAB had identified as suitable. The project was explained and participation requested where discussion confirmed the ITAB's opinion of suitability. If sought, this was followed up by a visit to the proposed firm for further discussion. For the supermarket chains initial contact was with human resource managers or equivalent in head offices of three chains, two of whom subsequently agreed to participate. Stores, for the supermarket case studies, were chosen by head office managers.

Participation was formalised by signed agreement with the liaising manager—either a director, the chief executive officer or the human resource manager.

Each liaising manager was requested to nominate four alternative two-and-a-half day blocks for the case studies within the period January to June 1999. A timetable of visits was then set in place.

The field work

Each case study involved:

- obtaining figures on a financial year basis for a series of metrics, for the period 1995–96 to 1997–98, and for 1998–99 June–December (given that the case studies were being undertaken in the second half of 1998–99). The metrics chosen were labour input, output, value added, training expenditure and numbers of personnel with, if possible, breakdowns on nature of employment and target groups in receipt of training (proformas appear as appendix B which is available on the world wide web: see p.65)
- gaining a profile of the enterprise through structured interview at manager level (appendix C, see p.65) and, in all but one instance (where permission was withheld), work observation
- discussion about the project with a union representative or equivalent (subject to the agreement of the chief executive officer)
- investigation of any sub-sector-specific or site-specific variables to be taken into account when analysing the results
- surveying personnel (except in two instances where permission was withheld), through a voluntary, anonymous written questionnaire (appendix D, see p.65)

Collection of quantitative data

In order to maximise the potential value of the case studies, it had been initially planned to collect a comprehensive range of quantitative measures of business performance. In practice it soon became apparent that this would be problematic on two fronts: manager fears of advantaging competitors even where identity is protected, and lack of data or lack in accessible form with consequent manager concern about the work that would be required to extract the figures. Therefore, the quantitative data requirements of the research were revised to concentrate on those metrics essential to it.

In discussion with the person assigned to extract the data the following points were made:

- labour hours are the hours worked during the year that have directly contributed to creation of the output (that is, they exclude annual and sick leave etc.); further details are provided for each sector in the relevant chapter of this report
- labour turnover is the number of people leaving the site in a year; it is recognised that, with downsizing, they might not be replaced
- total personnel is the average total number of people employed at a site during a year
- output is the total amount produced by the enterprise in a year measured in either real or monetary terms; further details are provided for each sub-sector in the relevant chapter of this report
- training expenditure is the amount spent by the firm on training, both directly for such things as fees, the employment of trainers, teachers etc. and the preparation of materials, and indirectly as back-filling costs in the release of personnel to attend courses. While some of the costed training may take place on the job, there may be other on-the-job training for which a cost cannot be allocated. It is irrelevant to this research whether the firm has been successful in recouping some of its costs from outside sources. Expenditure figures are sought for management training, supervisory or technician level training, and operator training

Structured interviews

Where practicable, initial interview was sought with the chief executive officer, or store manager in the case of supermarkets. This had the advantage of providing an overall framework for subsequent interviews. Interview style was always fairly informal in order to enable free flow of views. Thus the sequence of questions as listed was not adhered to rigidly, and notes were taken in preference to taping. Interviews were nearly always one to one.

Observation of work

This typically involved a walk around the work area in the company of the appropriate manager (for example, manufacturing or operations manager, executive housekeeper), although in supermarkets the team member was usually unaccompanied. It was found preferable to observe work after rather than prior to interviewing the manager about work practices, as this led to a better understanding on the part of the researcher.

Sometimes personnel were invited to speak with the researcher about their work, although not at all sites. In the manufacturing ones, both noise and hazard levels typically meant that an operative would have to stop work before any discussion could take place. Furthermore, some of the enterprises in the study set output rates for personnel. The researcher was concerned not to do anything that might threaten their achievement, and so be to the detriment of an operative. The escorting manager in all cases discussed the work with the researcher, and answered any questions.

Questionnaires

Questionnaires, along with postage-paid return envelopes, were supplied to each liaising manager with a request that they be distributed to personnel directly contributing to the production / service delivery process, typically operatives / room attendants / service assistants, leading hands, supervisors, office personnel who contribute to production / service delivery (in fact, in many instances they were more broadly distributed). It was stressed that the instrument was voluntary and that no pressure should be applied to personnel to complete it. It was stressed also that it should be made clear to personnel that answers were anonymous and confidential and that the employer would receive no information on any individual return. Liaising managers agreed to supply a box to make return simpler, and to mail any coming back that way. Alternatively, respondents could mail their responses themselves. Liaising managers were asked to confirm the number of questionnaires distributed, as absences and other changes in personnel could have meant that the number originally projected was not achieved (in two instances it was exceeded and additional ones were provided). Where there was a meeting with a union representative, the questionnaire was explained in terms of the above, together with its purpose and content.

Draft summaries

Following each visit, a draft summary of the findings was promptly prepared and sent to the liaising manager with a request for any changes, additions or deletions, and to sign off as satisfactory and return to the research team.

Local factors

Case-study firms in the two manufacturing sectors compete in national markets. Regional factors are unlikely to create significant differences in demand for their products. Similarly, the hotels are centrally based in capital cities. They compete with other large, top-of-the-range hotels. By contrast, supermarkets serve clienteles that are very local. Here there is potential for local differences to affect productivity. Three aspects were thought to be important: turnover would be advantaged by the physical distance between the case-study supermarket and its nearest competitor, the availability of items relative to the competitor, and any favourable price differential (though this may reduce profitability). Supplementary investigations were undertaken in order to examine whether these local factors were likely to have been variably affecting productivity levels.

Preparation of data and analysis of findings

The next four chapters present consolidated findings and the analyses of the data.

4 Footwear manufacture

Overview

This chapter reports the case-study results for the light manufacturing sub-sector, footwear manufacturing, and analyses them in accordance with the objectives of the research.

The case studies

Seven footwear manufacturers agreed to participate in the project, two of whom managed sites associated with the same company but which employed somewhat different practices. Five of the manufacturers produced light-to-medium-weight shoes and the other two footwear of heavier weight. The preference would have been to have eight case studies, and all in the former category; but the small size of the industry in Australia necessitated proceeding with seven and a greater variation in product than was first hoped.

In order to preserve anonymity while promoting ease of communicating the findings, a fictitious name has now been allocated to each of the manufacturers. They are Anodyne, Bliss, Caress, Dream, Ecstasy, Felicity and Glamour.

Table 3 brings together a few key characteristics of the enterprises, by way of introduction.

Table 3: Footwear manufacturers: some enterprise characteristics (summary)

Enterprise	Number of employees	Mode of operation	Claimed competitive edge	Planning	Training standards
Anodyne	100–200	Production line	International brand, responsiveness	Five-year strategic plan	Enterprise standards
Bliss	100–200	Production line	Brand positioning	No strategic planning	No set standards
Caress	200–300	Teams	Flexibility, responsiveness	Annual business plan	Customised national standards
Dream	100–200	Mix of production line and teams	Responsiveness	Goals set by parent company	Enterprise standards matched to national standards
Ecstasy	200–300	Production line	Brand, quality and service	Five-year strategic plan	Customised national standards
Felicity	200–300	Teams	Brand	Five-year strategic plan	Customised national standards
Glamour	300–400	Teams	Responsiveness	Five-year strategic plan	Customised national standards

Manipulation of the quantitative data

Productivity levels

Manufacturers supplied figures for output in two forms—numbers of pairs of shoes produced per annum, and value added per annum as sales minus materials costs. Sales figures were wholesale prices; these had to be adjusted where products were going to an intermediary, by including the intermediary's mark-up.

Each also supplied what was considered to be the hours of labour per annum, being the total number of direct hours of work within the factory that had gone into producing the output. As well as the labour hours of operatives and leading hands or team leaders, totals were to include the hours of supervisors worked on the floor in the production process (if they did). Store and warehousing hours were not to be included as they have more to do with factory layout and external arrangements than the skilled nature of the production process. The hours of maintenance personnel were to be included where they contributed directly to production.

The majority of manufacturers used outsourced labour to produce some of their uppers; therefore factory output had to be corrected for this. After investigation, a conversion figure of 0.42 was settled on; that is, it was assumed that manufacturing one pair with outsourced uppers is the equivalent of making 42 per cent of a pair from scratch. A figure was obtained also for the percentage of output each financial year that had utilised outsourced uppers.

Some of the manufacturers used premade soles while others made them on site. It has been assumed that the lesser value being added in the manufacture of shoes from premade soles would be balanced by the lesser amount of labour required. On the other hand, this, and the different levels of complexity in the ranges of the manufacturers, both seasonally and between sites, suggested that a raw measure of productivity as number of pairs produced per hour could not be expected to deliver comparability. Information was nevertheless gathered on the complexity mix, in expectation that it would assist interpretation of results. Approximate ratios were sought for products of low (for example, a simple sandal), medium (for example, an average walking shoe), and high complexity (for example, a high-heeled boot).

Productivity levels were calculated for each of the three-and-a-half financial years as pairs per hour of labour and value added per hour of labour, corrected for outsourcing where applicable.

Training expenditure

All manufacturers supplied figures for total training expenditure as training expenditure for non-management, and five of them for the whole of the enterprise as well. Again, figures represented what manufacturers believed their costs to have been, based on their records. Checking with them established that each considered that all major costs had been captured. They also provided average total personnel levels for each of the three-and-a-half financial years, but not manager numbers—precise historical figures were not always available for manager numbers.

In each case, the present organisational structure provided a figure for the current number of management positions. That number was deducted from the total personnel number for each year to give non-management numbers. Changes year to year in manager numbers would have negligible impact on the balance (to illustrate, it matters little whether twelve or fifteen is subtracted from two hundred when errors in estimates exceed the difference). But lack of precise figures for management meant training expenditure per manager per annum could not be estimated with an acceptable level of accuracy.

In estimating per capita training expenditure it was assumed that expenditure had been evenly distributed across all personnel—a situation that would not have applied in reality.

Hence, what were produced were measures of average training expenditure per capita (five case studies), and per capita non-management (all seven case studies).

In order that figures for 1998–99 could be used, it was assumed that training expenditure in the first half of the year would be mirrored in the second half so the figures were doubled. The approach assumes that labour productivity had been the same January to June as in the previous July to December. This is a reasonable assumption for value added but probably involves some over-estimation of number of pairs since making the summer range is replaced by making the more labour-intensive, winter one. (In fact, what was supplied for a few of the case studies undertaken towards the middle of the year was the full financial year figure.)

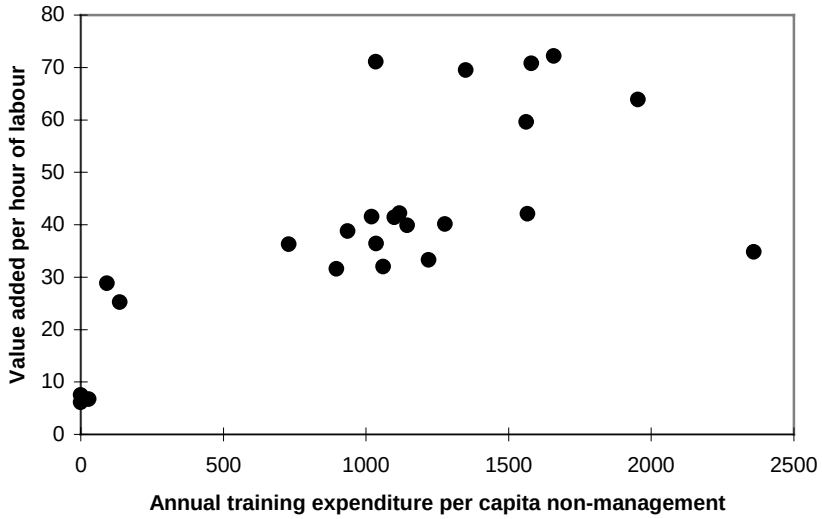
Productivity results

Main quantitative data

Table A1 (see appendix A) provides the collected results for the various metrics. It was decided to concentrate on the non-management set, both because it is complete and because justifying training at non-management levels is a priority for the VET sector. Furthermore, at that level, assumptions about distribution of expenditure are less problematic—it was found across the four industry sub-sectors studied that it was not uncommon for almost the whole of the management training budget to go on one person, say for an overseas study trip. It can be seen, however, that the two sets of figures, per capita and per capita non-management, differ very little.

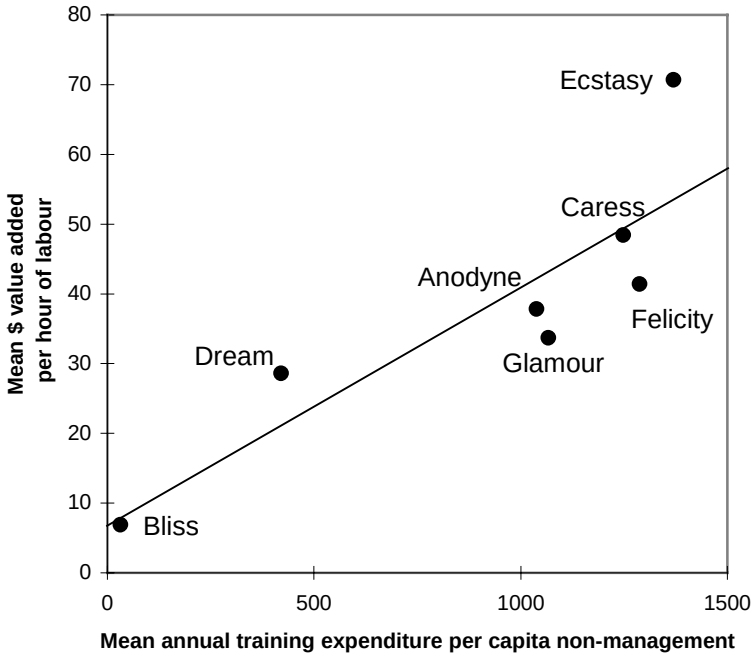
Figure 1 shows productivity levels as value added per hour of labour against training expenditure per capita non-management for that financial year. A correlation co-efficient of 0.714 was obtained. One problem is the outlying point to the right being where Dream in the most recent period markedly increased the level of expenditure and, presumably, where it has yet to capture a return. The other is the heavier weighting for some of the firms over others as a consequence of a greater amount of data.

Figure 1: Labour productivity in value terms against yearly training expenditure per non-manager by the footwear manufacturers



Plotting mean productivity levels against mean annual training expenditure per capita non-management gives equal weighting to each case study (figure 2). The graph suggests a strong relationship between training investment and productivity (correlation coefficient 0.870).

Figure 2: Average labour productivity in value terms against average yearly training expenditure per non-manager by each footwear manufacturer



This, of course, does not imply causality. One possible explanation is that both are varying as a consequence of a third factor, for instance businesses increasing expenditure on training along with some other action such as upgrading technology. This issue is returned to below. Another is reverse causality—increased productivity encouraging firms to invest more in training. In order to test for this, training figures were regressed against productivity figures both for the current year and for the previous year. A higher correlation was found to exist between training and labour productivity in the same year (0.731) than in the previous year (0.624). Comparing current-year and following-year figures, correlation coefficients were essentially the same—0.794 and 0.780 respectively. (Correlation coefficients for 'current year' vary because they result from somewhat different sets as a consequence of the coupling requirements). In other words, reverse causality is not supported by the results though it cannot be dismissed.

Figure 3 confirms the expectation that no apparent relationship would be found between training expenditure and productivity measured as mean number of pairs per hour of labour.

A clearer picture can be gleaned about what is happening at the individual enterprise level by looking at the bar graphs in figures 4 and 5. Two things, in particular, become apparent. One has been Caress's continuously increasing investment in the training of its workers and the likewise increasing levels of value adding it has been achieving. The other has been Ecstasy's somewhat less steeply rising, but nevertheless increasing training investment, alongside its consistently high levels of labour productivity.

Figure 3: Labour productivity in simple numerical output terms against average yearly training expenditure per non-manager by each footwear manufacturer

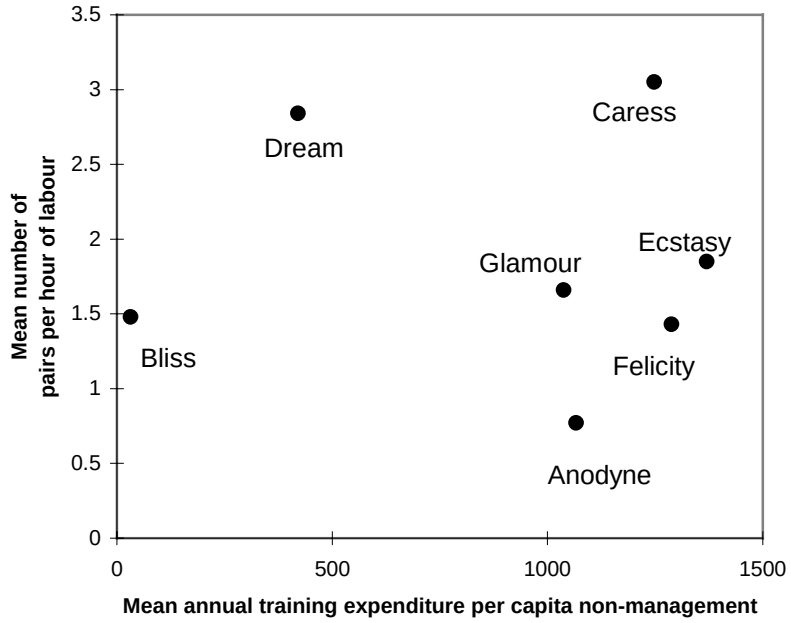


Figure 4: Average amounts spent on training each non-manager each year by each footwear manufacturer

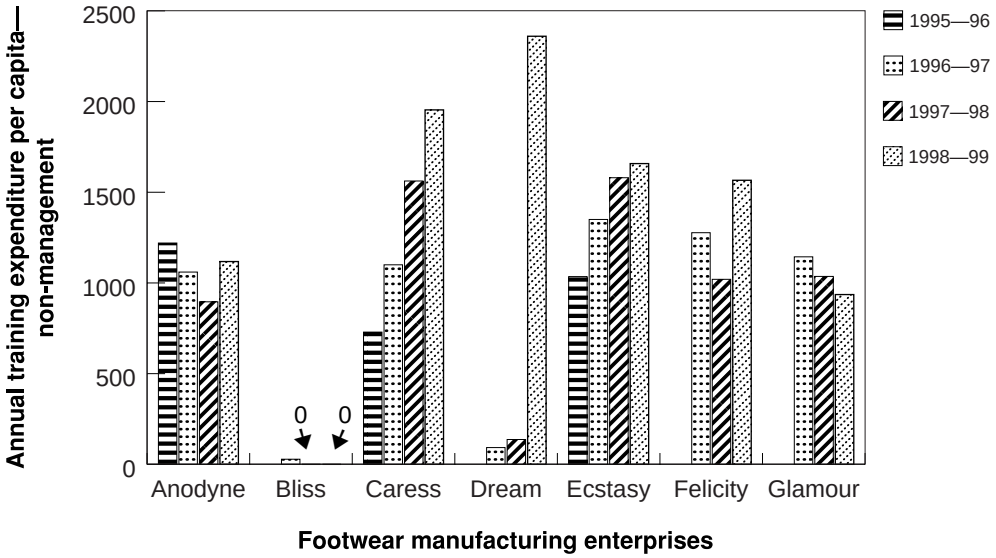
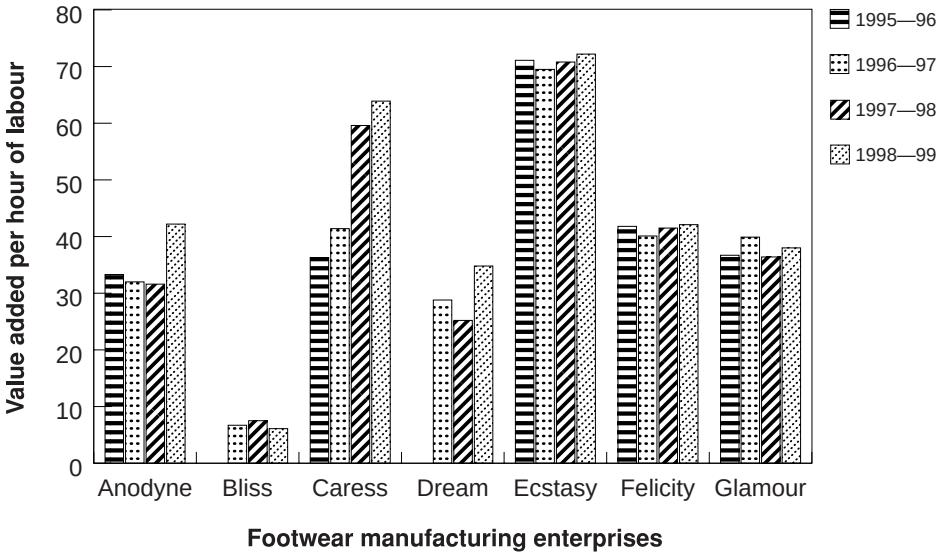


Figure 5: Labour productivity in value terms each year for each footwear manufacturer



Estimating return

If it is tentatively accepted that a causal relationship exists between the amount spent annually (within the range 0 to $1400) by an Australian footwear manufacturer on training each of its non-management personnel, and the dollar value those personnel deliver each hour, then an estimate of the return on investment can be made. (On the basis of this research nothing can be deduced about additional return through investing more than about $1400 per annum per employee.)

The regression line in figure 2 has the form $p = 0.0336\ t + 7.17$, with a standard error of 10.5, where training is the independent variable t and labour productivity is the dependent variable p.

To estimate return then for each $100 invested each year an average of 0.0336x$100 is returned per hour, that is, $3.36. Over a year, assuming 46 weeks at 37.5 hours per week, this equals $5800—an average return of fifty-eight to one.

An alternative way of defining the putative training effect is to say that training has the potential to increase productivity as value added per hour from about seven dollars to about fifty dollars plus or minus, with two-thirds achieving value adding levels of between about forty and sixty dollars (based on the standard error).

It should be noted that, however it is expressed, the estimated productivity effect is very high. It can be seen from figure 2 that this is a consequence of the particularly low level of productivity for Bliss and the particularly high level for Ecstasy. Remove them and the slope of the least squares line becomes much shallower.

Steady state model

The approach that has been used here treats training investment as a continuing input, year to year, so as to achieve or maintain a certain level of productivity. That is, it contrasts with methods that investigate a single training event which delivers a return that declines to nought over time, as skills are lost or become obsolescent. It is, in effect, a steady state model.

Alternative explanations of productivity levels

Organisational differences

In order to investigate whether findings support or contradict alternative explanations of the differences in labour productivity experienced by the manufacturers, organisational differences, as identified through enterprise visit and interview, have been tabulated. Tables A2 and A3 in appendix A list the major characteristics and production characteristics of the enterprises. Potential alternative sources of the productivity differences are now considered.

Nature of product differences

Ecstasy and Anodyne have both produced very well presented, heavier quality footwear; the rest have produced in the light-to-medium range. While this is probably important in the level of productivity Ecstasy has achieved, it is not sufficient to explain the differences across all of the enterprises. Nor is product innovation a sufficient explanation. Neither of the two lowest performers have seen innovation in the range as a priority nor, in the past, has Ecstasy, although it now sees innovation as important. But for the others, where changes in the range have been viewed as essential this, presumably, has meant having personnel able to make those changes. So product innovation as a source of value adding cannot be disengaged from training, because it can be a precondition to realisation of innovative ideas.

Quality differences

Bliss and Dream have had a lesser quality emphasis, while the four highest performers have been most committed to producing a high quality product. So, the trends in quality are consistent with the productivity differences but, like innovative differences, may be as a consequence of training differences.

Market differences

A small proportion of the output of Anodyne, Caress and Ecstasy is sold offshore (table A2). While this has expanded their respective markets to a small degree, it appears unlikely to have been the cause of the high return on labour of the latter two, in particular. Rather, it seems more likely that it has been the emphasis on quality that has enabled the three to start to penetrate overseas markets. Domestically, all manufacturers operate in a nation-wide market that demands quality at a price.

Enterprise size differences

Two of the three medium-sized enterprises (100–200 employees) had the lowest productivity levels and the other medium-sized enterprise was mid-range, suggesting some possible returns to scale. But Glamour, the largest of the enterprises, had the third lowest productivity. Hence, size does not appear to have explained the differences.

Challenges being experienced

Changes in the economy affect all enterprises. More significantly, three of the lower performers were seeking to overcome lack of commitment or trust amongst employees (Bliss, Anodyne and Glamour). But it is also noted that Bliss was very concerned about a lack of skills. This supports a training explanation. There is no accounting for Dream's performance in terms of manager-reported 'challenges'. However, Anodyne, Glamour and Dream have each downsized significantly over recent years (figures not listed); this has probably been instrumental in the commitment problems of the first two.

Work practice and technology differences

Whether enterprises have been team-based or production-line-based does not explain the differences in productivity. For instance, while two of the three highest performers have moved to self-managing teams, the highest has not. For it, 'teams' are groups of people who work well together but they are closely directed with no expectation of self-managing.

In terms of technologies, the pattern across the enterprises was a mix of newer, partially automated, computer-based machines and older machines, requiring a mix of manual and machine-setting techniques (table A3). The proportions varied, with Bliss probably having the highest proportion of old plant and Ecstasy the lowest. But productivity differences are not so easily explained for those in between—for instance, Glamour had fairly advanced technologies but not high productivity. Rather than technology differences per se accounting for the different productivity levels, it appears that introduction of newer technologies has been a stimulus to training. Such a pattern would be consistent with findings elsewhere (see chapter 2). Hence, the lack of training investment by Bliss appears to have been in part as a consequence of staying with established technologies. In contrast, it appears that Ecstasy has found it necessary to train heavily to gain maximum benefit from the technologies it has introduced. On the other hand, Anodyne has viewed automation as a means of avoiding the need for people with high levels of manual skill and the provision of lengthy training programs. Of course, this is not necessarily contradictory. Automation requires different skills—such as programming skills. And fewer people may be required for the same output (although in this industry, reduction in waste appears to be the source of greatest cost saving). But it is questionable whether there is a reduction in the length of training required; this would depend on the existing skills of operators.

Lack of routine maintenance

A failure of operators to perform routine cleaning and lubrication can result in increased incidence of breakdown and consequent reduction in efficiency. Even where there is spare plant, time is lost in changeover. The findings suggest that this could have been a source of some of the productivity differences observed. Operators at Bliss, Dream and Anodyne varied in their routine servicing while those at the other four enterprises all adhered to a strict, simple maintenance routine. But again, the difference cannot be dissociated from training—as was claimed at Caress, the recent high level of adherence to this requirement was seen as a result of training.

Bonuses

The enterprises cannot be differentiated on the basis of bonuses.

Personnel differences

Another potential source of productivity differences are differences in the capability of personnel that result from various recruitment and retention practices, rather than training practices.

Characteristics of the workforces as suggested by questionnaire responses are shown in table A4. The response rate for Glamour was extremely low; the figures shall be ignored (it did have a very high percentage of people on the floor whose first language was not English, but certainly not one hundred per cent). Consistent with on-site observation during the case studies, responses suggest that, except for Anodyne, enterprises have had a predominance of female labour. They also suggest that employees with Caress have been with their current employers for a lesser period, with personnel having been in their current job for a shorter time, than in the other four enterprises. The differences do not equate with age differences. But they do equate with labour turnover rates—Caress has averaged about 20 per cent per annum and Ecstasy 28 per cent per annum. Glamour has had similar levels, averaging about

25 per cent. Others have been lower: Anodyne 14 per cent, Bliss 7 per cent, Dream 8 per cent and Felicity about 15 per cent.

In terms of educational background, figures in table A5 suggest that Ecstasy's employees have a stronger general education, particularly in maths and science / technology. Based on a study of the work of Prais and co-workers as a lead-up to this research, Maglen and Hopkins (1998) concluded that mathematical and scientific or technological knowledge of employees can provide productivity benefits. While questioning whether this has been another factor in Ecstasy's high productivity levels, it must be acknowledged that the response rate for Ecstasy was low; it is possible that more educated personnel responded disproportionately. Certainly, the somewhat higher level of schooling suggested for Dream than for some other manufacturers reflects the higher proportion of responses from people in the enterprise occupying non-operational or other floor level positions (table A6). Ecstasy may have benefited too, from a high proportion of its workers being first language English speakers (table A4), assisting communication and reducing the need for English language training.

The questionnaire asked respondents to state whether they had completed or had ever been enrolled in modules or courses that go toward nationally recognised qualifications (for example a TAFE award course) and to list the courses and the approximate year of commencement and completion (if applicable). It also asked them to give the title of their current job. In analysing the responses, position titles were matched to listed courses. For example, a footwear apprenticeship was seen as directly relating to the title 'process worker' or 'team leader', and a Certificate in Office Practices to 'file clerk' but not to 'factory hand'. But an Advanced Certificate in Information Technology was treated as directly relating to either and a Certificate in Horticulture to neither. A few responses required a bit of guesswork; for instance 'apprenticeship' was taken as being in footwear. Footwear technicians were assumed to be on the floor unless apparent to the contrary, for instance in product development. Table A6 summarises the results. Caress and Ecstasy appear to have been slightly advantaged. More of their workers on the floor appeared to have undertaken post-secondary education and training directly related to the work that they performed. But again the rider stands regarding the returns for Ecstasy.

What is apparent however, are the small proportions of people in any of the enterprises who considered that they have undertaken some or part of a nationally recognised course. This is particularly puzzling given that six of the enterprises indicated that they have personnel undertaking the national award courses in Footwear Production (see table A7). Indeed, only one returned questionnaire referred to them—the respondent claimed to have been awarded the Certificates I and II in Footwear Production through recognition of prior learning (RPL) and was now undertaking the Certificate III. A very small number of returns listed Workplace Communications or Health and Safety but not as modules of award courses (for this reason those were treated as belonging in the right hand column in table A6). Nor could reference to an apprenticeship be interpreted as meaning New Apprenticeship—listed dates in nearly all of those returns precluded that explanation. Instead, the finding suggests that employees have little understanding of the relationship of some of the training they are undertaking to awards under the Australian Qualifications Framework (AQF).

Table A7 includes a summary of the recruitment practices as stated in interview with each of the human resource managers or equivalent. It must be borne in mind that stated preferences refer to the present; they may bear little if any relationship to what has gone on in the past, and therefore to the abilities and qualifications of the current workforce. Even so, Ecstasy's stated preference for Year 10 is consistent with the questionnaire responses. And Dream's preference to recruit to the floor those who have completed Year 12 is possibly reflected in the somewhat higher level of schooling amongst those who responded to the questionnaire relative to responses from elsewhere (other than Ecstasy). But productivity differences cannot be explained in terms of recruitment.

Enterprise-based training

Reasons to train

Summaries of what the general manager or deputy of each enterprise considered to be the purposes of training appear in table A7. Their expressed views amount, essentially, to two positions. The first, for Bliss and Dream, the basic position, justifies training in terms of survival—'enabling production to proceed', 'to stay in business'. The second, the elaborated position, as expressed by the other five, has training delivering much more than capacity to survive. Purposes were elaborated in terms of growth of the business, profitability, quality and the like, and for two of them, Anodyne and Caress, the interests of the employee. The general manager of Caress said:

> *We have got to deliver an investment outcome for the company. If we are going to invest in training we are doing it for a purpose…We need also to create opportunities for people to genuinely grow. There are so many people* [employees] *who don't see this as important and become brain dead and go through the motions* [of work]. *These are not opposites; they feed off each other. When we measure training we should be measuring both of the above—capturing the personal development as well as the company development.*

Certainly, cultural change was mentioned at Dream, suggesting some movement to the elaborated position and consistent with the very recent increase in training investment. But overall, the two positions align with the two populations of training investors—the lower and the higher.

Enterprise dynamic

An associated issue for this research has been to establish whether findings are consistent with training being most effective when in context of a 'bundle' of other practices that constitute what has been termed a high enterprise dynamic (see chapter 2).

Work practices

Three of the five higher training investors, Caress, Felicity and Glamour, have introduced work practices that are consistent with the first two characteristics ascribed to highly dynamic enterprises: empowering the individual worker to undertake a broad range of tasks, and to exercise judgement and responsibility, and team-based work with team-based problem-solving. It appeared during the industry visits that Caress was furthest down this path with teams; they were nearer to the autonomous ideal than elsewhere. So it is perhaps not surprising that it seems to have gained a somewhat higher level of return on its investment in training than have the other two. But Ecstasy has successfully chosen another route to high productivity that has not involved broad-skilling and self-managing teams. Its whole drive has been for very high quality with employees highly skilled in their specialty area.

Teams, also, were found to have taken an active role in range development by testing the practicability of designs and recommending modifications. Again, this did not happen at Ecstasy. But it did at Dream and, to a lesser degree, at Anodyne where 'they will tell you what's wrong' but not come up with solutions.

Recognition of performance

The third characteristic that has been ascribed to the 'high dynamic bundle' is the encouragement of workers to identify with their work by recognising (in some form) either high level or consistently good work performance. All seven manufacturers did this in some way.

Business and human resources strategy

The fourth and fifth characteristics concern business strategy and its relationship to human resource planning.

In accordance with characteristics that have been proposed as being associated with a high rather than a low dynamic, Bliss has not had a strategic planning process (table A2). Innovation, and research and development were rated 'not important' and, for the latter, the view was expressed that there was a need for new ideas but there was no process in place for their generation or capture. Nor has there been any human resource development planning (table A7), succession planning or system of skills recognition. Similarly for Dream, a strategic approach has not been a feature. Research and development have not been important and product innovation has been limited to styling. As explained above, human resource development is now a prime concern but this did not apply over most of the period of this research. Nevertheless, it has had a set of company standards that it has recently sought to 'match' to the national training standards.

For Anodyne, there has been a five-year plan that is now seen as failing to be responsive to change. Research, innovation and development have been viewed as 'somewhat important'. An aging and long-serving workforce has meant human-resource planning has not been a priority issue, although imminent retirement of managers has generated a concern about succession. The company codified its required skills in the mid-90s, as a basis for in-house training but the relationship to national standards 'is not known'.

Consistent with a high dynamic, Glamour, Felicity and Caress have each employed a thorough and forward-looking planning process. That 'has not meant mountains of paper', rather, each has sought to operate cohesively and coherently. All saw research and development 'with a small r and a small d' as important, as part of the process for producing innovative products. Each also appeared to be 'customer conscious' with Caress having as a key objective 'to deliver value for money' (table A2). Each has recently sought to deal more strategically with succession at higher levels of the organisation, and each has individual development plans that link directly (Caress and Glamour) or indirectly to the strategic plan (Felicity). All three have adopted the national footwear competency standards and customised them to the needs of the enterprise. Caress has continuously monitored for competence and has adopted the term 'recognition of current competency' in preference to recognition of prior learning. In practice this has meant paying a recruited 'qualified' tradesperson at the award, but not at the highest level until he or she is competent as per the customised standards.

Ecstasy, too, has seen research and development as important, as a source of both product and process innovation. An improved strategic planning process is considered to be at the heart of improved operation where work in progress and output of unsaleable items have both dropped. For it, too, succession planning is being introduced. National footwear competency standards at Levels I and II have been adopted, customised to the needs of the company.

In general then, Caress, Ecstasy, Felicity and Glamour can be distinguished from Bliss and Dream on the basis of business strategy which is concerned with quality enhancement, client needs, innovation which is informed by research (although less in the case of Ecstasy over the period of investigation), and human resource planning that is a subset of strategic planning. Anodyne seems to belong somewhere between the two groups.

Support for bundling

Given the small number of studies, it has not been possible to say whether there are additional returns to training through bundling of business practices. But the case studies have provided support for the contention that the enterprise characteristics which have been referred to as constituting a high dynamic tend to be adopted together. However, findings in regard to Ecstasy suggest that where high quality is the overriding objective, highly skilled specialists working harmoniously with their peers in more traditional forms of production can be just as effective.

It would be counter-productive, or indeed, downright foolish, to suggest that spending money on training is all that a business has to do to achieve high labour productivity. Yet some might infer that the method that has been investigated in this research is underpinned by such an assumption and therefore question the model's validity. It is bundling that provides the answer. Businesses are likely to invest in training as one tine of a multi-pronged strategy. Employers and managers in the case studies reported here who have used training in this way, see it as an essential component of their metaphorical fork. The case studies have provided insights into why some enterprises, such as Ecstasy and Caress, have gained somewhat greater returns for their investments than have, say, Glamour or Felicity.

Effective training

Given a set of coherent business practices, a further issue is what sorts of training are the most effective for people on the floor. In the research reported here, as typified by Caress, it has been a sequence of on-the-job induction training (which all the enterprises have delivered) and the on- and off-the-job development of competency against customised national footwear standards at Level II, with Level III being undertaken by trainers. Technicians have progressed to the Certificate IV in Workplace Leadership. For Ecstasy, customised national footwear standards have been those at Levels I and II; these have been combined with specific purpose short courses.

The employee questionnaire asked in what ways the respondent had learnt his or her current job. Most people believed that they had learnt their job by having another person explain and / or show them what to do (table A8). Few considered that they had learnt to do their job through courses or classes. Of course, this does not mean that those who have undertaken class-based learning found it to be irrelevant or ineffective; it may simply be that few have been offered what they think of as formal class-based training. But the results do suggest that for most employees in the footwear manufacturers, one-to-one, on-the-job instruction has delivered the most valued form of learning. Even so, there may be some learning that demands a more structured, class-based approach, such as is required for robotics (see Ecstasy, table A7) and for programming other computer-based machinery.

In other words, what appears to have been most effective, has been semi-formalised, on-the-job, competency-based training supported by class-based learning, as required. The probationary period appears to have become part of the recruitment process, enabling more effective screening of the applicant who had, seemingly, the greatest potential for high-level performance in the position. Ideally, formalised training takes over from more informal induction as soon as the recruit is fully appointed.

Some tentative conclusions

Firstly, it appears that differences in training investment have contributed significantly to productivity differences.

Secondly, varying combinations of much the same priorities have operated to encourage employers and managers in five of the enterprises to invest fairly substantially in training.

Thirdly, the method that has been used here to demonstrate and measure the level of return on training, seems to have potential as a planning tool for groups of footwear manufacturers. The industry sub-sector is one that works especially closely, so a co-operative approach is practicable, although members do not usually share financial information. They could, however, supply figures to each other for labour productivity as value added and per capita training expenditure in preference to more 'raw' data, as occurred in this research. More important is the potential for a mix of quantitative and qualitative information of the type presented here to be used for benchmarking purposes.

Fourthly, where training has been coupled with a drive for innovation in the range, and / or high product quality, and / or technological innovation, and routine maintenance practices of personnel, training has contributed to their achievement.

Fifthly, where employees have a strong grounding in maths and science or technology and well-developed English language skills these have delivered extra productivity benefits.

Finally, the research suggests that training within the context of a high enterprise dynamic has assisted firms in achieving high levels of labour productivity.

5 Wire products manufacture

Overview

This chapter reports the case study results for the metal and engineering sub-sector, wire products manufacture, and analyses them in accordance with the objectives of the research.

The case studies

Seven wire products manufacturers agreed to participate in the project. Fictitious names were allocated: Adept, Brilliant, Crackajack, Dazzle, Elan, Flawless and Glister. After undertaking the case study interviews, Glister proved unable to supply the quantitative data and therefore was deleted as part of the project. Investigations at Flawless revealed that wire products were only a small part of production at the site. Regrettably, despite checking its records, the firm has been unable to supply figures for output and labour, specific to wire products—necessary for output productivity estimates. Except for a small reference to it in passing, it, too, has been deleted from the project. Brilliant withheld agreement for observation of work and participation in the questionnaire component of the study. It required, also, that interview be solely with one of the directors of the company. Adept was able to supply data only for its two most recent years of operation. This has left five case studies for which all the key metrics are available for two or more years, with a shortfall in supplementary information for one of them. They are more varied in size and their products more varied than would have been preferred. To illustrate, if case studies were to focus on wire products, preference would have been to have them all, say, in spring-making, or all in woven wire products.

Table 4 brings together a few key characteristics of the five enterprises for which the required quantitative data were collected.

Table 4: Wire products manufacturers: some enterprise characteristics (summary)

Enterprise	Number of employees	Mode of operation	Claimed competitive edge	Planning	Training standards
Adept	20–50	Mixed	Skills	Five-year strategic plan	Not in use
Brilliant	20–50	Single person	Low overheads, responsiveness	Two-year strategic plan	Not in use
Crackajack	50–100	Cellular	Consistency	Five-year strategic plan	Not in use
Dazzle	100–200	Cellular	Brand	Three-year strategic plan	Not in use
Elan	100–200	Single person	Skills	Three-year production plan	Enterprise standards

The status of the case studies is indicative of the difficulties experienced by the ITAB and the research team in gaining metals industry manufacturers' agreement to participate. Initially, the intention had been to investigate eight medium or large enterprises, all of similar size, and all of which make much the same product. This proved impossible for four major reasons. Firstly, as in footwear, it appears that the economy is able to support only a few manufacturers in any one area of manufacture. Secondly, most enterprises are of very small

size—micro businesses. Thirdly, there is a concern amongst many manufacturers that time given to supporting industry-wide research is not spent on the business and is therefore an unacceptable cost. And fourthly, many of those manufacturers who do not have this view, have been researched extensively over the past decade and so do not wish to be involved again. Nor was it the desire of the research team to concentrate on the latter group, as all are likely to invest heavily in training, and so not give the sort of spread the method under investigation demands.

Manipulation of the quantitative data

Productivity levels

Manufacturers supplied figures for output in two forms—tonnes of metal processed, and value added as sales minus materials. Sales were wholesale prices. Except for Dazzle, they also passed on percentage waste figures.

Each supplied what was considered to be the hours of labour per annum, being the total number of direct hours of work within the factory that had gone into producing the output. As well as the labour hours of operatives and leading hands or team leaders, totals were to include the hours of supervisors worked on the floor in the production process (if they did). Store and warehousing hours were not to be included as they have more to do with factory layout and external arrangements than did the skilled nature of the production process. The hours of maintenance personnel were to be included where they contributed directly to production.

Productivity levels were calculated, for each of the three-and-a-half years, as kilograms of metal processed per hour of labour, and as value added per hour of labour. Percentage waste was also accepted as a productivity measure in accordance with the recommendation of Hilmer (see chapter 2).

Some of the manufacturers have sent out a small amount of their work in progress for special treatment; that is, special coating of some springs has been outsourced. Its impact on hours of labour is assumed to have been negligible and so no allowance has been made for it. (The savings for manufacturers are, of course, in plant and equipment rather than labour).

Training expenditure

Manufacturers supplied figures for total training expenditure in various forms—management, supervisory / technician and operative; management and other; and total with approximate share between management and non-management. From these figures training was estimated as per capita, and per capita non-management for each enterprise. Again, figures represented what manufacturers believed their costs to have been, based on their records. Checking with them established that each considered that all major costs had been captured. They also provided average total personnel levels for each financial year, but not manager numbers—precise historical figures were not always available for manager numbers.

In each case, the present organisational structure provided a figure for the current number of management positions. Except for Brilliant, for which manager numbers were known for each of the years, the current number was deducted from the total personnel number for each year to give non-management numbers.

In estimating per capita training expenditure it was assumed that expenditure had been evenly distributed across all personnel—a situation that would not have applied in reality. Hence, what were produced were measures of average training expenditure per capita, and per capita non-management.

In order that figures for 1998–99 could be used, it was assumed that training expenditure in the first half of the year would have been mirrored in the second half; so the figures were

doubled. The approach assumes that labour productivity has been the same January to June as in the previous July to December.

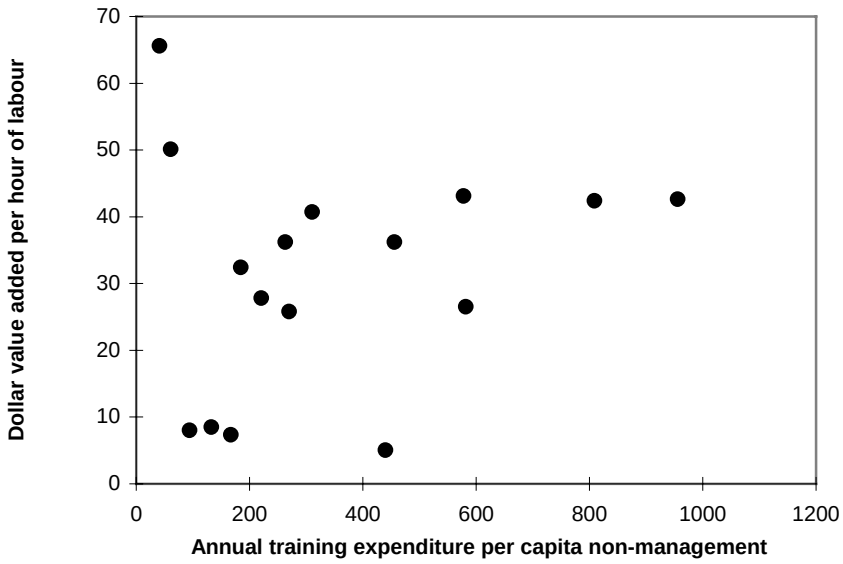
Productivity results

Main quantitative data

Table A9 (see appendix A) provides the collective results for the various metrics. As for footwear, it was decided to use the per capita non-management figures. In contrast to footwear manufacturing, expenditure on manager training appears to have sometimes well exceeded that on training of other personnel. For Brilliant and Dazzle the per capita figures are significantly higher than the respective figures that exclude management training costs. As with footwear, training expenditure per manager position was not estimated, as use of differences in estimating it was considered to introduce too many inaccuracies and invalid assumptions.

Figure 6 shows productivity levels as value added per hour of labour against training expenditure per capita non-management for that financial year. A correlation coefficient of 0.156 was obtained.

Figure 6: Labour productivity in value terms against yearly training expenditure per non-manager by the wire products manufacturers



As was undertaken for footwear enterprise figures, means for each enterprise were estimated so as to give each equal weighting (figure 7). For all five points collectively, there is no relationship between mean annual training expenditure non-management and mean value added per hour of labour. But the scatter of the points suggests that they are from two different populations. Adept has been achieving a very high level of productivity with very little expenditure on training. If Adept is excluded, a correlation coefficient of 0.930 is obtained between mean annual training expenditure non-management and mean value added per hour of labour.

Figure 7: Average labour productivity in value terms against average yearly training expenditure per non-manager by each wire products manufacturer

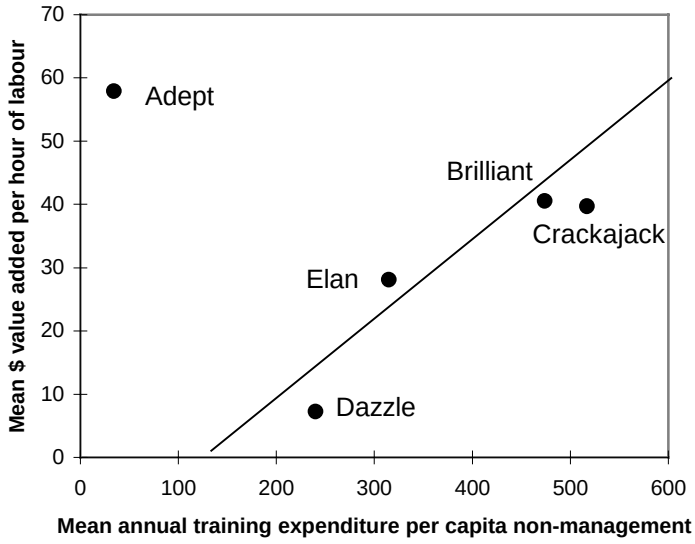


Figure 8 shows mean number of kilograms of wire processed per hour of labour against mean annual training expenditure non-management. Again the scatter suggests Adept has been very different to the other four.

When percentage waste is plotted against mean annual training expenditure non-management, a rather different picture emerges (figure 9). One partial explanation of Adept's high labour productivity is that it is achieved by incurring a relatively high level of waste cost. Incidentally, and consistent with the pattern for training investment and waste, Flawless had the highest training investment (about $1,500 per annum per capita non-management) and the lowest wastage (about 0.25%). As explained above, because of the predominance of other forms of production, including Flawless would be of questionable validity. So the figures have not been plotted.

Given the particularly small number of case studies, and the somewhat inconsistent behaviour of Adept, it is only possible to speculate about a relationship between training expenditure and productivity. There is less support for reverse causality than for direct causality—correlation coefficients between annual training expenditure per capita non-management and value added current year 0.516 and previous year 0.412; and between current year 0.694 and following year 0.589 (Adept excluded). (Correlation coefficients for 'current year' vary because they result from somewhat different sets as a consequence of the coupling requirements). But perhaps the scatter has little to do with training investment and is the result of other factors.

Figure 8: Labour productivity in simple numerical output terms against average yearly training expenditure per non-manager by each wire products manufacturer

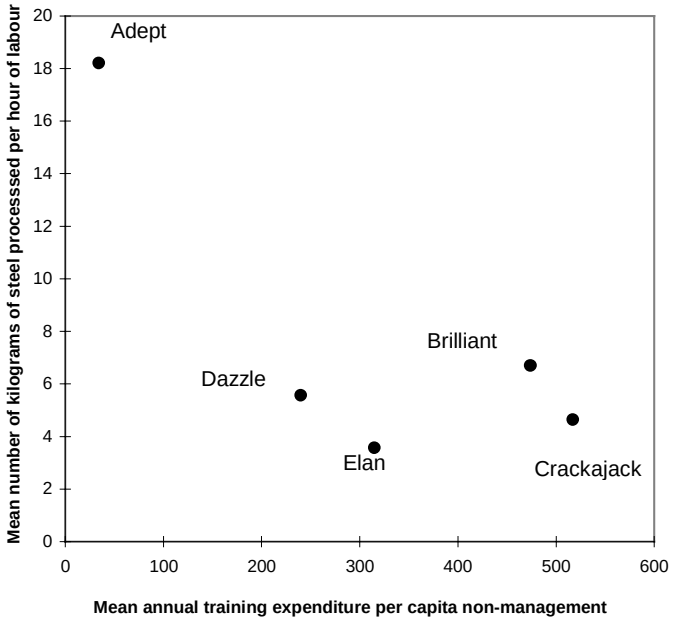
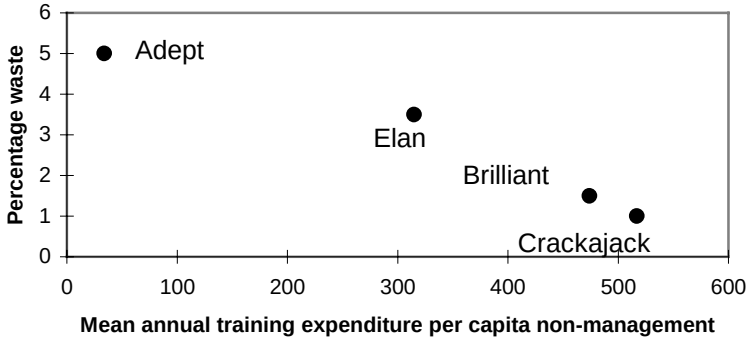


Figure 9: Wastage level of each wire products manufacturer against average yearly training expenditure per non-manager



Estimating return

The footwear manufacturing case studies provided support for the application of the method for measuring return on training investment where higher levels of investment are one part of a more extensive business strategy to improve performance.

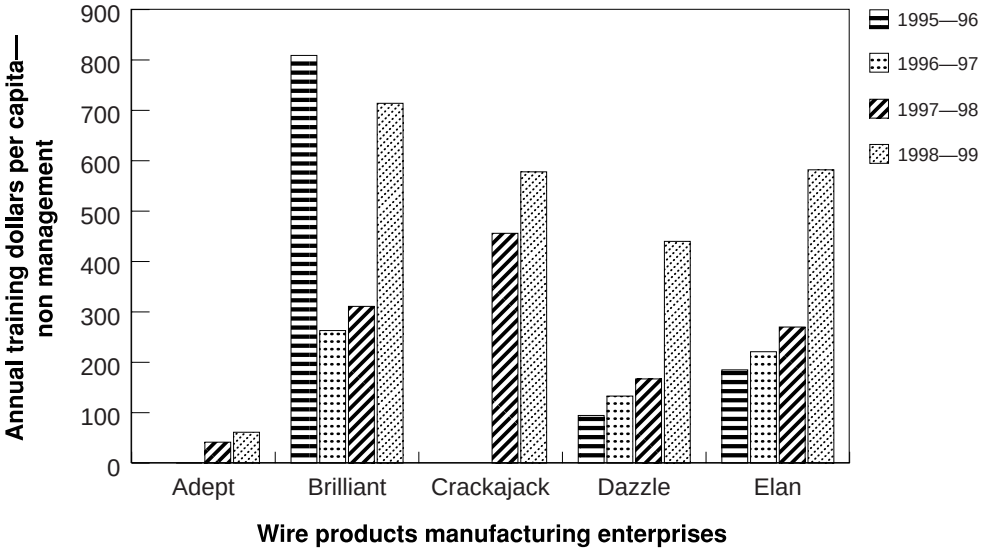
The least squares line in figure 7 suggests that for each dollar in the range one hundred to about six hundred dollars spent per annum on training for each member of non-management personnel, then about eleven dollars are added to productivity per hour ($p = 0.11\ t - 14$). Over

a year of 46 weeks at 37.5 hours per week, this gives almost $19 000 or a ratio of about one hundred and ninety to one.

While this would appear to constitute a very substantial return, it would cease to be so if spending on training is only part of the story—that is, if enterprises are investing in more than training to achieve high levels of productivity. As with footwear manufacturing, it is necessary to look more closely to see if there are alternative explanations for the levels of productivity achieved and / or whether there is evidence that training is effective through acting in concert with other aspects of business strategy.

The reality is indeed complex as demonstrated by figures 10 and 11. The trend has been for enterprises to increase expenditure year by year on training. Furthermore, for all but Adept, there has been a large increase in the year 1998–99, assuming that levels of training expenditure in the second half of 1998–99 mirrored those in the first half.

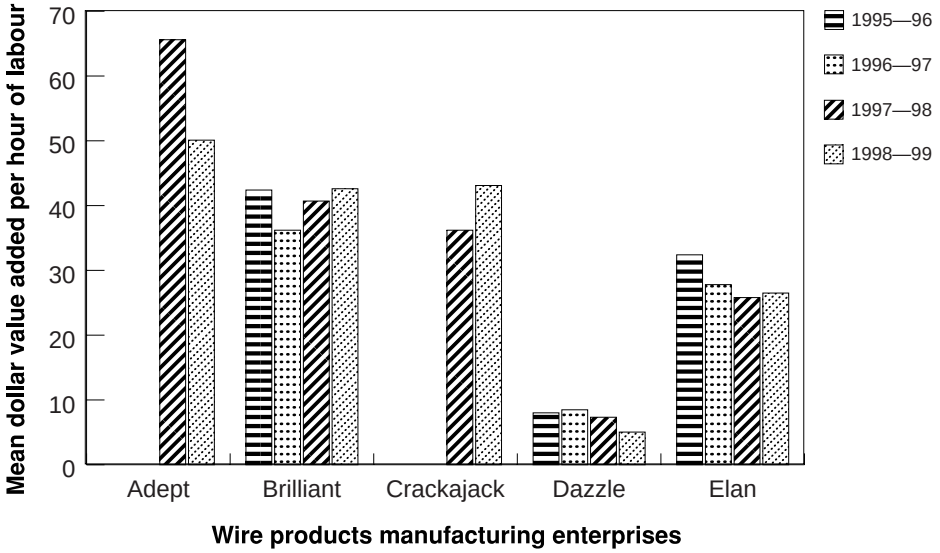
Figure 10: Average amounts spent on training each non-manager each year by each wire products manufacturer



However, productivity levels for each enterprise have remained fairly stable. It is as if each has seen it necessary to increase its training investment continually to maintain financial return, year to year, at a level that it has determined as acceptable and achievable.

There is also the issue of Adept's high level of labour productivity. If any suggestion were to be made that investing in training is normally a precondition to high levels of productivity, Adept's apparent lack of need for it should first have been explained.

Figure 11: Labour productivity in value terms each year for each wire products manufacturer



Alternative explanations of productivity levels

Organisational differences

Organisational characteristics as identified through interview and, with the exception of Brilliant, direct observation, are listed in table A10, 'major enterprise characteristics' and table A11, 'production characteristics'. Potential alternative sources of productivity differences are now considered.

Nature of product differences

Adept, with the highest labour value adding, has concentrated on springs manufacture, while Dazzle, with the lowest labour value adding, has produced only wire mesh, and the other three, who have produced springs and various other wire products, are in between. Springs, too, vary in shape, material, diameter and finish. It is possible that differences in value adding are a consequence of product differences.

Market differences

Over the period of the project all five enterprises have competed in the domestic market nationally as components manufacturers, although there has been a small amount of production for sale to distributors to retailers. Export has not been a significant activity, although Crackajack is now looking to export in strategic alliance with an overseas company to share technology. In addition, customised products, to order, have been an important part of the business. Products may have been for large manufacturers, such as in the automotive industry (springs), or food industry (steel belts), where production demands are fairly predictable in the longer term. Or they may have been for smaller businesses that require short-run job lots of a unique product, made according to their design specifications or to deal with a particular problem.

One factor therefore that seems to have been important, is the capacity to adjust the nature of output quickly. Although this has probably been less of an issue for Dazzle, whose products have been less customised, than for the others. As discussed below, under 'work practice and

technology differences', adaptability may have been a factor in Adept's high labour productivity.

However, another factor appears to have been the capacity to continually increase productivity. Crackajack, the bulk of whose output goes to automotive manufacturers, is experiencing continuing reductions in the price that its automotive customers are prepared to pay, as they pass on price shifts resulting from tariff reductions. Others mentioned, too, the increasingly competitive nature of the industry, as more and more manufacturers enter it. For instance, the director of Brilliant, who was interviewed, explained that some large companies are offering to undercut whatever prices are in place, with the result that there has been no capacity to increase prices in five years. Only by increasing productivity has it been possible to remain viable. This picture accords with the suggested explanation, above, of the observed increasing investment in training along with a fairly stable level of value adding per labour hour.

This could be interpreted as meaning that the industry competes on price. It would seem more accurate however, to claim that it competes on ability to deliver a product that meets quality standards at a price the purchaser is prepared to pay.

Quality differences

Manufacturers could not be differentiated on the matter of quality. All had quality accreditation. As the operations manager at Dazzle said, 'The customer expects quality these days and doesn't have to mention it'. Notwithstanding, the general manager at Elan commented that benchmarking by customers rates that company highly, with the company products, in his view, being seen 'as pretty well in the top percentile'.

Enterprise size differences

The two enterprises with the highest value adding per unit of labour have been Adept and Brilliant, small manufacturers. The two largest, Dazzle and Elan, have had the lowest productivity by the same measure. It is possible that some of the differences in productivity have arisen as a consequence of size differences. As can be seen in table A11, this is not as a consequence of the smaller enterprises having invested more heavily in capital. If size has been a factor, a possible explanation is a closer interaction between management and people on the floor in small enterprises.

Challenges being experienced

Crackajack, Dazzle and Elan have each continued to have personnel problems, either in recruitment or in establishing and maintaining good relations on the floor. Brilliant has also had relationship problems on the floor in the past. Adept stands out, in that the issues for this company are concerned with advanced management practices—how best to measure performance, and how to adjust to introduction of preventative maintenance. The apparent high level of functionality of Adept relative to most of the others probably has had a significant and positive impact on productivity.

Work practice and technology differences

As was found with footwear manufacturers, enterprises have used a mixture of old machines demanding a large measure of manual skills and newer, or adapted, programmable logic controlled (PLC) and numerically controlled (NC) machines, requiring computer-setting skills.

It is the judicious mix that has a large influence on productivity. NC machinery can require specialised knowledge to set up—a few instances of problems in this regard were observed when undertaking the case studies. Once functional, they are not necessarily faster. Nor are they quickly adjusted for short runs. But they ideally deliver high-quality output, with low

wastage and reduced labour. So, given the 'jobbing' nature of the sub-sector, it is not surprising that enterprises have remained fairly 'low tech'. As the managing director at Adept explained, 'We never buy a machine if we can make it or adapt one'. In this company, investing in people has been seen as more cost-effective than investing in off-the-shop-floor, specialised equipment; especially as a job may be brief with equipment having to be modified yet again. This 'philosophy' contrasted somewhat with that of Elan, where it was said, 'We go for the newest and latest machines'. Thus, there was a higher proportion of NC machinery at Elan that at Adept. But given that this makes Adept more labour-intensive than Elan, rather than less, it cannot explain the differences in labour productivity. But it possibly explains why Adept has had a relatively high percentage of waste.

Routine maintenance

Dazzle, unlike the others, appears to have had problems achieving consistent and conscientious daily cleaning and lubricating of machines by personnel. This is consistent with Dazzle's relatively low labour productivity. It would appear, in this instance at least, to relate to Dazzle's relatively poor history of industrial relations. But as suggested for footwear manufacture, it is also a training issue; particularly so, since training is often seen as an aid in improving industrial relations.

Over-award payments

All enterprises have paid over the award. On the other hand, it was said at Crackajack, that the levels it has been able to pay as a consequence of declining margins in the automotive industry, have been insufficient for retaining many of its more highly skilled personnel. It seems that its productivity levels have continued to suffer as a consequence. Being almost always short of skilled labour, it probably never achieves maximum efficiency. It appears that Crackajack is, in practice, conceding productivity for lower wages.

Personnel differences

Table A12 summarises questionnaire responses pertaining to the general personnel characteristics of the enterprises. Responses for Dazzle are mostly from non-floor level personnel (table A13) and so should be interpreted accordingly. Although response rates are low for it and also for Adept, they give some idea of the make-up of Adept's labour force. The suggested masculine nature of all workforces is consistent with observation. However, Dazzle had a much higher percentage of English-second-language speakers than suggested by the returns and is conducting the Workplace English Language and Literacy (WELL) program in order to break down language barriers to communication. On the other hand, Adept's workforce as mostly English-first-language speakers, as represented by the returns, accords with observation.

A potential source of productivity differences are differences in the capability of personnel resulting from various recruitment and retention practices. The main source of Adept's relatively high labour productivity and low training costs appears to have been here. Except for a small number of labourer positions, it has sought to recruit people with skills to the floor, either as qualified tradespersons or as indentured apprentices—in accordance with its policy of investing in people rather then machines (table A14).

Brilliant's recruitment policy has been to recruit people with Year 10 schooling who have a 'cooperative attitude' and who are 'physically strong enough to undertake the work'; and then to train them in-house. When appointing a team leader from outside, Dazzle has expected that the recruit will have relevant experience but not necessarily a trade qualification. Similarly, Elan has required technical proficiency but not necessarily formal training—although, for work with the NC equipment, it has required the recruit to have undertaken relevant modules from, for example, a TAFE diploma course. Crackajack would prefer to appoint qualified tradespersons to its technician level positions, but as explained above, has been unable to attract or retain them. So it too, has recruited externally to lower

level jobs those with 'a record of consistent employment', and who pass a health check, and has then sought to train them.

As was done in relation to footwear manufacturing, responses to the question in the survey regarding 'title of present position or job' were matched to the listed courses of study. In this instance, nearly all courses were ones that appeared to relate directly to the respective job title; for example, basic electronics, or an apprenticeship in tool-making or fitting and machining. Table A13 provides the results from this matching process. It shows less difference then expected in percentage on the floor at Adept who have undertaken relevant award courses relative to percentage at each Crackajack and Elan. But this may be a result of the fairly low response rate. Returns do suggest, however, a higher level of secondary education (table A15).

Enterprise-based training

Reasons to train

In the previous chapter on the footwear manufacturing case studies, it was suggested that stated reasons for training constituted two positions, a basic one and an elaborated one. The former position was shared by the two enterprises with the lowest labour productivity. For wire products manufacture the segregation is not so clear (table A14). Brilliant took the basic position yet had the second highest productivity. Adept, Dazzle and Crackajack fitted the elaborated position. And both Adept and Dazzle mentioned benefits to the learner in addition to those realised by the organisation. For footwear, a sense of responsibility to the employee through training was demonstrated only by the two companies with the highest labour productivity. For wire products on the other hand, it was demonstrated by the one for which labour productivity has been the highest and the one for which it has been the lowest.

Training strategy

Adept has undertaken twice-yearly assessments of each person against his or her job specification and thereby identified training needs. Taking into account the individual's career plans, a program of training has thereby been developed. It has been mostly undertaken on the job and may have involved working in new areas, including the office, to gain broader skills and knowledge of the company. No cost has been put against this form of training. Funding support has been provided for the employee to undertake modules at a TAFE provider where this has been seen as addressing identified training needs. Given that this is highly subsidised, the costs to the company have been small. Furthermore, time release has not been provided which has also kept costs low. Short courses may have been provided on site that incurred some cost, for example, in people skills. Hence, while Adept cannot be said to have been trading off training for recruitment, it appears to have devised a very cost-effective technique of training that is practicable as a consequence of its recruitment practices.

On-the-job training for the other manufacturers, too, has been the main mode of training provision. But, for other than indentured apprentices, it has been as part of comprehensive in-house training. They have not used mainstream TAFE award courses to the same extent. Part of the reason is, certainly, the lack of a trade course in spring making. A number of the persons interviewed recalled efforts in the past to establish a spring making apprenticeship. But the industry has lacked the critical mass.

Enterprise dynamic

Each of the enterprises is assessed in the context of the characteristics considered as acting synergistically and which collectively have been referred to as a high dynamic.

Work practices

All but Dazzle have sought to have personnel able to perform a wide range of tasks. Multi-skilling is now being introduced there also. And with all manufacturers, those employees with application and aptitude have typically risen to more senior positions and thereby have come to exercise increasing levels of judgement and responsibility in their work. But the work of process workers has not had these characteristics.

Furthermore, self-managing teams have not been characteristic of any of the manufacturers. Crackajack, in the past, did employ a team approach but it was discontinued because 'they got fed up with each other'. However, it is again looking to move to a more team-based style of operation, as is Dazzle.

So, multi-skilling of employees with some degree of empowerment for the more able at higher levels, can be said to have applied at all but Dazzle. Again this has been consistent with its relatively low investment in training.

Recognition of performance

All pay over-award wages with the objective of retaining personnel (table A11). The amount paid over the award by Brilliant has depended on the number of machines that the worker has mastered. But performance requirements are not codified. Elan has had a system of skills recognition also, with pay increments associated with them. But Crackajack and Dazzle are only now codifying skills that, along with a better recognition system will assist multi-skilling. Adept, as described above, has had a well-developed skills recording system that is combined with the pay structure. Elan and Adept appear to have come closest to a characteristic of 'recognising high level skill or consistently good performance'.

Business and human resources strategy

All companies have prepared long-term plans that have variously served as strategic and operational plans. Elan is the only company which has undertaken human resource planning at the operational level as a subset of the business planning process. This is achieved by having skills profiling for the floor undertaken through analysis of the projected manufacturing program. Adept has assumed that its planning for products and technology guides human resource planning through the development of position descriptions.

All now view innovative capability, both product and technological, as vital to survival. In a sense the two cannot easily be separated. As was the case for footwear manufacture, innovative products depend on finding cost-effective ways of making them. The ideas for new products in footwear are generated internally; in wire products it is more likely that it is the customer who brings a concept design or engineering problem to the manufacturer.

The research suggests that all the enterprises have used a 'business strategy that is concerned with quality enhancement, client needs, and innovation and is informed by market and other research'.

Support for bundling

None of the manufacturers has had all the characteristics termed a high enterprise dynamic. Certainly, Dazzle has had fewest of the characteristics while Elan along with Adept have had the most. It is not possible to conclude whether bundling has been effective in this sector. But perhaps Elan has performed somewhat better than its training expenditure would suggest and Dazzle somewhat worse, because the former has had more of the characteristics of a high dynamic enterprise and Dazzle has had very few.

In many ways Adept's approach has been similar to the footwear manufacturer, Ecstasy, in that it has operated with a relatively well-educated and skilled workforce using fairly

traditional manufacturing practices. But, of course, Ecstasy invested more heavily in training rather than recruiting for industry skills.

Effective training

It is perhaps because there is no spring making trade course in Australia that there is a lack of knowledge of competency standards and training packages amongst many of the key people within enterprises, as revealed by the case studies. Even where enterprises had indentured apprentices undertaking metal trades courses, some managers were not aware of the competencies to be acquired by their apprentices. It is especially surprising because the metals and engineering sector, if not the wire products sub-sector, has been at the forefront of training reform linked to reform of industry awards. The manufacturers' common lack of knowledge of competency-based training has probably influenced the sorts of training they have provided. This should be borne in mind when considering employee opinion of the effectiveness of training.

Table A16 shows responses in the employee questionnaire relating to how the respondents learnt their present jobs. 'Having the job explained by another person' and 'being shown by another person', as for footwear manufacture, rated most highly. But different from footwear, courses have been viewed as an important source of learning for work. Most of those who ticked that box indicated that they had undertaken trade or similar training. Classes inside or outside the firm rated less highly. It is therefore reasonable to assume that the award courses had been the source of useful learning.

It seems that wire products manufacture is an industry where a combination of on- and off-the-job competency-based training is the ideal.

Some tentative conclusions

It is concluded that product differences may have contributed to productivity differences. Furthermore, variation in the quality of management–floor level relationships may have variably affected the levels of productivity achieved. Notwithstanding, training also appears to have been important in achieved levels of productivity.

It seems that most enterprises recruit for attitude and apparent potential rather than developed skills. For them, the increasingly competitive business environment and customer demand for small runs of customised products, requires that the enterprises continually improve productivity by, among other things, investing in training of their personnel to retain their level of return on labour. Whether they would experience increased labour productivity by spending substantially more on training than in the past cannot be judged from this research with any confidence. The results suggest however, that an enterprise on a low plateau of labour productivity such as Dazzle, may be able to move to a higher plateau by a number of strategies, one of which is a significantly increased investment in training.

For a wire products manufacturer who recruits for skills and whose workforce has strong learning skills and English language skills, the (presumably) higher wage costs may be more or less offset by greater labour productivity and more cost-effective training strategies. This project has not sought information on labour costs so it is not possible to suggest just how cost-effective this has been. But Adept's high labour productivity level, a productivity level not having been achieved through high expenditure on plant and equipment, and the fact that all manufacturers pay over-award wages, suggests there have been sizeable benefits.

It must be acknowledged that while Adept has passed on some of its training costs by enrolment of employees in mainstream, publicly funded courses, employers in the other three sub-sectors investigated in this research have received subsidies from government as part of traineeships for some of their employees. In the latter instances those costs have been included as company investment in training—it has not mattered to the logic of this research if an enterprise recoups part or all of its expenditure on training.

It might be questioned whether inclusion of the 'hidden' costs for Adept would bring it into line with the productivity levels of the other manufacturers. The answer is, it would not. Even if it were assumed that all the present expenditure has been on TAFE fees and charges, and that they represent about one-twelfth of the real cost, it would move the point linking mean annual training expenditure non-management and mean value added per hour of labour about two-thirds of the way to the least squares line for the other points. It seems that its combined recruitment and training strategy is effective in reducing the cost of training.

The research provides some evidence for the adoption of characteristics, characteristics which have been termed 'high enterprise dynamic', as promoting training effectiveness.

6 Four- and five-star hotels: Accommodation

Overview

This chapter reports the case study results for the tourism and hospitality sub-sector, hotels (four and five star, accommodation), and analyses them in accordance with the objectives of the research.

The case studies

Eight hotels agreed to take part in the project. The hotels have been given the identifying names of Amiable, Benevolent, Congenial, Delightful, Eminent, Festive, Gallant, and Heavenly (table A17, see appendix A). (Nothing should be read into the names—they were allocated at random.) Six were five-star hotels and the other two were a four and a four-and-a-half-star hotel (in future referred to as the four-star hotels). One of the latter two did not commence operation until 1997–98. As with the two previous sets of studies, the group was somewhat more diverse than preferred. The preference had been for all eight hotels to be of the same rating, of similar size, and to have been well established prior to 1995. All, however, were located either within or on the margin of central business districts of Australian capital cities.

Table 5 brings together a few key characteristics of the enterprises, by way of introduction.

Table 5: Hotels (accommodation): some enterprise characteristics (summary)

Enterprise	Number of employees	Rooms	Claimed competitive edge	Planning	Training standards
Amiable	100–200	100–200	Personnel	Annual business plan	Customised national standards
Benevolent	200–300	200–300	Facilities	Long-term financial planning	Enterprise competency checklist
Congenial	400–500	300–400	Skills	Five-year strategic plan	Customised national standards
Delightful	200–400	400–500	Flexibility and service	Five-year strategic plan	Customised national standards
Eminent	500–600	300–400	Personnel, location	Strategic planning now being introduced	Customised national standards
Festive	400–500	500–600	Personnel, location	Annual business plan	Customised national standards
Gallant	500–600	300–400	Personnel, quality	Five-year strategic plan	Have not been in use
Heavenly	200–300	100–200	Personnel and facilities	Plans at divisional level	Enterprise standards

One hotel, Eminent, did not agree to distribution of the questionnaire to personnel because the company had only very recently subjected them to a very long and challenging company survey. Nevertheless the hotel was very supportive of the project. Unfortunately, not all

hotels were able to supply a full set of data, and Gallant withdrew from the study before supplying the data for the final period.

Manipulation of the quantitative data

Defining the problem

It had been decided in discussion with the ITAB to concentrate on the accommodation function of hotels. Excluding both food and beverage, and events management (conferences, banquets etc.), would have the advantage of reducing the variables. Therefore any relationship between training investment and productivity should be more apparent.

The footwear and wire products studies were concerned with labour contribution to output of tangible products as transformed materials, and was measured by deducting the materials costs from the sale price. In attempting to apply the method under test to measuring labour contribution to hotel accommodation services, the method must measure a 'product', much of which is experience and for which consumed inputs are minuscule relative to labour and 'rented' infrastructure. Hotels measure output as the product of average room price and number of rooms sold. But does this equate to labour input, the hours of which reduce as skills increase? Might throughput measures be informative—rooms sold per unit time and rooms serviced per unit time? This group of case studies has been concerned to find out whether, by using one or other of these measures of productivity in the method under test, it is possible to demonstrate a contribution to productivity from training.

Complications and assumptions

Accommodation is the business mainly of the front office and housekeeping sections of hotels. In the majority of hotels in the case studies they were combined as two arms of rooms division. Therefore, it was decided to collect figures on housekeeping and housekeeping plus front office—referred to as rooms division in this report, whether or not a hotel has, itself, used the term.

It was decided to give housekeeping special attention for two reasons, the first one being its pivotal role in delivering a quality 'product'. Because 'a room for a period' is what the customer buys, it is the comfort, functionality and cleanliness of that room that is his/her first consideration. The decision to purchase, especially in a segment where price is not the prime concern, is greatly affected by previous experience. (It was discovered when undertaking the case studies, that hotels are very focussed on returning guests). The other is that housekeeping is typically the 'poor relation' in terms of training within hotels. It was seen as important to discover whether hotels which placed a high importance on training in what is commonly thought of as 'women's work', benefitted from doing so. Ideally, this would mean collecting figures on training specific to housekeeping. This proved not to be possible. On the other hand, it was practicable to collect qualitative information on the induction training of housekeeping personnel, particularly room attendants.

In applying the method under test it has been necessary to make a number of simplifying assumptions.

It has been assumed that all hotels compete within the same market, and that differences in price and occupancy reflect the quality of the services they are able to deliver. Given that the case studies include six of the same rating, it was seen that the other two could be excluded if they appeared to belong in another population, leaving sufficient numbers of hotels to be informative. But, of course, a hotel may be able to demand a premium because of a unique location or historic significance, factors which may have nothing to do with the quality of labour. Furthermore, productivity in accommodation is not independent of what happens elsewhere in a hotel. For instance, the quality of the food, or the suitability of conference facilities, affects demand for beds. It has had to be assumed, in application of the method, that these have not been impacting to a significant extent. A further complication for this research

is that hotels, quite properly, 'juggle' prices and occupancy levels to improve the bottom line. They may, for instance turn the 'last' customer away rather than open another floor, as the cost will exceed the return.

If housekeeping productivity is measured as rooms serviced per unit labour, it must be assumed that the servicing demands are similar for hotel rooms of the same rating. In reality, there are differences in labour demands arising as a consequence of variation in room complexity. What is more, there are differences between the duties of room attendants. Attending to the mini-bar in some hotels is the responsibility of housekeeping while in others it is the responsibility of the food and beverage unit. While undertaking the case studies, it was discovered that room attendants have allotted loads as a number of units that must be serviced in a shift. A standard room equals one unit with suites being of a higher value, say 1.3 units. It proved possible to allow for the room-suite mix (see below). However, these differences meant that most of the labour contributing to housekeeping productivity was of predetermined output as units. Nevertheless, it was possible that the quality of the labour could affect occupancy levels and prices paid.

Other differences in housekeeping related to ancillary services. The size of hotel laundries, for those that have them, varied—from those that provided only a guest and staff service, to others that laundered some linen, to those that serviced the hotel's full needs. Some hotels provided a 'turndown' service to all guests while others provided it only to selected clients. It was not possible to adjust for these differences; instead it has been assumed that variation in labour input is very small relative to core housekeeping functions. The same applies to front office. Work has not been exclusively devoted to reservations, but these are assumed to have formed almost all of it.

As mentioned, where a hotel had both rooms and suites, it was possible to make some adjustment for the latter's greater labour demands on room attendants. This was because hotels rated the suites in labour equivalence terms for daily servicing purposes although it still had to be assumed that occupancy was evenly spread. To illustrate: for a hotel of eighty rooms each requiring one unit of labour and twenty of suites requiring 1.5 units, with an occupancy of fifty per cent, it would be assumed to have half its rooms and half its suites occupied. Therefore 40 + 15 = 55 units of labour would be required to service. Or the labour required to service this hotel would be ten per cent greater than if it were comprised of all rooms. Numbers of rooms sold were inflated by this factor for estimation of housekeeping productivity (Gallant's figures were supplied in this form). In reality, the adjustments were much smaller, typically one or two per cent, because rooms vastly outnumber suites in most hotels.

Finally, no attempt has been made to measure the contribution of maintenance personnel to accommodation provision. Again, it is not possible. Work is both undertaken in-house and outsourced. And maintenance departments service whole hotels which can account for more than accommodation.

Productivity measurement

For each financial year, hotels supplied figures for total room numbers, room mix and labour unit equivalence (see above), average room occupancy as a percentage, and average room price. They also supplied hours of labour in rooms division. Some, in addition, provided housekeeping hours.

The number of rooms sold by front office is assumed to be the same as the number provided for by the rooms division, including servicing by housekeeping. In fact it may be a room or two less because of a live-in general manager, and/or a manager staying in to evaluate hotel performance.

From these figures, the following were estimated: rooms serviced per hour of housekeeping labour, rooms provided per hour of rooms division labour, dollar takings (number of rooms

times average price) per hour of housekeeping labour, and dollar takings per hour of rooms division labour.

Training

Figures were provided for number of personnel employed within the hotel each financial year, and the expenditure on training. It proved impossible for hotels to produce training expenditure figures for accommodation only. Gallant supplied figures for rooms division. In the case of Benevolent, services other than accommodation have been very small by comparison. Nor were most of them able to give separate figures for non-management training. As with the manufacturing studies, it had to be assumed for calculation purposes, that training expenditure had been evenly spread which, of course, it would not have been. Also, in common with the previous studies, figures for January to June 1999 have been assumed to be the same as those for June to December 1998.

Productivity results

Table A18 brings together the main quantitative data. There was considerable inconsistency in the sets of figures that hotels were able to provide, as indicated by the 'NA'. Hence it was decided that the only practicable way to proceed was to take average figures across the period 1995–99, as was done in the manufacturing studies. An additional series of figures was added which was mean rooms sold per hour of labour—front office, as the difference between the figure for housekeeping and the figure for rooms division as a whole (using inverses). This was done rather than going back to the original figures for non-adjusted housekeeping hours as figures for Gallant were supplied in the adjusted form. And as mentioned, the adjustments that were made were very small.

Although not being strictly a productivity measure, mean occupancy has been included as a performance measure in order to establish whether it might, nevertheless, provide a useful tool for measuring training effectiveness.

The various measures of productivity / performance have been plotted against mean annual training expenditure, as the independent variable.

Figure 12: Average occupancy rates for hotels against average yearly expenditure on training per person

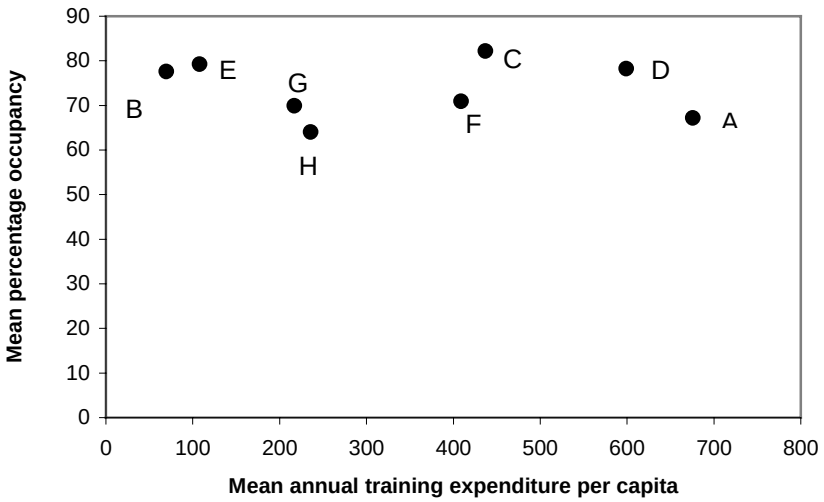
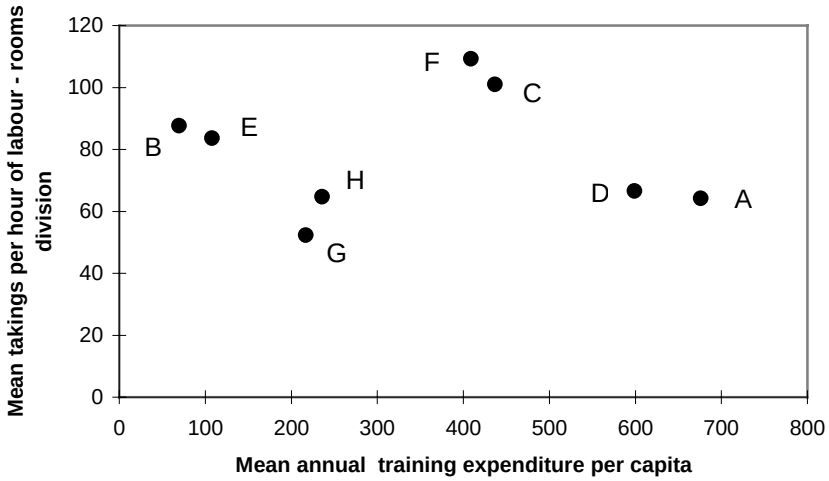


Figure 13: Labour productivity in terms of takings on rooms against average yearly expenditure on training per person



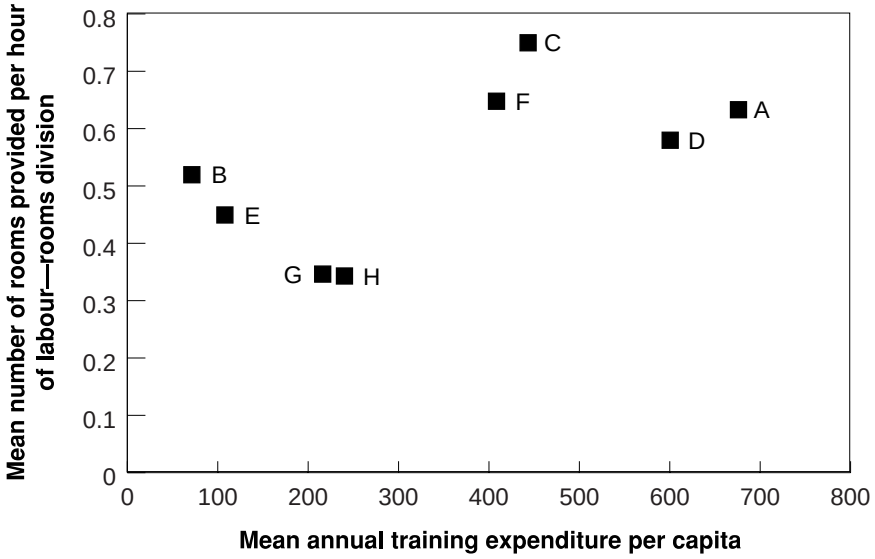
Hotels: A=Amiable, B=Benevolent, C=Congenial, D=Delightful, E=Eminent, F=Festive, G=Gallant and H=Heavenly

Clearly, for mean percentage occupancy (figure 12) and mean takings per hour of rooms division labour (figure 13), there is no suggestion of a relationship. If enterprise-provided training affects labour performance, then occupancy and sales are too aggregated to see any evidence for it, given the other variables. It is clear, however, that the two four-star hotels (points A and D), have spent more on training per head than have the five-star hotels. The high level of expenditure by Amiable (A) must be seen in the context of its recent opening. In the case of Delightful, a very strong training culture was apparent; all managers interviewed spoke of its importance.

Figure 14, where the dependent variable is mean number of rooms delivered per hour of rooms division labour, suggests that rooms divisions in hotels which spent less on training may have provided less rooms than those which spend more. But it could be equally argued that the scatter suggests two populations, both of which have experienced negative returns to training! Again, the aggregation is probably too great to make any judgements at all.

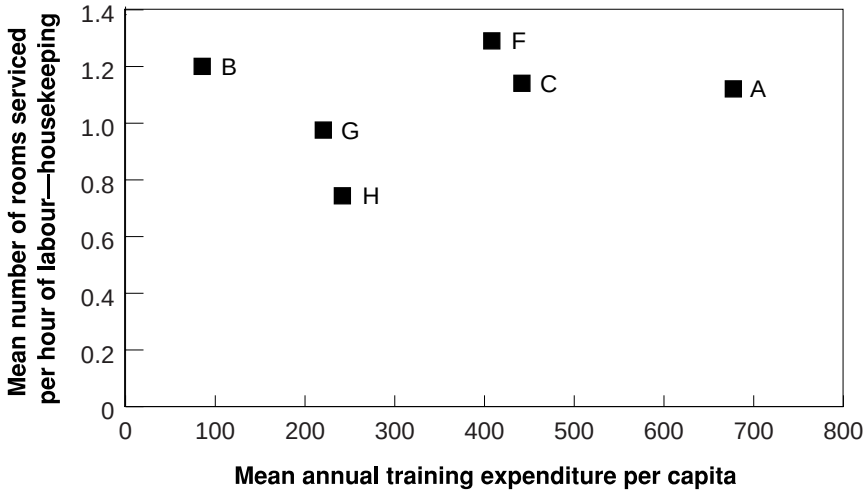
For the six hotels which provided labour hours for housekeeping, figure 15 shows mean number of rooms serviced per hour of labour. As expected, the scatter has more to do with room complexity than anything else (table A19). Rooms at Gallant (G) and Heavenly (H), for which housekeeping productivity was least, were opulent. Some surfaces at Heavenly were complex shapes that are not easy to keep clean. Two- and three-dimensional works of art at Gallant similarly would demand careful attention and handling. In contrast, rooms at Amiable (A) and Festive (F), with the highest labour productivity, were fairly austere. In between are Benevolent (B) and Congenial (C). They had neither the opulence of the former group nor the austerity of the latter. In fact, for the hotels that confided work unit loads (see above) the pattern accords with those figures. It must be remembered also, that the independent variable is the average amount spent on training per head right across the hotel; it may have no relationship to the amount spent on people in housekeeping.

Figure 14: Labour productivity in terms of rooms provided against average yearly expenditure on training per person



Hotels: A=Amiable, B=Benevolent, C=Congenial, D=Delightful, E=Eminent, F=Festive, G=Gallant and H=Heavenly

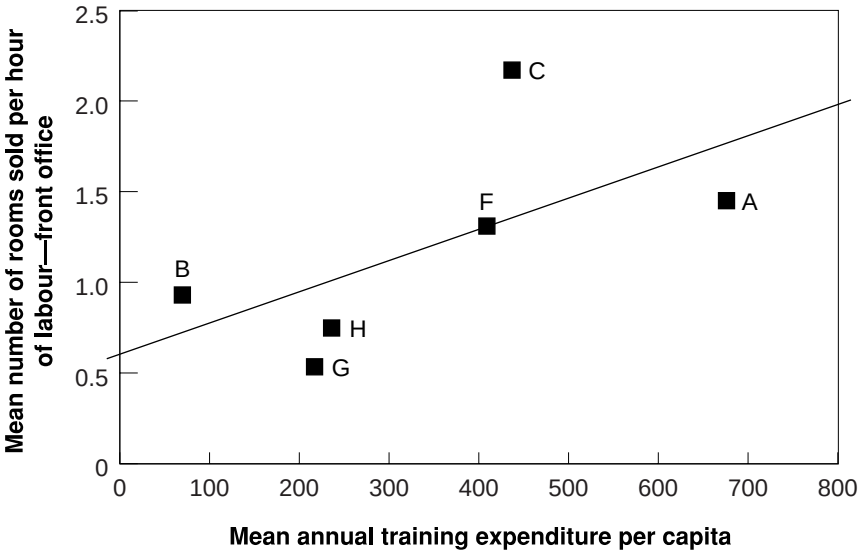
Figure 15: Labour productivity in terms of rooms serviced against average yearly expenditure on training per person



Hotels: A=Amiable, B=Benevolent, C=Congenial, F=Festive, G=Gallant, H=Heavenly

When mean number of rooms sold per hour of front office labour is plotted against mean annual training expenditure per capita then some suggestion of a relationship emerges (figure 16). Clearly, the scatter around the regression line is considerable (correlation coefficient of 0.618). It would be stretching things too far to suggest that a measure of probable return to training can be made on the basis of these results. It does, however, provide a basis to consider how training might be influencing productivity.

Figure 16: Labour productivity in terms of rooms sold against average yearly expenditure on training per person



Hotels: A=Amiable, B=Benevolent, C=Congenial, F=Festive, G=Gallant, H=Heavenly

Nature of the workforces

Responses to questionnaires give some insight into similarities and differences between hotels with regard to personnel. Managers were asked to distribute them to people working in accommodation rather than in food and beverage areas. Nevertheless, a small number may have come from the latter, although they may, alternatively, have come from those providing guest-only food service. As with the other sub-sectors, response rates were variable (table A20).

They suggest that women have outnumbered men in most of the hotels, that there has been a predominance of young people, and that English-first-language speakers have been in the majority. Given their youth, it is to be expected that most would not have been with their current employer for a long period. But it is clear, too, that large numbers had been in their present job for less than a year, although they may have been with their employer for longer.

The trends are consistent with the very high turnover of personnel experienced by hotels. While not all hotels in this study provided figures for turnover, those that did indicated that these figures were in the region of thirty to forty per cent per annum.

For top-of-the-range hotels trying to achieve and maintain standards, retaining able employees is a challenge—skills keep being lost. For high-rating hotels, too, there is 'our way of doing things'. This phrase was often used by interviewees in this industry. In attempting to differentiate themselves from the competition, where the product is, to all intents and purposes, 'an experience', style is fundamental. If a third or more of the workforce have to be inculcated in that style every year, training, although not necessarily formal training, becomes doubly important.

Recruitment and educational background

Recruiting 'good' room attendants was, for hotels, a never-ending battle. So while the preference was for experienced people who also like the work and present well to guests, they commonly have had to recruit people who must be trained from the outset.

For front office personnel, computing skills have usually been essential. For supervisory positions diplomas or degrees have been typically preferred. Table A21 reports the secondary

school background of respondents. Except for Gallant, more than half had completed Year 12. Reference to table A22 shows that responses for Gallant had a lower percentage from more senior people within the hotel, which would account for the lesser proportion who had completed secondary school. In spite of high numbers of school graduates, in most cases twenty to thirty per cent of respondents had not gone past Year 10. Room attendants mostly were in this group. Another thing apparent from the returns, is the strong mathematics base that many had while very few had a science or technology subject at Year 12 level.

Table A23 gives the consolidated results from the questionnaire, where current job title was matched to listed national award courses that the respondent claimed to have at least commenced. Around half of the respondents had undertaken some or all of a relevant award course. Many of those working in the front office had undertaken some or all of a diploma or degree. Again, this is consistent with the age profile, where younger people are more likely to have undertaken post-secondary studies. It was apparent from the questionnaires that many of those working in the hotels were undertaking concurrent formal study.

While about a third to a half of those surveyed felt that the courses they had undertaken had contributed to their learning of their job, the great majority came down in favour of 'having the work explained by another person' or 'being shown by another person' (table A23). As was the case for the manufacturing industries, course-based training can only go so far unless it is complemented, at some stage, by one-to-one, on-the-job training. Incidentally, the autodidacts were at various levels of their organisations.

Training provision

The pattern of training across the case-study hotels was found to have been similar to the pattern across the manufacturing case studies. That is, it ranged from nationally recognised, competency-based training for everyone, to minimally codified, non-recognised training for all but a few—in this case being the cooks who, in accordance with industry practice, had undertaken an apprenticeship (table A24).

Both of the four-star hotels have provided the Certificate II in Hotel Operations across the hotel. People at higher levels at Delightful, have progressed to the Certificates III and IV. Amiable, given that it was new, had yet to initiate the Certificate III. At Eminent, also, the Certificate II has been provided throughout the hotel. Each hotel has customised the national training package to suit their particular needs and organisational culture. And each has viewed informal, on-the-job training as an important complement to formal, off-the-job training.

At the hotel Congenial, the national Certificate II had been introduced for recruits throughout the hotel. But provision appeared not to have been as pervasive during the period covered by the case studies as was the case in the three hotels previously discussed. Notwithstanding, the hotel has had a policy of accepting students from institution-based providers for work practice. This has proved a very fruitful source of recruitment of qualified people later on.

Heavenly has had its own skills-based program. The standards required, it was claimed, well exceed those specified within the national training package. It was said that the hotel had established a system for recognising an employee's training by awarding a national certificate, but nobody has ever applied for it.

Benevolent and Festive have employed internal, minimally codified standards. Benevolent too, had provided work placements and considered that it had well-qualified employees as a consequence. It required that appointees to the front office already have a degree or diploma in hospitality. Notwithstanding, the two hotels are now introducing the national training package.

At Gallant, skills generally have not been codified. Human resource development has depended on passing information on, person to person. The chain has had a policy not to seek external recognition for in-house training. It was said that this enabled training to have a high level of specificity without demands for more generality for the sake of transferability, and

avoids imposition of controls. The human resource manager believed that the standing of the hotel was such that those who left did not suffer in the labour market as a consequence.

Understandably, given this policy, the hotel did not, as a general rule, recognise formal qualifications. People still had to train—although those who had done a course usually completed training more quickly. In fact, this situation was not noticeably different from that elsewhere; it probably was a matter of expression. The norm across hotels was for all recruits to be trained to apply their learning within the culture of the enterprise and to meet its customised standards.

Referring again to figure 14, with the exception of Festive, those hotels that have applied national competency standards, or recruited for them, tend to have had higher labour productivity in the front office than those that have not. The application of new technologies, including new systems for managing reservations, has probably been important in the productivity levels achieved. But as in manufacturing, ability to use the technologies cannot be disassociated from training.

Induction of room attendants

All hotels had a process in place for the induction of room attendants (table A24). Processes were very thorough, both in passing on task requirements and in monitoring performance—hardly surprising, given the ratings of the hotels. This is not to imply that there had never been problems. In viewing the work of room attendants in company with (usually) the executive housekeeper, almost invariably faults would be detected with a requirement for remedial action. Checking of an individual room attendant's work, by senior personnel, may continue indefinitely. Indeed, it appeared to be a great honour when a room attendant was made a 'self-checker' because of consistently high performance. But it was status that could be lost.

Enterprise dynamic

It is not possible to distinguish high productivity and low productivity hotels, given the variables. Notwithstanding, do they provide evidence for 'bundling'?

Work practices

Because dealing with guests is fundamental to hotel work, all those who interact with the customer must exercise a certain amount of judgement and initiative. This includes room attendants. One manager pointed out that they are the group that has most face-to-face contact with guests, since they are the ones who are on guest room floors for much of the time. On the other hand, their tasks are highly prescribed. However, when compared with a factory worker who might stand on the spot and perform essentially one task repeatedly, room attendants can be said to be multi-skilled, if not highly skilled. Those at operational level, in the front office, can be said to be both. They must cope with competing demands for their attention at busy times that can include irate customers, a range of technologies that are frequently updated, and records which require prompt and accurate maintenance. Work is undertaken both alone and in teams.

Employee recognition

All the hotels recognised outstanding performance through honorary awards such as 'employee of the month', or in-kind awards such as theatre tickets, or through a combination of honorary and in-kind awards.

Business strategy

Hotels other than Eminent and Heavenly have had an overarching strategic planning framework (table A17). The process has been both bottom up and top down, with issues and opinions from lower levels feeding into planning at higher levels. Market research has been seen as vital in the battle for the competitive edge. (Hotels were found to be very good at keeping track of what their competitors are doing.) For Heavenly, the absence of a strategic planning process is probably consistent with its intentionally conservative image that it strives to maintain.

Human resource planning

For the two four-star hotels, Amiable and Delightful, strategic planning has linked to individual development plans (table A24). General managers at Benevolent and Congenial both said that this needs to take place in their hotels and that they will shortly be introducing it. Eminent, too, is moving to a more linked process. For Festive, performance appraisal has been the basis of individual plans which take account of changes flowing from strategic change. The emphasis at Gallant and Heavenly has been on performance appraisal without an obvious strategic linkage, depending rather on responding more directly to experienced problems.

A high dynamic

In general, then, the trend is for top-rating hotels that seek to be the epitome of a modern, international hotel, to approach the ideal of a high dynamic enterprise. It is interesting that it was the two four-star hotels that seemed closest to achieving it. It will be recalled that these were the hotels with the highest per capita expenditure on training. Perhaps it is the disproportionate growth that this segment of the market is currently experiencing, that makes it imperative to plan and empower to the maximum degree practicable.

Some tentative conclusions

It seems that the method, as investigated, is not an effective one for demonstrating a relationship between training investment and labour productivity in top-of-the-range Australian hotels. This appears to be, primarily, because each hotel is unique in its location, style and service delivery. However, training appears to be playing an essential role in achieving the style and level of service to which each hotel aspires. Training packages are proving a valuable resource to the sector, provided they are customised to reflect the unique nature of each enterprise.

7 Supermarkets

Overview

This chapter reports the case-study results for the retail sub-sector, supermarkets, and analyses them in accordance with the objectives of the research.

The case studies

Selection of stores

As briefly explained in chapter 3, the senior personnel within the head offices of two supermarket chains formally accepted, on behalf of their companies, a request to participate in the project. Each agreed that their company would nominate four supermarkets, two in Victoria and two interstate, that were suburban-based, in middle class areas, and of medium-to-large size (but not very large). Stores were to have been established for some years prior to the commencement of the study period (mid-1995), so that a full set of data could be collected. Some of the nominated stores were found, on investigation, to be unsuitable because, it seems, the agreed criteria were not always fully communicated to other head offices. Alternatives were then chosen.

The four stores of the first chain with which the project has proceeded, have been given the names Avocado, Broccoli, Cumquat and Damson. Unfortunately, it eventuated after the case study had been almost completed, that the state office was unable to supply figures for training expenditure for operational personnel at Avocado. The case study has been retained as part of the project, as other collected information has still proved informative. Stores of the second chain have been called Elderberry, Fennel, Gourd and Hazelnut.

Table 6 brings together key characteristics of the enterprises, by way of introduction.

Along with other general information in table A25 (appendix A), the State in which each is located is shown (because of the considerable number of chain-based supermarkets in each State, anonymity is not threatened). It can be seen too, that some of the stores served socio-economically mixed rather than essentially homogeneous, middle-class communities. There was another difference in location: Cumquat and Gourd were in suburban fringe communities rather than 'central' suburbs. Numbers of employees ranged between one hundred and three hundred, with different mixes of full- and part-time permanent employees and casuals. Because the hours of casual employees vary in accordance with day-to-day, expected peaks and troughs in customer influx, it is not meaningful to equate numbers with equivalent full time.

Table 6: Supermarkets: some store characteristics (summary)

Chain	Training standards	Enterprise	State	Claimed competitive edge	Store level, nationally recognised standards
One	Nationally recognised company standards introduced nationwide over past approximately three years (replacing State level standards in Tasmania)	Avocado	Victoria	Location, range	Four people deemed competent at Level II
		Broccoli	Victoria	Access, presentation	Three people undertaking Level III
		Cumquat	Tasmania	Range, service	The store has not been a major recipient
		Damson	Tasmania	Location, service	The store has not been a major recipient
Two	Nationally recognised company standards introduced over past approximately five years	Elderberry	Victoria	Location	About 18 enrollees in Level II traineeship at any one time
		Fennel	Victoria	Service	About five trainees in Level II traineeship at any one time
		Gourd	New South Wales	Range, new retailing methods	Now 17 trainees in Level II traineeship
		Hazelnut	South Australia	Presentation, new retailing methods	Now 3 trainees in Level II traineeship

Recognised training

Both chains had introduced nationally recognised training prior to being invited to participate in the research and, as a consequence, both had an interest in a comparative study being undertaken. Chain 1 had been conducting retail training at AQF Levels I to VII in Tasmania, against State level company standards, for the full period of the research. This was being replaced by training addressing somewhat broader, customised standards, based on the national Retail Training Package. The new, national program was being phased in nationwide. Chain 2 had provided the retail traineeship across the country from the mid-90s and it, too, was phasing in customised standards based on the national Retail Training Package. In addition to retail operations training for operational trainees, both chains had been providing management trainee positions. Except in Tasmania however, these had not, until now, led to a qualification under the AQF.

Local competition

While the research team had requested that stores be in suburbs of similar socio-economic level and of similar size, there remained the issue of local competition. Local factors are more likely to affect supermarket productivity variably, than manufacturers who market nationally, or hotels that compete for business in capital cities. The markets that stores serve are very local, with potential for marked differences in the competitive pressures they experience. Should these, indeed, be shown to be very different across the case-study stores, any discovered productivity differences may simply be reflecting local differences in demand. Therefore, as part of the research, an attempt was made to gauge the level of each store's competitive environment.

Three factors, in particular, were considered likely to affect turnover:

- the physical distance separating the store and its nearest supermarket-based competitor
- the availability of items within the store relative to its competitor

- the price differential between it and its competitor (though low prices may reduce profitability while increasing labour productivity)

As an adjunct to undertaking each case study, the nearest competitor(s) was identified. Separating distance was measured by car meter, except where the supermarkets were in the same complex, where it was paced out. For estimating price differential and availability, branded items were selected that were expected to be held by all supermarkets and that, together, constituted a range of product types. From an initial list of about fourteen, ten items were selected following exclusion of some that proved to be unavailable in one or more of the States visited. Standard prices were recorded rather than 'special' prices to avoid a chance alignment of 'specials' with the sampled items. ('Specials' are, of course, important, but as all supermarkets have them to very similar extents, it was assumed that their impact evens out across stores.)

Table A26 details the results. There was considerable variation in the physical separation of the case study-stores and their nearest rivals. Those at greater distance may benefit as a consequence. All performed as well as, or better than, their competitor(s) on item availability. So item availability appears not to have been a differentiating factor. Where prices were concerned, there was little difference overall, except for Elderberry, where prices were about ten per cent less than at its competitor. This may have increased turnover at Elderberry, relative to other stores in the study.

State-level differences

The comparisons reveal another difference that needs to be considered in interpreting results of the case studies—the higher prices in the Tasmanian stores by comparison with the mainland ones. Takings should be about ten per cent greater for those stores, all else being equal. But when undertaking the case studies, various senior staff in Tasmania spoke of declining demand across the State as a whole. This has been reflected in sale of cheaper versions of essential items and sale of lower-priced, or less numbers of, non-essentials. Hence, even though all stores are suburban based, inter-store comparisons may suffer from non-comparability of data because of economic differences at State level.

Manipulation of the quantitative data

Productivity levels

State offices and stores jointly supplied the quantitative data (incomplete for Avocado, as noted above). Initially, it had been expected that output figures would be supplied for 'number of items sold per annum' and 'average mark-up'. But Chain 1 subsequently advised that policy forbade the release of mark-up figures, but that it was able to supply 'average sale price'. Chain 2 then agreed to supply the comparable figures. In terms of application of the method under test for estimating training effect on productivity, this was seen not to be a problem. Few of the items that pass through the turnstiles of a supermarket are value added by the chain or the store. And for the few that are—meat, bakery, delicatessen—all stores produce fairly similar products.

Figures for hours of labour were provided. Some stores contract out the collection of shopping trolleys. In using labour figures to estimate labour productivity, allowance was made for whether or not collection of trolleys was undertaken by store personnel. Stores were able to supply an estimate of the hours per week that went into this duty, where the duty was performed by external personnel. This amount, adjusted to a year, was added to total annual hours.

The number of items sold per hour of labour, and value of sales per labour hour, were estimated.

Training expenditure

The collection of comparable figures on training expenditure across the stores has been seemingly impossible. For some of the stores, allocations for manager training have been expressed at 'x per cent of State budget', with the result that it would be impossible to estimate the total for the State in the absence of the latter figure, let alone the expenditure on management at a particular store. For operator training, while figures were provided for all but Avocado, they were not necessarily comparable (see below). Expenditure on department manager training was provided for a few stores only, with similar questions about comparability.

Supermarket chains have operated what can be thought of as segmented internal labour markets. Stores have typically been 'staffed' by two groups. One group has been mainly female; these people have received store-based, short course training, mainly at induction, that is not recognised outside the chain. They have identified with, and stayed with, a particular store. The other group has identified much more with the chain, usually on a regional basis. Members of the group have included higher proportions of men, and they have moved around to service their employer and to progress their careers. To illustrate: the majority of store managers who were interviewed as part of the case studies, had been with their current store for only a few months to a year. Training for the 'careerists' has been provided both within the store where they happen to be located, and at a regional, State and perhaps even national level. Expenses associated with the latter have not necessarily been costed against a store. (Nor has it proved possible, in every case, to have clarified exactly what is and what is not included in supplied figures.) With a few recent exceptions, nationally recognised training has been provided only to people in the careerist group.

In these circumstances, the skills that a company store's personnel have acquired since joining the company probably have little to do with the expenditure on training at that store. Rather, they are a reflection of State level and national training policy, and staffing arrangements.

Nevertheless, average training expenditure per year was calculated on the figures provided, using total personnel number minus the number of manager positions as applied during the case study. These might have changed by one or two over the period 1995–99, but because manager positions have been few relative to non-management numbers, any introduced error in non-manager estimates is assumed to have been negligible.

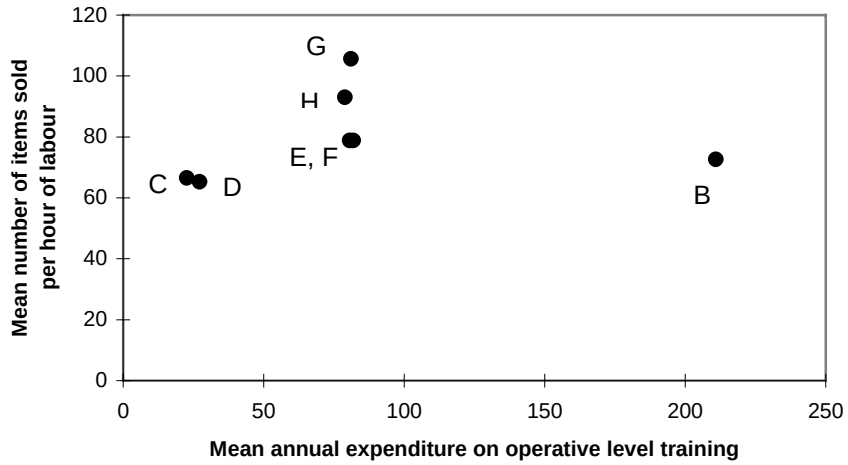
Results

Table A27 lists two measures of labour productivity, and the figures, based on store costings, for average annual expenditure on training per operative.

As with the previous case studies where companies provided incomplete data sets, averages across the three-and-a-half-year period were calculated.

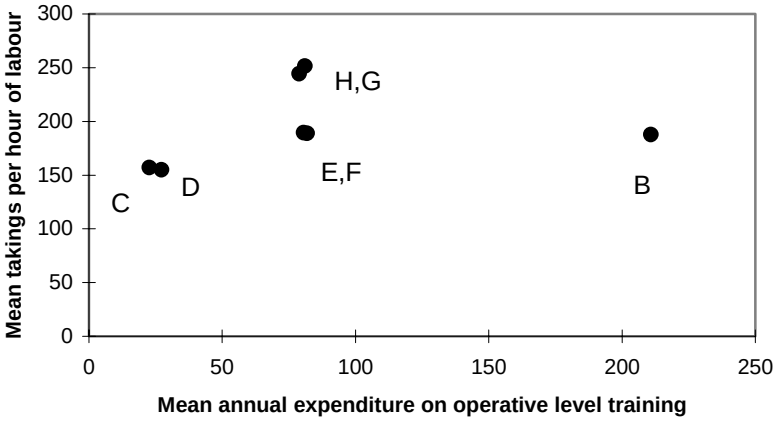
Two issues are apparent: firstly, there is no obvious relationship between training expenditure and labour productivity, and secondly, points are clustered. Those for the two Tasmanian stores of Chain 1, Cumquat and Damson, are almost coincident, as are the ones for the two Victorian stores of Chain 2, Elderberry and Fennel. Indeed, mean training expenditure for the four Chain 2 stores has been almost identical. Checking table A27 shows that training expenditure has varied year to year, but very little between stores at any one time. Not surprisingly, the figure for mean number of items sold for Avocado is almost the same as that for Broccoli, both being Victorian stores of Chain 1. Figure 18 exhibits a similar pattern, where mean takings per labour hour is plotted against the same independent variable.

Figure 17: Labour productivity in terms of items sold against average yearly expenditure on training per supermarket operative



Supermarkets: B=Broccoli, C=Cumquat, D=Damson, E=Elderberry, F=Fennel, G=Gourd, H=Hazelnut

Figure 18: Labour productivity in terms of takings against average yearly expenditure on training per supermarket operative



Supermarkets: B=Broccoli, C=Cumquat, D=Damson, E=Elderberry, F=Fennel, G=Gourd, H=Hazelnut

Interpreting the results

Training expenditure

The results indicate that levels of training expenditure per capita non-management, for Chain 2, have been virtually identical for the three States, Victoria, New South Wales and South

Australia, and by extension, probably nationally. The chain operates very much as a national system. So it is probably reasonable to conclude that training expenditure has truly been identical at the store level.

It appears that, for Chain 1, training expenditure levels have been more State-based. Given the well-established system of statewide training that has existed in Tasmania over the period of the study, the low store-level expenditure for Cumquat and Damson relative to Broccoli accords with a shift from store-level to State-level costing. It has been since verified with head offices that, in Tasmania, expenditure associated with nationally recognised training is not costed against an individual store; nor are there associated backfilling costs for stores. But training at Broccoli in Victoria has been mainly store-based and figures include backfilling costs.

Productivity targets

It seems that, at least for Chain 1 in Tasmania and Chain 2 in Victoria, personnel numbers have been matched to requisite productivity levels. Some of the store managers interviewed claimed that they had very little independence in the running of their stores. Performance outcomes were prescribed and it was up to them to make sure that outcomes were delivered with the human and physical resources with which they had been supplied. The research results fit with such a picture.

Notwithstanding the apparently predetermined magnitudes of output and labour input within stores, differences have existed for labour productivity levels between States and/or companies. Presumably, target levels have come about as a result of experience within a State. Can those differences be explained?

State economies

Figures for Victoria suggest that State level economic factors may transcend company level ones. The supermarkets in Victoria for the two chains have had very similar levels of labour productivity, with a small edge belonging to Chain 2's stores. The poorer level of performance of the Tasmanian stores, in spite of a well-established system of nationally recognised training, also suggests the presence of State level economic factors.

Labour

Questionnaire responses provide some insight into labour differences. Table A28 gives response rates and general characteristics of respondents. The response rate for Fennel was extremely small—only seven responses. Figures for Fennel have been included only because they suggest a similar pattern to elsewhere. Responses across the supermarkets indicate that personnel were predominantly female, young and English-first-language speakers. This accords with direct observation. Between one-third and two-thirds had been in their current job for less than two years, although they might have been with their stores or the company for longer.

Education and training

Chain 1 supermarkets

Table A29 shows a lesser proportion of respondents in the Tasmanian stores than elsewhere, who had completed Year 12 schooling. This difference is consistent with the composition of post-secondary studies that respondents had undertaken (table A30). Very few had or were undertaking degree level studies, but about a fifth had or were participating in nationally recognised certificates or diplomas in retail. The proportions for Chain 1's Victorian stores were the other way around, with a fifth to a third of respondents at Avocado and Broccoli having been enrolled in degree level courses. It seems that many of the young people recruited by Chain 1's stores in Tasmania, have been early school leavers for whom a retail

qualification at AQF 1–6 provides a pathway to a career in retail, either within the company or elsewhere. By contrast, many of the young people recruited by Avocado and Broccoli have completed school and are or were working while studying at university for a profession; their future careers are less likely to be with the company, or even in retail.

Chain 2 supermarkets

At interview, managers within Elderberry reported that the store had had, since 1997, a fairly high proportion of employees undertaking the retail traineeship (table A31). For Fennel, manager reports indicated that the store had had fewer numbers of retail trainees but that the system had been in place at the store since 1995. Questionnaire responses for Elderberry also showed a relatively high proportion of employees who had undertaken part or all of a retail course. But responses also suggest a strong general educational base. The two Victorian stores of Chain 2 may have benefitted from having had a nationally recognised traineeship in place for two to three years, as compared with Chain 1 stores that had not. However, the latter may have been somewhat compensated by having high proportions of personnel who, having completed secondary education, have undertaken or are pursuing other post-secondary education.

Reference to table A27 reveals that productivity figures for Gourd have been supplied only for 1997–99, and that this store underwent a substantial increase in the second year. Gourd also had a refurbishment at that time (table A25). The changes transformed the store from a dated one to a large, leading-edge store with an extensive range (table A32). This appears to have increased the size of its clientele with efficiencies in the utilisation of labour as a consequence. It is noted that the store manager saw the system of nationally recognised training as enabling the store to attract more capable recruits. It may be that the productivity levels the store was achieving were enhanced by the skills and other qualities that new recruits had brought with them, as well as by those they were acquiring through employer-provided training.

Most difficult to explain is Hazelnut's consistently high labour productivity. That its productivity has, indeed, been high is suggested by comparison with Broccoli, which it matches for size and catchment (affluent, medium density) although its competition has been a little further distant. Hazelnut may have benefitted from being part of a larger complex more than has Broccoli, although the store manager of Broccoli saw the access and ease of parking at his store as a result of being in a small centre, as a benefit (table A25). Certainly, Hazelnut has had trainees undertaking the nationally recognised retail course since 1995, but not in high numbers (table A31). The questionnaire response rate for Hazelnut was low, and no comparisons can be made for them on training of personnel relative to other stores. However, the low response rate, along with that for Fennel, suggests a lack of commitment of personnel to their employer that might result in lower productivity rather than higher. The store manager at Hazelnut, when interviewed, commented on a general lack of drive and enthusiasm amongst personnel and warned the researchers not to expect many to return the questionnaire. (No such view was expressed by Fennel's store manager.) Unlike Broccoli or the other Chain 2 stores, Hazelnut has operated with quite restricted hours. This may have delivered it greater labour productivity while delivering a lesser return overall.

In general then, Hazelnut appears to have achieved high labour productivity through a combination of factors—being in a wealthy area, being well separated from the nearest competition, opening only in popular shopping hours and, perhaps, maintaining a core of personnel undergoing nationally recognised training.

Training effectiveness

If supermarkets have benefitted from instituting nationally recognised training for their personnel, it would be expected that those who have undertaken it to recognise it as a contributor to learning for work. Table A33 brings together the questionnaire responses on the ways that employees considered they had learnt their current job.

As was the case with the other three sub-sectors investigated in this project, nearly everyone considered that 'having the work explained by another person' and 'being shown by another person' had helped them learn their job. But, in contrast to the other studies, a high proportion felt that 'reading manuals or watching videos' had contributed. This aligns with the use of these types of resources by the chains in the training of all of their personnel, whether as part of nationally recognised or non-recognised training.

Over a third of employees in Chain 1's stores rated 'classes run by the firm' as a source of learning for their job. But the proportion was much lower for Chain 2 (15 and 26 per cent, ignoring figures for Fennel and Hazelnut). Far fewer ticked 'courses have undertaken' than ticked 'classes run by the firm'. Presumably, the lower scores for 'courses have undertaken' implies that many of the firm-run classes have been viewed as not part of courses, while some of the other courses that employees have undertaken have not been seen as a help. If figures in table A30 for 'certificate or diploma in retail' are combined with 'other [courses] - directly relating to current job', totals are fairly similar or exceed those for 'courses have undertaken' as contributing to current job. It must be borne in mind that decisions as to whether a course directly related to a position or not, were made by the research team, and not by the respondents. To illustrate, a computing course, a butchery apprenticeship, a business studies course or a course in health science were all seen as relating, but a course in drama was not. However, the particular modules or subjects that an employee had studied, in other than a company retailing course, might have had little relationship to work. Some of the generalist degree level courses would have been a source of relevant learning also.

Enterprise dynamic

As far as characteristics relating to the putative 'enterprise dynamic' are concerned, all supermarkets were very similar. Supermarket chains in Australia, as is obvious to anyone who shops in them, are attempting to be both price cutters and quality service deliverers. Case studies demonstrated the tensions that exist when cost minimisation and quality improvement are both goals.

Many of those employees who were interviewed felt they had little influence over their work, nor did they feel that they were encouraged to be multi-skilled. Yet they also felt pressured to do more. So-called work teams existed mainly in name, and department managers spent much of their time driving their subordinates 'to get on with it', as it was commonly expressed. A common view was that training was only for the select few. What is more, some of those who had worked in a store for an extended period felt threatened by a new group of formally trained young people whom, they feared, would displace them. In other words, some felt excluded from the changes taking place, while at the same time resenting what they perceived as the increased work intensity.

While head offices have been seeking to make their businesses more strategic, this sort of thinking was found to be 'thin on the ground' below store manager level. There was an apparent discontinuity between the strategic approach being promoted by head offices and the work practices in most of the stores. Two observations, in particular, are mentioned here.

The chains are introducing improved management information and reporting systems. Managers are expected both to enter data and to use the data in their planning. But some of the department managers interviewed saw their prime job as on the floor, stacking shelves, rather then using information in making strategic decisions. Data collection was viewed as yet another task, rather than part of a process to assist them to be more effective managers.

The other observation was an isolated one, but telling, nonetheless. It highlights the sorts of ambiguities that arise between store interests and company interests, especially at times of rapid change, when contradictions are prone to be overlooked. At interview, a department manager commented that, as area trainer he was expected to move around the district training new managers in his field; in spite of this, his annual increments depended solely on his performance within his department. Thus, the more effort he put into his training responsibilities, the more his career and salary suffered. His inclination therefore, was to

favour his department duties over the other ones. Yet, of course, the interests of the company (as distinct to those of his store) would have him raising the productivity of many departments, even at a cost to his own.

Given these tensions and ambiguities, supermarkets do not fit the definition of high dynamic enterprises. They have a long way to go in the acquisition of a learning culture. However, head office and in-store senior managers were all of the opinion that having trained and committed personnel is essential to achieving and retaining the competitive edge. As one store manager put it, all supermarkets sell essentially the same things. 'The difference with the main opposition can be only service and brand.'

The importance of training

For the two companies, the future is in delivering the service and promoting the brand in a cost-effective way. New technologies for stock control, ordering, register of purchases, etc. increase labour productivity but require personnel who are skilled in their operation. Good service delivery requires people who are skilled at dealing with customers, including 'difficult' ones.

The results of the research in this sub-sector have shown the method under test for demonstrating a relationship between training and productivity to be ineffective. It appears this is because productivity levels are essentially set beyond the store, and local economic factors are a major determinant of the prescribed levels of performance. But the project has, nevertheless, established that training is viewed as an essential ingredient in achieving required levels of productivity.

Some tentative conclusions

As with hotels, it appears that the planned objectives and changes sought for supermarkets depend, in part, on training of personnel, but that differences between stores make the method under investigation an ineffective one for revealing the impact of training on productivity. For supermarket chains, like many of Australia's four and five star hotels, the training packages, provided they are customised, are a valuable resource in the training of personnel.

8 The comparative case-studies method

Overview

The findings from the four sets of case studies are brought together and tentative conclusions drawn on the value of the method for measuring the effect of investment in training on labour productivity. General guidelines for further application of the method are given. Overall, findings with respect to the proposed characteristics of enterprise dynamic are evaluated, and as a result, revised characteristics are proposed.

The service industry studies

In its report, *Assessing Australia's productivity performance* (1997) the (then) Industry Commission wrote on measuring changes in productivity:

> *Allowances are made, where possible, for improvement in the quality of goods. If they were not, productivity would be understated, since it would appear as if more inputs were going into producing equivalent output. Particular effort is usually made in goods subject to substantial quality change, such as computers. However, quality improvements in services have generally proved problematic. The most frequently cited example is increased shopping hours. Shops are providing more convenience, but on the standard output measure of goods sold, the increase in employment required to extend shopping hours produces a productivity decline.*

Similar concerns apply to point-of-time productivity comparisons. In this research, attempts to employ the method of comparative case studies in the two service industries were, in the main, unsuccessful and for the sorts of reasons alluded to by the commission.

The supermarket with the highest labour productivity did, indeed, have very restricted hours, thereby achieving labour efficiency, at least in part, by delivering a lesser-quality service (if longer hours were what members of the local community wanted). The only way that the method could deal with operating hours would be to control for them. But there are other quality-of-service issues, too, that the research attempted to take into account to some extent (floor size, range size). But it would be impossible to have size and range identical across the stores, as it is impossible to have supermarkets operating in identical surroundings.

Differences in room quality and service quality might or might not be captured in hotel occupancy levels and room price, but the differences in room quality made the attempt to compare the productivity of housekeeping departments futile. Work rates for room attendants in hotels, as room equivalents to be serviced per unit time, reflected room complexity differences. In these circumstances, use of the method to quantify the effect of training on labour productivity, simply revealed what the target rates were. Room attendants were not providing a service amenable to comparison. Similarly, staffing of supermarkets and sales targets together reflected the levels of labour productivity that head office required to be achieved. Obviously, this was not because people paced themselves just to meet targets, but because targets and staffing were set at levels based on known customer demand. Store managers sought to exceed the targets, but consistent over-performance by substantial margins would have been unlikely (and perhaps have resulted in a review of targets or level of resources).

Notwithstanding, it could be suggested that both room attendants and store assistants might, as a consequence of training, use the allotted time more effectively, and thereby increase the amount of business that the enterprise attracts. But estimates of per capita training expenditure for room attendants, and for store personnel in at least some of the supermarkets,

were probably very inaccurate: for the former because they did not share equitably in it, and for the latter because of inaccurate costing arrangements. Also, there appeared to be no obvious differences in the non-costed, induction-based training of room attendants. Seemingly, it would not have been possible to observe an effect for either group.

In fact, it was a common complaint of managers in the two sectors that the personnel tended to do only the minimum required. For instance, one executive housekeeper said that many of the room attendants rushed through their allotted rooms, rather than delivering the best service that time allowed. And some of the department managers in supermarkets commented that their service assistants did not initiate tasks.

Walsh and Tseng (1998) have coined the term 'active effort' to encompass all the 'behaviours beyond those specifically required of the job incumbent and that contribute to the organisation's overall goals'. Based on telephone interviews of employees in the Chicago area, their research concludes that 'workers are willing to engage in active effort and they will exchange this extra, voluntary effort for a say in the organisation's goals and procedures and for the social reward of recognition for their efforts'. For service assistants and room attendants there was potential for the latter. But when specifically asked about opportunities for contribution of ideas, executive housekeepers in only four of the eight hotels were able to suggest ways in which room attendants could contribute. Store managers / assistant store managers in only two of the eight supermarkets indicated that ideas from assistants were encouraged.

The Industry Commission (1996), referring to the research of Prais and colleagues in hotels stated:

> *The effect of these differences* [in vocational qualifications and in the nature of skills training] *was that the staff in the German hotels were more efficient than the staff in the British hotels. While these findings might be universally applicable, it would be useful to have an analysis of the Australian situation—particularly given the significant increase in training in the last five years.*

It seems it is the work of room attendants that mainly determines the efficiency of housekeeping departments in Australian hotels, but using a method similar to that of Prais has not been successful in revealing differences between hotels, for the reasons just discussed. On the other hand, the work of front office personnel appears to have been more amenable to comparison across hotels. Also, as a group, they have been a target for enterprise-provided, off-the-job training, with the result that estimates of per capita training expenditure have probably been a reasonable reflection of the training they received. Comparisons of labour productivity, while perhaps not delivering accurate quantitative estimates, nevertheless provided some support for training investment by Australian hotels to have contributed to front office efficiency.

Overall, it appears that the method, as investigated for measuring the effect of training investment on labour productivity, is unsuitable for use in service industries. It remains possible that it could be employed to effect in an industry where the services are essentially identical, and where it is practicable to control for the variables that are likely to impact significantly on customer demand. But this circumstance would be rare, especially for in-person services. The uniqueness of a service setting can be important in attracting customers, as the hotel room furnishings and fittings in the case studies. And those service providers, like the supermarkets, which offer an essentially standardised service, are usually selling in unique local markets where a multiplicity of factors, both obvious and not so obvious, affect productivity.

The manufacturing studies

The manufacturing industry studies, on the other hand, suggested that the method has potential as a tool for estimating the effect of training expenditure on labour productivity. Given that a multiplicity of factors determines an enterprise's level of productivity, comparison of training expenditure and labour productivity between enterprises, in the absence of measures of the other important factors such as investment in plant and

technology, could not be expected to do more than yield some suggestion of a relationship. But, as noted by the Industry Commission (1997), 'Measurement of productivity is not an exact science'. The greater the number of case studies for comparative purposes, the better, generally, will be the estimate of return. However, six to eight case studies that meet the criteria listed below, appear to be adequate.

Requirements for application of the method

On the basis of the research it is tentatively concluded that comparative case studies of similar-sized manufacturers, producing similar products, have potential as a tool for measuring labour productivity against training investment where:

- productivity is measured in dollar terms, as value added to material inputs
- the manufacturers operate in the same market
- recruitment is on the basis of similar characteristics
- the mix of technologies are similar
- training expenditure estimates:
  - exclude manager training
  - vary from relatively low to relatively high levels across the case studies
  - reflect all major costs

There may be potential too, to measure productivity in other ways. The wire products case studies suggested a relationship between waste minimisation and training investment.

The last dot point, above, can be problematic. As was found for one enterprise in wire products manufacture that encouraged personnel to enrol in modules of publicly provided mainstream courses, all the costs of effective training might not be incurred, even in the short term, by the enterprise. Of course, the success of that enterprise's strategy appeared to depend on its practice of recruiting already skilled people, a characteristic that differentiated it from the rest of the group and which would put it in a different set of case studies on the basis of the listed criteria. There is probably a need, also, to restrict comparisons to enterprises that have similar policies regarding off-the-job training delivery (that is, taking place within or outside work hours). This is because backfilling costs usually make up the greater proportion of costs where it is undertaken during work time. It is not practicable to cost training outside work hours against the individual's leisure time. Nor is it valid to treat the two arrangements for provision as the same: issues of employee fatigue and attitude to the training may mean that one is more effective than the other. In other words, the additional costs incurred by the enterprise through time release are assumed to have some return.

In testing the method, the research team was fortunate to be investigating enterprises that, collectively, provided a fairly broad range of training expenditure levels. Had the ranges been narrow, it seems safe to say that no correlation would have been observed in either sub-sector studied. It was also by chance that the technologies they employed were fairly similar although a pragmatic mix of old and new may be fairly characteristic of Australian manufacturing.

Utilisation of the method in other industries

Need for further studies

Before it can be stated with confidence that the method has general application, it should be applied to effect in some further manufacturing studies.

It is the view of the researchers that a major strength of the method lies in its relating training investment and labour productivity levels to the other business practices of an enterprise. This is discussed further below. So it is desirable, both for those firms that are researched and for the value of the findings, that quantitative data-gathering be complemented by in-depth case studies.

However, although it is not recommended, the method could possibly be further tested by collection of only the main quantitative data, given that this research has suggested the criteria upon which enterprises should be selected for comparison. As a minimum, it would be necessary for the investigator(s) to meet with the accountant in each enterprise in order to clarify the nature of the data to be collected. A difficulty with the minimal approach would be ensuring that the enterprises really do have the characteristics for which they have been selected to participate. Also, given the experience of this research, where some of the enterprises provided the quantitative data only after numerous reminders (written and phoned) over a period of many months, the minimal approach might prove to be neither 'quick', nor truly low cost.

Under 'objectives of the research project' is listed the objective of providing recommendations for further research on the method as a tool for very small business, community service, primary and information sectors.

Very small business

Three of the wire products manufacturers employed less that one hundred people and so were small businesses according to the ABS definition (1998), one being very small (less than twenty employees). Two of the smaller enterprises had relatively high levels of labour productivity, going against the more general observation (see chapter 2, Background to the research) that small manufacturers typically have low capital-to-labour ratios and so have relatively low labour productivity. If the method is to be used with enterprises in the five to nineteen employees group (very small businesses), it would be important for them to be very well matched in technology as well as in product. It would also be vital to account for any 'hidden' labour. In very small and micro-businesses, owner / director / managers are much more operational than in larger businesses, but their hours spent in production are unlikely to be recorded. What is more, those hours may amount to a very sizeable proportion of the total labour hours. It is suggested that, were the method to be tested with very small businesses, not only should they be very well matched, but the study should be a current one rather than a retrospective one. Accurate records could then be set up and kept for the various metrics.

Community services

Given that the method was found to be non-functional for the two service-based industries, it can reasonably be assumed that it could not be applied for community services. In addition to the sorts of problems met for personal services, choosing appropriate measures of output is extremely problematic—high numbers of clients 'processed' may mean low numbers helped. Yet, as Durand (1998) writes, services have taken on the 'just-in-time' production model of manufacturing in an effort to keep costs down and money circulating—mass tourism and fast food outlets with lines of compliant consumers, educational institutions and hospitals feeding clients through. But unless measures of labour productivity are ones that capture the enjoyment provided by travel, the nutritional quality of food, the enrichment gained through learning, or the improvement in health, achieved efficiencies are deceptive.

Agriculture

Agricultural enterprises that are primary producers, increasingly rely on technology rather than labour. Employment is largely seasonal. There are local environmental factors that govern yields and national and international events may affect prices in fluctuating markets, or prices may be the result of stabilisation schemes rather than competitive forces. Were it attempted to apply the method for farms, they would need to be in the same region, have much the same area in production and produce the same output. Were prices to reflect quality then these might be useful. Otherwise it would be necessary to limit output to raw tonnage. But given all these limitations, as well as labour mobility in the industry, the method is not foreseen as a useful one for the sector.

Information industries

The method may have application in information-based industries provided that suitable groupings can be created for comparative purposes. One of the 'difficulties' here would be the high incidence of employee-initiated learning that may be contributing to productivity levels, but is not part of enterprise investment in training. Again the strategy would need to include investigation of current rather than retrospective training, in this instance so that there is more potential for capturing the employee initiated learning, thereby assisting interpretation of results.

Comparability

Irrespective of the sector to which the method is applied, processes should be checked to ensure that they are truly comparable. If a significant proportion of work is outsourced, or if workers are performing some time-demanding duties in their tallied hours and which are not contributing to the measured output, then figures should be adjusted. It is not possible to state here what they will be; adjustments should be pursued on a study-by-study basis.

Constraints

While one of the two greatest difficulties experienced in the project has been obtaining the main, quantitative data, the other was obtaining the agreement of enterprises to participate in the research. And because of time delays, there were additional difficulties where manager changes following agreement resulted in participation having to be renegotiated, or another enterprise found altogether.

Based on those experiences, a number of potential constraints on the method's application have been identified:

- the small number of enterprises in Australia manufacturing a particular product, and the even smaller number that meet the selection criteria
- concerns at manager level about
  - breakdown of confidentiality
  - empowering competitors
- research co-operation fatigue, that is, a reluctance to participate on the part of enterprises that have already been the subject of previous research studies
- paucity of records of the requisite quantitative data, especially on training expenditure

Only the second group, manager concerns, is amenable to some change, at least in the short term. In some instances, agreement was granted after an initial disinclination to participate. This typically followed discussion of the potential benefits that this sort of investigation can have for participants as well as the industry as a whole, the confidentiality commitments of the researchers under the university's research approval arrangements, and the capacity to timetable the investigation to the enterprise's convenience.

Longitudinal study

Ideally, figures should be collected for labour productivity and training expenditure over a minimum of three or four years, as this would yield quantitative information on any changes taking place. It also would allow, as happened in this research, for averages to be calculated, sometimes overcoming problems of missing data.

Measuring productivity

Matching

In measuring labour productivity it must be decided whether to concentrate on the manufacture of one product or a range of products. The advantage of concentrating on a single product is that it allows better matching across enterprises. But where short-run, customised products are the main output, matching can be only in broad terms, and a single product output may be very small in number. Furthermore, it has been the experience of this research, that enterprises are unable to supply labour hours disaggregated to the level of individual products, even where they are the result of continuous production. So it is probable that comparisons can be made only between the total outputs of factories. Judgement will need to be exercised as to whether the mix of products is sufficiently similar in each case for application of the method to be valid.

Labour hours

It is normal practice to measure labour productivity based on the hours of work that have gone directly into producing the output. If the recorded hours, in the view of the factory or operations managers, include other hours such as those of tooling and maintenance staff for the development or adaptation of equipment, they should be able to supply an estimate of the percentage of non-production time. Time spent in keeping equipment functioning however, is best included as it is affected by the level of care that operators exercise, which in turn appears to be the result of training. However, the main issue is consistency in the figures collected. It is probable that enterprises estimate labour hours as the product of the number of people who work in production and the hours worked per year, allowing for part-time work. If this is the approach, it is as well to check that any overtime has been included.

Value added

What will be estimated for each enterprise and for each year, will be the number of additional dollars' worth of value that will be added to materials during each hour of work by each person. Subtracting the cost of materials from the price that the enterprise gets for the 'elaborated materials' (the product), gives a measure of the value that has been added.

But where some of the purchased materials are sent out for value to be added by persons whose labour hours are not being counted, enterprise productivity will be overestimated unless figures are corrected for the outsourcing. Of course, where outsourced work is minute compared with the 'insourced' work, as was the case with special purpose spring coating in the wire products subsector, it can be ignored. But where it constitutes a significant proportion of the labour input, as was the case with sewing of footwear uppers, it cannot. Strictly speaking, the value of the product should be reduced, but alternatively, for productivity (ratio) purposes only, 'insourced' labour hours can be increased.

It was found that enterprises had no difficulty in supplying figures for 'sales minus inventories' as the measure of value added. It is important to check however, that all are selling in the same way, as suppliers of intermediate goods, as wholesalers or through a wholesale distributor. If they are not, some adjustment to the sale price may be necessary to provide comparability.

Labour productivity may then be calculated as dollar value added per hour of labour.

Measuring training investment

Coverage

For enterprises, extracting figures on training expenditure was a challenge in most instances. Figures were seldom aggregated as a single collection. It may be necessary to work through the sorts of items that should be costed, with both the human resource manager and the accountant. The main ones are expenditure on preparation and updating of learning materials, employment or hire of teachers and training consultants, course fees, travel support and backfilling for people released to attend training. There may also be venue hire costs. Again it becomes a matter of judgement as to whether to include items like the latter because of distortions that can be introduced, such as where another enterprise has a dedicated training room that it does not cost against training. As before, the issue is comparability.

All enterprises provide on-the-job training, particularly at induction. It has commonly been informal (lack of specified processes and outcomes, assessment arrangements and recording of outcomes), although this research suggested that it is increasingly becoming more formalised, whether or not outcomes are specified as competency standards and whether or not achievement is recognised for a credential under the AQF. Although training that is integrated with work is not usually treated as a cost, with a more formal system there may be costs that should be included in the estimates.

Breakdown

If possible, figures should be obtained for non-manager training, as expenditure on manager training may be very high relative to amounts spent on other personnel. It may be possible also to look specifically at productivity against manager training, although it is important to check how the expenses were incurred. For instance, where one firm annually supports one manager for a costly world trip and another spends a lesser amount but more equitably, comparison of averages will be very misleading. There is, of course, the potential for similar distortions to occur for non-manager training, but the research has suggested that expenditure is more evenly distributed. It may also prove possible to disaggregate training expenditure so as to have, for example, separate figures for technicians or supervisors and other personnel.

Per capita training expenditure per annum can then be estimated, given the number of personnel in the group (for example, all non-management, technician and supervisory).

Inflation

This project collected figures for a period of time over which there was virtually no inflation in Australia. Should studies collect metrics over a period when inflation is operating at significant levels, adjustments to training costs and value added should be made to give parity across them.

Measuring return to training

Value added per hour of labour is plotted as the dependent variable against training expenditure per capita as the independent variable. Whether it is better to use a set of figures for a year, multiple years, or averages across a number of years will depend on those available. The main things are that figures apply to much the same periods and that enterprises are equally weighted (there are the same number of points for each).

In this research, Excel for Windows was used. Assuming that there is an apparent linear relationship between the variables, the following (amongst other things) can be calculated using the package:

- the correlation coefficient
- values for the parameters ‘a’ (slope) and ‘b’ (intercept) of the regression line $p = a\,t + b$, where ‘p’ is value added per hour of labour and ‘t’ is annual training expenditure per capita
- the standard error of the estimate

The slope, ‘a’, can then be employed to estimate the average return to training; that is, for each dollar spent on training an average return of ‘a’ dollars per hour is gained. (The value of ‘a’ will normally be much less than one.) This amount is multiplied by the number of work hours in a year to give the total average return per dollar.

The regression and the standard error can be used to estimate the average return for a particular level of investment and how well the average represents expected returns. (About sixty-eight per cent of values can be expected to lie within plus or minus the value of the standard error, and about 95 per cent within plus or minus twice the value of the standard error.) The correlation coefficient is useful for reporting, and for comparison of regressions.

A tool for enterprises

Should additional studies confirm the usefulness of the method, its most valuable application may be as a benchmarking tool to be used by managers within enterprises. The advantage in being used in this way is its potential for comparability across firms as the result of agreement between them on what data would be collected, and how they would be collected.

Recommendation 1:

That the method undergo further testing in manufacturing and related industries such as information technology, before being promoted to businesses as a tool.

Enterprise dynamic

Findings

As an integral part of this research project, case-study enterprises were investigated to see whether those that most heavily invested in training also exhibited other characteristics which together have been referred to as a high enterprise dynamic. Those characteristics were:

- work practices that empower the individual worker to undertake a broad range of tasks, and to exercise judgement and responsibility
- work that, to a significant extent, is team-based with team-based problem-solving
- encouragement of workers to identify with their work by receiving recognition (in some form) for either high level or consistently good performance
- human resource planning that is a subset of strategic planning
- business strategy that is concerned with quality enhancement, client needs, and innovation, and is informed by market and other research

The results suggest that manufacturers who have most or all of these characteristics also invest fairly heavily in training. The pattern was more clear-cut for footwear than for wire products manufacture. However, instead of a self-managed, team-based approach, some of the enterprises very successfully appeared to have used more traditional, manager-directed systems in the production of high-quality products. The most successful had a well-developed strategic planning system that included human resources planning. And for one of them, people recruited to the more skilled jobs were already trained and, as a consequence, had a lesser need for employer-provided training. The first two dot points should be brought

together and amended to provide an alternative; that is the employment of highly skilled people working in their area of specialisation.

Table 7 aggregates the findings for the two manufacturing sectors and hotels. Supermarkets are not included because they were all essentially identical, reflecting almost identical company policies. Except for Adept (wire products A) rankings are ones for which there was some observed correlation with training expenditure. Adept has been included on the basis of its alternative strategy of recruiting for skills. For manufacturing, a trend is observable.

Table 7: Enterprises, ranked by labour productivity level, scored against enterprise dynamic characteristics

Sub-sector and enterprise		Work practices that empower the individual worker to exercise judgement and responsibility while working either as a highly skilled specialist, or as a member of a self-managing team in a broad range of tasks	Wages over-award for skilled personnel, or a system of bonuses or other form of recognition in place	Human resource planning that is a subset of strategic planning	Business strategy that is concerned with organisational change, client needs, and innovation	✓
Footwear	E	✓	✓	✓	✓	4
	C	✓	✓	✓	✓	4
	F	✓	✓	✓	✓	4
	A	X	✓	X	X	1
	G	✓	✓	✓	✓	4
	D	X	✓	X	X	1
	B	X	✓	X	X	1
Wire products	A	✓	✓	X	✓	3
	B	✓	✓	X	✓	3
	C	✓	✓	X	✓	3
	E	✓	✓	✓	✓	4
	D	X	✓	X	✓	2
Hotels	C	✓	✓	X	✓	3
	A	✓	✓	✓	✓	4
	F	✓	✓	X	X	2
	B	✓	✓	X	✓	3
	H	✓	✓	X	X	2
	G	✓	✓	X	✓	3
(Not ranked)	D	✓	✓	✓	✓	4
	E	✓	✓	X	X	2

Footwear manufacture and wire products manufacture enterprises ranked by average labour productivity as dollar value added per hour.

Hotels ranked by average number of rooms sold per hour of labour, front office (figures not available for D and E).

Enterprises are identified by initial.

The poorest performers, in terms of labour productivity, demonstrated half or less of the characteristics of a dynamic enterprise, and invested little in training. Perhaps what is most curious is why there were no enterprises that invested in training yet lacked the other characteristics. It may be that this was due to chance, or it may be that most managers

consider that there is little point in spending money on training in an environment where business decisions are short-term and reactive and where there is a lack of strategic direction.

When this research project was first proposed, it was questioned whether enterprises with a high dynamic might gain a greater return to training investment than those that spent the same amount on training in the absence of those other practices. The answer is a hypothetical 'probably yes—if the second group exists'. The question might have been better expressed as 'Do enterprises that invest most in training, tend to employ it as part of business strategy?' The answer then would be a more confident 'yes'.

The service industry studies were less informative, possibly because they did not present the range that the manufacturers did. But interestingly, the two four-star hotels came closest to the ideal of a high dynamic enterprise as defined; they also invested most in training. Given the lack of other four-star hotels in the study, it is not possible to gauge their performance against others. That they did not match some of the five-star hotels in labour productivity in dollar terms is hardly surprising. The Industry Commission (1996), drawing on figures of Howarth Asia Pacific, showed rooms in four-star hotels in 1993 and 1994 to be about 25 per cent cheaper than in five-star hotels—but because of the larger costs in supplying the latter, gross operating profits were greater for the four-star hotels!

Provision for employee recognition failed to differentiate between the enterprises. As discussed earlier, it seems that the form of recognition can be important. But this research has not been able to assist clarification on the matter. It has been retained because other research, as discussed, suggests that it is important.

Overall, the findings indicate that Australian enterprises vary in their mix of strategic planning practices and work practices; however, firms that invest most in training tend also to be more strategic, and to empower and reward their employees. The findings are not dissimilar to those of Gittleman, Horrigan and Joyce (1998) who used the US 1993 Survey of Employer Provided Training to investigate patterns of adoption of 'flexible' work practices. They found no evidence of practices falling into a few, discrete clusters. But adoption of flexible work practices such as work teams, quality circles and job rotation was positively correlated with, amongst other things, manufacturing and extensive training.

Revised definition of enterprise dynamic

Based on the findings, an enterprise with a high dynamic appears to be characterised by:

- work practices that empower the individual worker to exercise judgment and responsibility while working either as a highly skilled specialist, or as a member of a self-managing team in a broad range of tasks
- recruitment and training practices that collectively maintain a high level of skill
- encouragement of workers to identify with their work by receiving recognition (in some form) for either high level or consistently good performance
- human resource planning that is a subset of strategic planning
- business strategy that is concerned with quality enhancement, client needs, and innovation, and is informed by market and other research

Importantly, it appears to have been a combination of these practices that was responsible for the apparently high levels of return to training expenditure that were suggested by the footwear manufacturing studies in particular. Enterprises with high labour productivity were doing much more than investing in training to achieve those returns. It was not that they were necessarily spending much more on plant and equipment, but that the purchases were made within the context of comprehensive planning—they promoted efficiency and effectiveness.

Caress's general manager said that the company brings together every aspect of the business in a total systems approach to planning: the strategy addresses strategic insourcing (deciding what can be done internally), quality of materials, internal recruitment so that people with ability can rise within the organisation, improving the work environment, plant and

equipment, strategic sharing of information with competitors, cultural change aimed at commitment and openness, and training that is a vital input to almost every activity. For consistency, the report has used the term 'labour' throughout. But what is described by Caress is not the training of skilled manual labour; rather, this company is investing in people, in a multiplicity of ways. That is, it is increasing its stocks of human capital. Some economists may wish to represent those additional investments as within the 'residual' of multi-factor productivity. But from an educational perspective such fragmentation is unhelpful—double loop learning has old learning continuously being reviewed and born anew. And people do not behave as 'labour' at one moment and 'capital' at another. Rather they behave as integrated, multifaceted human beings. Therefore, the term labour is used in this report to mean human capital.

It must be acknowledged that there are firms, especially very small ones, that have survived quite successfully in the absence of most or all of the 'high dynamic' characteristics. There may well be circumstances where this allows a level of responsiveness that would be unachievable in a more strategically directed organisation.

Adjunct to the method

This research has suggested that those firms which invest heavily in training are achieving high apparent returns because they are also investing time and effort in planning, and in optimising functionality and responsiveness across their organisations. It is important that any subsequent investigation of the method for estimating returns to training through labour productivity also examines this further. Should the method become a business tool, it may be used to inform business decisions on training in the context of other business practices, rather than in isolation.

Recommendation 2:

That any subsequent research on the method include further investigation of the relationship between labour productivity and training investment in the context of the level of 'enterprise dynamic'.

9 Broader horizons

Overview

The closing chapter addresses interpretation of the general findings of the research and their possible implications for businesses and employees. In addition, some specific findings in relation to training and the workplace are discussed.

Returns to training

Integrated business strategy

This research has found strong evidence for Australian manufacturers gaining large returns, in the form of increased labour productivity, on training expenditure on their personnel. It has found also, that managers of enterprises in the service sector—top-of-the-range hotels and chain-based supermarkets—view training as an essential input, as customers become more discriminating and their competitors get better at meeting customer expectations.

The manufacturing studies have suggested that innovative and quality-committed firms that employ training as part of cohesive and comprehensive business strategies, are examining every aspect of their business, and that the labour productivity levels they achieve are a consequence of all these factors, not just training. In these circumstances, a claim that for every one dollar it spends on training, a footwear manufacturer gains about fifty-eight dollars, or a wire products manufacturer gains about one-hundred-and-ninety dollars, does not seem so incredible. That is, the returns in labour productivity are to expenditure on business strategy and implementation that includes one dollar on training.

An attribute of the method is that there is no requirement for estimation of depreciation of the benefits of training. Application of the method showed firms to be investing in training by a certain amount each year in an effort to maintain their productivity. A few were experiencing small amounts of growth or decline year to year. But most were in a fairly steady state where loss of skill or loss of skill relevance was being counterbalanced, either by maintaining a level of training expenditure (footwear), or gradually increasing it (wire products). Larger changes were associated with very deliberate efforts to achieve growth in productivity.

As noted in the chapter on the background to the research, Smith and Hayton (1999) found little evidence for a relationship between strategy and training in Australian enterprises in 1994–95. They found that ‘training activity was triggered by more operational concerns such as the introduction of new forms of work organisation or new technology, rather than strategic concerns, and was significantly influenced by a range of moderating factors that were often unique to each enterprise’. This research found that, while only some of the firms had training firmly entrenched as part of strategic planning, the general manager or equivalent in many more was of the view that there was a need for such a development and that the need was being addressed. Certainly, the firms in this research cannot be assumed to be typical, given that their agreeing to participate in itself implies a concern about training-related issues. But perhaps there has been some shift in the half decade since Smith and Hayton undertook their investigations. Only more broadly based research could clarify whether this has been the case or not.

Need for training

This report was required to suggest indicators of the need for an enterprise to invest more in training. Firms in which labour is value adding at a rate that does little more than cover the wages bill—as was the case for the lowest performers in this research—and are looking to improve profitability, may turn to training. But in the absence of more fundamental changes to business strategy, it is probable that returns will not be of the magnitude suggested by the research. Rather, in graphs such as those shown in figures 2 and 7, the point representing labour productivity against training expenditure will move to the right and probably upwards also. However, it is likely to be to a location well below the regression line.

The research found, also, that firms with the higher levels of labour productivity in both manufacturing and services considered the success of their businesses to have been predicated on training of their personnel. What is more, this meant training being an ongoing process rather than having personnel attend a short course during the year. Few used the term 'training culture' or 'learning culture', but that is what each, in effect, was promoting.

For firms with no such drive, and which are experiencing relatively low labour productivity, a poor-quality product, and/or alienated and disgruntled personnel, the potential for an increased training effort should be explored. (Of course the 'problem' may be elsewhere—such as poor floor layout, low-quality materials or failure to meet personal needs of employees.) But if training is a solution, it involves more than a two-day workshop and then waiting for business to improve. This research has suggested that, if lasting benefits are to be experienced, it means building learning into everything that happens. This is best done within a broader framework of business planning rather than as an end in itself. For how else are questions to be answered about what is to be learnt, by whom and how, if training is provided in an information void? And asking personnel where they feel they need training is not enough, because it fails to anticipate the firm's future directions.

Policy

Current government vocational education and training policy in Australia emphasises the importance of enterprise investment in training. It does not, however, typically place training explicitly in the context of overarching business strategy and human resource planning. If, in fact, this is the key to training effectiveness, there might be benefits in the form of economic returns to enterprises and the country as a whole, were policy to make this connection. Calls for increased expenditure might also be seen as having greater credibility.

> **Recommendation 3:**
>
> **That ANTA give consideration to recognising, in the form of policy and promotions, a probable link between training effectiveness and the human resource practices and overarching strategies adopted by enterprises.**

Profits and competitiveness

The ratios of training expenditure to dollar value added by labour, as suggested above, overstate the returns. There appear to have been other investments in achieving those ratios which this research is unable to measure. However, appealing though the findings for manufacturing are, it must be remembered that increases in labour productivity are not synonymous with increases in profitability and competitiveness.

There is the issue of supply and demand: high labour productivity may mean being able to sell at a lesser price and so capture a greater share of the market, or expand the market

through an increase in quality. How successfully either is achieved has much to do with what competing firms are doing.

> *The standard 'textbook' view of productivity implicitly assumes that all parts of the economy are producing as efficiently as possible. Productivity growth then comes largely, if not exclusively, through new technology. But in practice, all parts of the economy are not producing as efficiently as possible. Addressing these inefficiencies opens up other possibilities, by definition, to improve productivity* (Industry Commission 1997).

Then there is the issue of distribution of additional earnings between labour and capital. Recognition of high-level or consistently good performance of workers was suggested as one of the characteristics of a highly dynamic enterprise. This means that labour is sharing in the return, whether recognition is in the form of increments, above-award wages or bonuses. But while payments to labour are being provided, presumably capital is accruing some of the return. It is illuminating that one of the firms in the research project decided not to pay a bonus to a high-performing team unless the factory as a whole met or exceeded targets. The rationale, it was claimed, was that it could not afford to pay one group extra while it had others under-performing, with profitability suffering as a consequence. Whether this demotivated the potentially high-level performers, or encouraged them to assist those behind them 'on the learning curve', was not apparent.

But just as there appear to have been additional costs, there may have been additional savings. Self-managed teams are performing some of the functions for which managers have been paid in the past. Not that the research found many teams to be truly self-managing; in the opinion of management, most had a considerable way to go. So some of the savings may increase as teams become less reliant on management.

The most straightforward issue is, of course, costs and returns. If the costs of training exceed the present value of future returns then it has probably not been a worthwhile investment—although this may be difficult to decide. Subsequent returns may prove to be less than previous returns, but are they less than what would have been experienced subsequently without the training? The counterfactual is always problematic, but perhaps there were improvements that have enabled the business to survive.

Then there is the issue of how labour productivity is being achieved. As mentioned in chapter 2, micro-enterprises appear to have low labour productivity but high profitability—they are not investing in expensive plant and equipment as compared with larger firms. In the study of supermarkets the highest labour productivity appeared to be largely the result of relatively short opening hours. But whether the supermarket was more profitable as a consequence is questionable. Managers of 'twenty-four hour' stores said that, given there were packers working in the store overnight whether it was open or closed, overhead costs were much the same. The extra business in the short term, plus reducing the likelihood of customers developing other attachments in the longer term, delivered greater profits. Labour productivity was a little lower, but the greater total amount of turnover delivered higher profitability.

A further issue is other costs. A firm that spends more on advertising or that has capital tied up in inventories and stocks may have higher labour productivity yet lower profitability. For the manufacturers in this research, especially the footwear manufacturers, moving to 'just in time' manufacture was a priority. The capacity to reduce tied-up capital may be only partially as a consequence of the skills of floor-level personnel and their productivity. But a key issue was work in progress, where skills and training were crucial, along with labour productivity. Reducing the time for a product to be made meant less capital tied up. Most importantly, it meant being able to be more responsive to customer orders. Manufacturers said that retailers are now demanding supplies of specified products (number, style, colour, size) at very short notice. It is the capacity of local manufacturers to respond which provides their edge over importers.

In general then, competitiveness and as a consequence, profitability, are only partly the result of labour productivity levels. But unless a firm has high labour productivity in both

magnitude and quality terms, in relation to its technologies, it is unlikely to be competitive in the market and so it will not be profitable.

Employment

While the project has been primarily concerned with demonstrating that firms benefit from investing in the training of their personnel, the findings have implications for existing and potential employees as well as for employers.

Although there were firms that recruited for industry-specific skills, most placed priority on more general, widely transferable skills, personal qualities and capabilities. Important across the board were good communication skills, good general education, conscientiousness and, in service industries, 'grooming' and an outgoing disposition. So also was interest in the area of work—an attribute work-experience or VET-in-schools can help young people clarify for themselves. The importance placed on 'personality' is not without foundation. For instance, Hurley (1998) found that superior retail service providers tend to be rated by others as extroverted and agreeable.

Senior managers in a few of the enterprises mentioned that school leavers are increasingly presenting for interview, very well prepared, as a result of schools teaching their students interview technique. Performance at interview is becoming less of an indicator of suitability for employment. Casual employment and the probationary period preceding permanent appointment, are increasingly becoming essential phases of the recruitment process. Managers are looking very critically at casuals and probationers before offering permanency.

The manufacturing sub-sectors to a small extent, and the service sub-sectors to a much greater extent, employed casuals on flexible hours, as a means to adjust personnel levels to meet short-term variation in demand. The manufacturers relied more on overtime. Some of the footwear manufacturers, too, were moving away from a second or third shift as they sought to downsize while both reducing the range and increasing labour productivity as throughput and quality. The situation is similar to that observed by Mattey and Strongen (1997) in the US, where the working week provided a significant source of flexibility, with manufacturers using different strategies, depending on the nature of the production process. Whether current practices in Australia are employee-friendly is another matter (Burgess 1998).

The shift to service-based industries

Rowthorn and Ramaswarmy (1997), with the International Monetary Fund, point out that the shift to service-based industries in advanced economies means that national growth levels are smaller than those of developing nations that are expanding their manufacturing sector. The standardised production processes of manufacturing, and of some parts of the information industries, are codified. This allows them to take on new technologies with substantial increases in labour productivity in the process ('technologically progressive'). But services, especially personal services that demand person-to-person interaction with the customer, have less potential for large increases in efficiency ('technologically stagnant') even though some aspects of the work are amenable to the use of more efficient technologies. As more and more people move out of the technologically progressive industries (mainly manufacturing), and into the technologically stagnant ones (mainly services), measured levels of national economic growth must therefore decline.

In microcosm, the case studies illustrated some of these trends. Nine of the thirteen manufacturers had decreased their total number of personnel over the period of the study, some quite considerably, while one had slightly increased the number.

Rowthorn and Ramaswamy probably overstate the ease with which firms take on technologies and employ them efficiently. The very large differences in labour productivity levels amongst the manufacturers investigated in this research is evidence of the resistance to spread that operation of new technologies exhibits. New growth theory recognises the

importance of learning in the efficient application of technologies and the advantages this confers on communities that share the specialist knowledge (Lucus 1988). Not all aspects of technological knowledge are as codifiable as the authors suggest. It is the tacit aspects that most resist spread (Archibugi & Michie 1998; Teece 1998).

In all four sets of case studies, the great majority of respondents to the personnel questionnaire indicated that 'having the work explained by another person' and 'being shown by another person' had contributed to their learning their job, well in excess of numbers who thought courses and classes had contributed. Tacit knowledge was probably being shared in one-to-one interactions while on the job, knowledge that training packages cannot deal with, and which cannot be adequately communicated in off-the-job training.

Not that downsizing was restricted to the manufacturers. Six of the eight hotels had reduced personnel numbers, but by smaller amounts. Amongst supermarkets four had increased, three decreased and one, after a rise, was back to where it was in 1995–96. But what, of course, is not apparent from this research is the growth of services and information industries, not through the provision of more jobs for the same work, but through overall expansion of their number and diversity.

Training

The research has found a high level of firm support for customised national industry standards amongst three of the four sub-sectors studied. The fourth, wire products manufacture, is one in which there is a lack of standards, especially for spring-makers. The sub-sector is still a significant user of metal trades, in tooling, and fitting and maintenance. The most effective learning appeared to be where off-the-job training linked closely with on-the-job coaching and work-based experience.

Most of those enterprises that invested heavily in training have adopted national industry standards (where they exist). They have customised them to the needs of their firm and have been establishing systems for linking on- and off-the-job training, and for on-the-job assessment and recording. Short courses have been created where national standards fail to reflect the training needs arising from innovation and new strategic direction. This dynamic process that links learning, planning and innovation, national standards and customisation, and on- and off-the-job training, is a fertile one for further research and the development of best practice guidelines that recognise differences between sectors and enterprises.

Recommendation 4:

That ANTA give consideration to encouraging research that links business planning, innovation, formal and informal work-based learning, off-the-job training, national training standards and customisation.

Notwithstanding the level of support, there were findings that suggest room for improvement. Those findings mainly concern ignorance of recognised training. All of them, in the opinion of the researchers, warrant consideration of their implications by governments, and further investigation especially given the related findings of studies by Smith (1999) and Schofield (1999, 2000).

- lack of awareness of the curriculum being undertaken by indentured apprentices (as distinct from employees in workplace-based traineeships): whether the apprenticeship was in tool-making, fitting and machining, bakery or butchery, in most instances supervisors and managers were not aware of the course curriculum, nor had they met a teacher from the provider of the off-the-job component. When asked how could they be confident that their apprentice's on-the-job and off-the-job training were complementary, the common response was that if he or she had problems it was assumed that he or she would ask. These findings accord with those recently reported for the building industry where 'integration is too often perceived to be almost entirely an issue for apprentices to

reconcile rather than for host employers and training providers to facilitate' (Harris & Simons 1999). Yet curriculum design for apprentice training has assumed that on- and off-the-job learning are complements. Ideally, they integrate to unite theory and practice

- lack of knowledge about training packages or industry competency standards, amongst senior managers in the majority of wire products manufacturers: this was particularly surprising, given the leading role that the metals industry has played in training reform
- trainee lack of knowledge of their training. As discussed in the chapter on footwear manufacturing, the personnel questionnaire responses suggested that employees who had been recruited as trainees under New Apprenticeships had no idea of the course that they were supposedly undertaking nor, perhaps, that they were undertaking a course. What is more, in one instance certificates had been issued by the provider for trainees who had yet to undertake the off-the-job training. To the credit of the firm, they had not been distributed. The manager explained that approval arrangements required that the provision be completed within a certain time, but that production demands had precluded trainees from being released during that time to undertake the off-the-job training

Recommendation 5:

That ANTA give consideration to mechanisms for ensuring effective collaboration between firms and external training providers with which they deal, and for ensuring that personnel undertaking any nationally recognised training are made fully aware of that recognition and any associated qualifications.

On the other hand, findings in respect to recognition of prior learning have suggested the policy may be trailing behind practice. Provision for recognition of prior learning was, in most instances, indistinguishable from provision for assessment of competence against the firm's customised standards. Nor was competence necessarily assumed to be maintained once achieved—a period away from a task could mean re-assessment. As one firm noted, they had recognition of current competence (RCC), not prior learning. If this is the reality, perhaps the term RPL should be replaced with RCC! It would be consistent with the trend towards customisation of standards that this research found to be the norm. It would go some way also to accommodating the issue of transferability of learning. Theory of learning transfer based on a general–specific dichotomy has been effectively replaced by one where work-related learning is more or less transferable. But even learning that is highly transferable must be transformed in a new context. Firms are recognising this and acting accordingly.

Recommendation 6:

That in the further development of their policies on recognition of prior learning, governments give more weight to the common industry practice of recognising current competencies exhibited in performance on the job, assessed against employers' own specific customised standards.

Conclusion

Like most large research projects, this one has raised more questions than it has addressed. And like all projects that depend on subjects agreeing to be investigated, it suffers from questions about self-selection; in this instance, by firms that are typically committed to training. Nevertheless, the project has been able to demonstrate that, in those enterprises where commitment to training has been greatest, it has commonly been associated with planning for innovative change in products and / or processes and high labour productivity levels.

Lapagne and Bernsted, in a Productivity Commission research paper (1999), conclude, amongst other things, on the basis of a comparative study of the 1989–90 and 1995 AWIRS data:

> *The links between training, innovation and labour productivity in technically efficient and inefficient workplaces differ. It appears that training is an effective strategy for less efficient workplaces striving to 'catch-up' with competitors, whereas innovation appears to promote labour productivity growth among both technically efficient and inefficient workplaces.*

The research reported here has found that employers and managers in innovative firms see innovation as dependent on the work of personnel who are trained to enable them to transform ideas into economically viable innovations.

References

ABS (Australian Bureau of Statistics) 1998, *Small business in Australia*, number 1321.0, AGPS, Canberra.

Acemoglu, D & Pischke, J 1998, 'The structure of wages and investment in general training', Centre for Economic Policy research discussion paper series, no. 1833.

Archibugi, D & Michie, J 1998, 'Technical change, growth and trade: New departures in institutional economics', *Journal of Economic Surveys*, vol. 12, no. 3, pp.313–32.

Arthur, JB 1994, 'Effects of human resource systems on manufacturing performance and turnover', *Academy of Management Journal*, vol. 37, no. 3, pp.670–87.

Ashenfelter, OC & LaLonde, RJ 1996, *The economics of training, volume I: Theory and measurement*, International library of critical writings in economics, Edward Elgar Publishing Limited, Cheltenham, UK.

Bailey, D & Hubert, T (eds) 1980, *Productivity measurement: An international review of concepts, techniques, programmes and current issues*, British Council of Productivity Associations, Gower, Westmead.

Barron, JM, Berger, MC & Black, DA 1997, 'How well do we measure training?', *Journal of Labour Economics*, vol. 15, no. 3, pt.1, pp.507–28.

Barron, JM, Black, DA, & Loewenstein, MA 1989, 'Job matching and on-the-job training', *Journal of Labor Economics*, vol. 7, no.1, pp.1–19.

Bartel, AP 1995, 'Training, wage growth, and job performance: Evidence from a company database', *Journal of Labor Economics*, vol. 13, no. 3, pp.401–25.

Ben-Ner, A & Jones, DC 1995, 'Employee participation, ownership and productivity: A theoretical framework', *Industrial Relations*, vol. 34, no. 4, pp.532–54.

Bishop, JH 1994, 'The impact of previous training on productivity and wages', in *Training & the private sector*, ed. LM Lynch, University of Chicago Press, Chicago.

Black, SE & Lynch, LM 1996, 'Human-capital investments and productivity', *American Economic Review*, vol. 86, no. 2, pp.263–7.

Blundell, R, Dearden, L, Mechir, C & Sianesi, B 1999, 'Human capital investment: The returns from education and training to the individual, the firm and the economy', *Fiscal Studies*, vol. 20, no. 1, pp.1–23.

Burgess, J 1998, 'Working-time patterns and working-time deregulation in Australia', *Economic Papers*, vol 48, no. 3, pp.35–47.

Chapman, PG 1993, *The economics of training*, Harvester Wheatsheaf, Herfordshire.

Cutler, T 1992, 'Vocational training and British economic performance: a further instalment of the "British labour problem"?', *Work, Employment and Society*, vol. 6, no. 2, pp.161–83.

Daly, A, Hitchens, & Wagner, K 1985, 'Productivity, machinery and skills in a sample of British and German manufacturing plants: Results of a pilot inquiry', *National Institute Economic Review*, vol. 111, February, pp.48–61.

Dawkins, P & Rogers, M 1998, 'A general review of productivity analyses in Australia' in *Microeconomic reform and productivity growth*, workshop proceedings, Productivity Commission and Australian National University, AusInfo, Canberra, pp.195–238.

Dockery, AM, Koshy, P, Stromback, T & Ying, W 1997, 'The cost of training apprentices in Australian firms', *Australian Bulletin of Labour*, vol. 23, no. 4, pp.255–74.

Dosi, G 1997, 'Opportunities, incentives and the collective patterns of technological change', *The Economic Journal*, vol. 107, September, pp.1530–47.

Durand, JP 1998, 'Is the "better job" still possible today?', *Economic and Industrial Democracy*, vol. 19, no. 1, pp.185–98.

Finegold, D 1999, 'Creating self-sustaining, high-skill ecosystems', *Oxford Review of Economic Policy*, vol. 15, no. 1, pp.60–81.

—— —— & Soskice, D 1988, 'The failure of training in Britain: analysis and prescription', *Oxford Review of Economic Policy*, vol. 4, no. 3, pp.21–53.

Gittleman, M Horrigan, M & Joyce, M 1998, '"Flexible" workplace practices: Evidence from a nationally representative survey', *Industrial and Labour Relations Review*, vol. 52, no. 1, pp.99–115.

Harris, C 1996, 'Productivity at the plant and industry levels in Australia', in *Sources of productivity growth*, ed. D G Mayes, Cambridge University Press, Cambridge, pp.164–222.

Harris, R & Simons, M 1999, '"Views through three windows": A study of the usefulness of on- and off-job training', *Australian and New Zealand Journal of Vocational Education Research*, vol. 7, no. 2, pp.55–80.

Hart, RA & Malley, JR 1996, 'Labor productivity and the cycle', discussion paper in economics, no. 96/21, Department of Economics, University of Sterling.

Hilmer, FG 1991, 'Coming to grips with competitiveness and productivity', EPAC discussion paper, AGPS, Canberra.
Hoque, K 1999, 'Human resource management and performance in the UK hotel industry', *British Journal of Industrial Relations*, vol. 37, no. 3, pp.419–43.
Hurley, RF 1998, 'Customer service behavior in retail settings: A study of the effect of service provider personality', *Journal of the Academy of Marketing Science*, vol. 26, no. 2, pp.115–27.
Ichniowski, C, Shaw, K & Prennushi, G 1997, 'The effects of human resource management practices on productivity: A study of steel finishing lines', *The American Economic Review*, vol. 87, no. 1, pp. 291–313.
Industry Commission 1996, *Tourism accommodation and training*, report no. 50, AGPS, Canberra.
—— —— 1997, *Assessing Australia's productivity performance*, research paper, AGPS, Canberra.
Keltner, B, Finegold, D, Mason, G & Wagner, K 1999, 'Market segmentation strategies and service sector productivity', *California Management Review*, vol. 41, no. 4, pp.84–102.
Köhler, C & Woodard, J 1997, 'Systems of work and socio-economic structures', *European Journal of Industrial Relations*, vol. 3, no. 1, pp.59–82.
Krueger, A & Rouse, C 1998, 'The effect of workplace education on earnings, turnover, and job performance, *Journal of Labor Economics*, vol. 16, no. 1, pp.61–94.
Laplagne, P & Bensted, L 1999, 'The role of training and innovation in workplace performance', Productivity Commission staff research paper, AusInfo, Canberra.
Long, M & Burke, G 1998, 'An analysis of the 1997 training practices survey', Monash University–ACER Centre for the Economics of Education and Training working paper, no. 20.
Lucas, RE Jr 1988, 'On the mechanics of economic development', *Journal of Monetary Economics*, vol. 22, pp.3–42.
Lyau, N & Pucel, DJ 1995, 'Economic return on training investment at the organization level', *Performance Improvement Quarterly*, vol. 8, no. 3, pp.68–79.
Lynch, LM 1992, 'Private-sector training and the earnings of young workers', *American Economic Review*, no. 82, January, pp.299–312.
—— —— & Black, SE 1998, 'Beyond the incidence of employer-provided training', *Industrial and Labor Relations Review*, vol. 52, no. 1, pp.64–81.
Macduffie, JP 1995, 'Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry', *Industrial and Labor Relations Review*, vol. 48, no. 2. pp 197–221.
McNabb, R & Richardson, S 1989, 'Earnings, education and experience: Is Australia different?', *Australian Economic Papers*, vol. 28, no. 52, pp.57–75.
McNabb, R & Whitfield, K 1998, 'The impact of financial participation and employee involvement on financial performance', *Scottish Journal of Political Economy*, vol. 45, no. 2, pp.171–87.
Maglen, L 1993, 'Assessing the economic value of education expansion: A preliminary review of the issues and evidence', background paper for the Economic Planning Advisory Council, AGPS, Canberra.
—— —— & Hopkins, S 1998, 'Linking VET to productivity differences: An evaluation of the Prais program, and its implications for Australia', Monash University–ACER Centre for the Economics of Education and Training working paper, no. 18.
Mason, G, Keltner, B & Wagner, K 1999, 'Productivity, technology and skills in banking: commercial lending in Britain, the United States and Germany', National Institute of Economic and Social Research, working paper, no. 159, October.
Mason, G, Prais, S J & van Ark, B 1992, 'Vocational education and productivity in the Netherlands and Britain', *National Institute Economic Review*, vol. 140, May, pp.45–63.
Mason, G, van Ark, B & Wagner, K 1994, 'Productivity, product quality and work skills: Food processing in four European countries', *National Institute Economic Review*, vol. 147, February, pp.62–83.
Mattey, J & Strongin, S 1997, 'Factor utilisation and margins for adjusting output: Evidence from manufacturing plants', *Economic Review*, no. 2, pp.4–17.
Prais, S J, Jarvis, V & Wagner, K 1989, 'Productivity and vocational skills in services in Britain and Germany: Hotels', *National Institute Economic Review*, vol. 130, November, pp.52–74.
Rogers, M 1998, 'Productivity in Australian enterprises: Evidence from the ABS Growth and Performance Survey', Melbourne Institute working paper, no. 20/98, Melbourne Institute of Applied Economics and Social Research, University of Melbourne.
—— —— 1999, 'The performance of small and medium enterprises: An overview using the growth and performance survey', Melbourne Institute working paper, no. 1/99, Melbourne Institute of Applied Economics and Social Research, University of Melbourne.
Rowthorn, R & Ramaswamy, R 1997, 'Deindustrialization: causes and implications', International Monetary Fund working paper, no. wp/97/42.

Schofield, K 1999, *Report on the independent investigation into the quailty of training in Queensland's training system*, VETEC, <www.detir.qld.gov.au/VETinfo/reports/schofield.htm>
—— —— 2000, 'Review of the quality of training in Victoria's apprenticeship and training system', discussion paper, Office of Post-Compulsory Education, Training and Employment.
Shackleton, JR 1995, *Training for employment in Western Europe and the United States*, Edward Elgar, Aldershot.
Smith, A & Hayton, G 1999, 'What drives enterprise training? Evidence from Australia', *The International Journal of Human Resource Management*, vol. 10, no. 2, pp.251–72.
Smith, L R 1999, *The impact of user choice on the Queensland training market: A progress evaluation*, Department of Employment, Training and Industrial Relations, Queensland, March.
Steedman, H & Wagner, K 1987, 'A second look at productivity, machinery and skills in Britain and Germany', *National Institute Economic Review*, vol. 122, November, pp.84–95.
—— —— 1989, 'Productivity, machinery and skills', *National Institute Economic Review*, vol 22, May, pp.40–57.
Teece, DJ 1998, 'Capturing value from knowledge assets: The new economy, markets for know-how and intangible assets', *California Management Review*, vol. 40, no. 3, pp.55–79.
Veum, JR 1999, 'Training, wages and the human capital model', *Southern Economic Journal*, vol. 65, no. 3, pp.526–38.
Walsh, JP & Tseng, S 1998, 'The effects of job characteristics on active effort at work', *Work and Occupations*, vol. 25, no. 1, pp.74–96.
Wooden, M & Bora, B 1999, 'Workplace characteristics and their effects on wages: Australian evidence', *Australian Economic Papers*, vol. 38, no. 3, pp.276–89.

Appendices

A: Tables A1 to A34 (*p.85)*

B: Proformas for quantitative data (*see below)*

C: Instrument for structured interviews *(see below)*

D: Employee questionnaire *(see below)*

Appendices B–D can be found on the world wide web at:
www.ncver.edu.au/research/proj/nr8011a.pdf

Table A1: Footwear manufacture: combined quantitative data

Year	Metrics	Anodyne	Bliss	Caress	Dream	Ecstasy	Felicity	Glamour
1995–96	Pairs per hour of labour	1.69 [0.85]	2.12 [1.57]	NA	3.35 [3.12]	1.89 [1.80]	1.47	1.55
	Low: medium: high	0 : 1 : 0.18	0.73:1:1.6	NA	4.3 : 1 : 1.3	0 : 1 : 0	1:1:1#	1:1:0.2#
	$ value added per hour of labour	54.7 [33.3]	NA	40.1 [36.3]	NA	74.6 [71.1]	41.8	36.7
	Training $ total per capita	1 140	86.5	734	88.8	1 080	NA	NA
	Training $ non-management per capita	1 220	82.3	729	63.6	1 035	NA	NA
1996–97	Pairs per hour of labour	1.45 [0.70]	1.93 [1.43]	2.88 [2.60]	2.23 [2.12]	1.88 [1.79]	1.38	1.64
	Low: medium: high	0 : 1 : 0.18	0.68:1:1.6	1.28 : 1:0	4.3 : 1 : 1.3	0 : 1 : 0	1:1:1#	1:1:02#
	$ value added per hour of labour	66.2 [32.0]	9.09 [6.72]	45.7 [41.4]	30.2 [28.8]	72.9 [69.5]	40.1	39.9
	Training $ total per capita	983	27.6	1 175	117	1 430	NA	NA
	Training $ per capita non-management	1 060	28.3	1 100	92.5	1 350	1 277	1 144
1997–98	Pairs per hour of labour	1.65 [0.79]	1.90 [1.41]	3.09 [3.53]	2.26 [2.15]	2.00 [1.91]	1.26	1.55
	Low: medium: high	0 : 1 : 0.8	0.56:1:1.35	1.32 : 1 : 0	2.75:1:1.25	0 : 1 : 0	1:1:1#	1:1::0.2#
	$ value added per hour of labour	66.4 [31.6]	10.2 [7.52]	65.8 [59.6]	26.4 [25.2]	74.3 [70.8]	41.5	36.4
	Training $ total per capita	840	9.27	1 720	156	1 620	NA	NA
	Training $ per capita non-management	896	0	1 562	137	1 580	1 020	1 036
First half 1998–99	Pairs per hour of labour	1.50 [0.72]	2.12 [1.56]	3.41 [3.01]	3.60 [2.56]	2.08 [1.98]	1.63	1.90
	Low: medium: high	0 : 1 : 0.8	0.70:1:0.42	1.13 : 1 : 0	2.75:1:1.25	0 : 1 : 0	1:1:1#	1:1:0.2#
	$ value added per hour of labour	88.3 [42.2]	8.28 [6.13]	70.5 [63.9]	49.0 [34.8]	75.7 [72.2]	42.1	38.0
	Training $ total per capita	504	0	1 000	1 130	839	NA	NA
	Training $ per capita non-management	559	0	977	1 180	829	783	468
1995–1999	Mean pairs per labour hour**	[0.77]	[1.48]	[3.05]*	[2.48]	[1.85]	1.43	1.66
	Mean $ value added per labour hour**	[33.7]	[6.9]*	[48.4]	[28.6]*	[70.7]	41.4	37.8
	Mean annual training $ per capita***	990	35.14	1 323	426	1 420	NA	NA
	Mean annual training $ per capita non-management***	1 067	31.71	1 248	421	1 370	1 288*	1038*

Figures in square brackets are adjusted for outsourced labour, assuming one pair using pre-made uppers has a labour equivalent of 0.42 pair fully made.
*Mean of figures for incomplete set. **Half year figure for 1998–99 treated as applying for full year. ***Half year figure for 1998–99 has been doubled.
Rough estimates only.

Table A2: Footwear manufacture: major enterprise characteristics

Characteristic	Anodyne	Bliss	Caress	Dream	Ecstasy	Felicity	Glamour
Company type	Public	Private	Private	Public	Private	Private	Private
Product type	Medium to heavy	Light to medium	Light to medium	Light to medium	Medium to heavy	Light to medium	Light to medium
Market	National some international	National	National some international	National	National some international	National	National
Size*	100–200	100–200	200–300	100–200	200–300	200–300	300–400
Mode of operation	Production line, 'rooms' work as teams but highly directed; significant outside production of uppers; soles made on site	Production line; significant outside production of uppers	Team-based: mix of making, bottom making, and cutting and making teams; some outside production of uppers	Mix of production line and two teams as pilots for VAM—Value Added Management system; significant outside production of uppers	Production line; some outside production of uppers	Team-based: all 'cut to box'	Team based: mix of 'cut to box' and component producers
Claimed competitive edge	An international brand; capacity to test the market early	Brand positioning	Flexibility in manufacture; short response time;	Quick response time	Historically efficient mass production; increasingly brand association with quality and service	Brand association with quality	Quick response time
Key objectives	Return on investment	While there is a mission statement there are no generally agreed priority objectives	To market successfully to the niche; to deliver value for money	To be at leading edge so as to deliver an acceptable level of return on investment	Expansion; continued upgrade of technology and HRM systems	Continuous improvement; increasing market share and profitability	Continuous improvement; a happy, safe and committed work force
Challenges	Meeting set level of ROI reduce the range and improve quality;.meeting delivery schedules improve project management; lack of commitment among personnel	Lack of skills among personnel at all levels to meet an increasing demand for quality	Changes in the economy: GST, tariffs; providing skills growth; critical mass of the industry; recruitment: at all levels	Managing outside production of uppers to match demands of the enterprise as a consequence of seasonal differences in the range	'We must become a little more worldly'; changes in the economy—tariffs; meeting customer expectations; passing knowledge on; effective succession planning	Changes in the economy; tariffs and implications for prices and efficiency levels	Lack of commitment of personnel with disinclination to be involved in decision making; matching needs of the workplace with family needs
Planning	Hitherto five-year strategic plan, no annual operational plan; moving to rolling five year plan annually reviewed	No strategic planning; production driven by requirement to put set number of lines onto market annually	Vision document plus one-year business plan latterly providing KPIs against profit, customers, personnel and cash	Goals set by parent company	Five year strategic plan; operations hitherto evolving but now more planned in context of the overarching strategy plan	Five year strategic plan with operational planning as a subset	Five year strategic plan with operational planning as a subset providing KPIs and objectives against the goals

Table A3: Footwear manufacture: production characteristics

	Anodyne	Bliss	Caress	Dream	Ecstasy	Felicity	Glamour
Productivity strategy	Set rates; award plus bonuses; stock in hand through build up during low demand times; establishment of a dedicated customer service unit	Set rates (historical), award plus bonuses but there is no 'strategy'; rather, tackle problems; poor product development and low quality inputs, lack of skills, dated technologies, poor plant layout	Set rates; award plus bonuses, prizes; a total systems approach based on a culture of openness and commitment; includes in-sourcing, materials quality, training, strategic information sharing with competitors	Set rates, award plus bonuses; goals are set for the factory that are 'road mapped'; in 1998 introduced VAM as the central strategy; Other: better co-ordination of factory and off shore production	No rates, bonus paid on 6-monthly rating mainly by supervisor; strategic planning has operated over past three years; new five-year plan now in place; operational planning now becoming more systematic	Rates and payment on basis of skills; five-year strategic plan drives operational planning including range development, machinery purchase and marketing	Rates and payment on basis of skills with possible bonuses; five-year strategic plan drives operational planning including range development, machinery purchase, marketing and labour reduction
Standards	ISO9002; Finish and presentation treated as very important	Quality checks are against 'understood', non-defined standards	High quality work environment; emphasis on quality checks throughout production process	Are aiming to implement ISO principles; quality checks at key production points	ISO9002; Quality checks at key points including boxing plus random supervisor checks	Quality improvement is the driving theme; no seconds other than in boots (high leather costs)	Quality is balanced against price for marketability; quality checks—teams and independently
Production Machinery	Mix of old (35 year+) machines and computer based machines (NC cementers, sole stitcher)	Most equipment is fairly old; some leading-edge machines; NC cementers	Mix of new and older; continuous review of cost-effectiveness of information and production technologies	Mix of new NC machines (cementer and side lasters), 10–12 year old stitchers and other older machines	Machines are mostly 5–10 years old; computer driven cutters found cost-effective; introduced moulding on the last	A few old machines but many 2–3 years old, including NC equipment	Most machines only a few years old; NC cementer, and on test a PLC cutter
Repair and maintenance	Maintenance unit: inspection schedule based system; operators vary in their daily cleaning and servicing; there is also a weekly 15-minute operator servicing session	Maintenance unit has twice yearly servicing; Operators: only sewers clean and lubricate their machines; otherwise an emergency approach	Maintenance unit: schedule of servicing and component replacement; record with each machine; operators regularly clean and lubricate; each has kit; claimed training effect	Maintenance unit: no preventative system in place; with breakdown repairs try to anticipate future problems; some operators regularly clean and lubricate while others do not	Maintenance unit: preventative maintenance system; operators clean and lubricate and are trained to identify malfunctions	Maintenance unit: on call for repairs as determined by teams; operators all carry out daily cleaning and lubrication	Maintenance unit: on call for repairs as determined by teams; operators all carry out daily cleaning and lubrication plus simple replacements
Innovation and improvement	Product: established and new styles; Process: automating where otherwise lengthy training and high dexterity	Product: very conservative; overseas market is not sourced for ideas; Process: no drive to innovate	Product: informed by global developments, review of previous range, new materials; Process: ongoing	Product: styling innovation but not a major thrust; Process: changes typically two yearly	Product: previously conservative but becoming innovative; Process: major changes about every five years	Product: informed by global developments, review of previous range; Process: ongoing automation	Product: informed by global developments, review of previous range; Process: involved in R&D of technology globally

Table A4: Employment breakdown: questionnaire responses

Firm	Overall response rate	General characteristics			Years with current firm, per cent					Years in current job, per cent				
		Male: Female	*Peak age bracket*	*Per cent NESB**	*< 1*	*1 to 2*	*2 to 4*	*5 to 10*	*> 10*	*< 1*	*1 to 2*	*2 to 4*	*5 to 10*	*> 10*
Anodyne	41%	61:39	40 to 49	33	3	3	13	22	59	12	6	15	21	45
Bliss	84%	33:67	40 to 49	78	10	7	16	22	45	13	5	12	34	36
Caress	97%	42:58	30 to 39	39	4	10	53	21	12	7	9	79	18	7
Dream	23%	35:65	30 to 39	33	3	3	13	22	59	12	6	15	21	46
Ecstasy	14%	36:64	20 to 29	5	8	3	36	32	21	10	8	54	23	5
Felicity	66%	24:76	20 to 29	61	4	10	21	38	27	11	13	19	39	18
Glamour	6%	35:65	20 to 29	100	18	6	47	29	0	12	17	53	18	0

*Non-English-speaking background

Table A5: Secondary education background: questionnaire responses

Firm	Highest level of secondary education (or equivalent) completed, per cent				Highest level of secondary education (or equivalent) completed a mathematics, subject per cent				Highest level of secondary education (or equivalent) completed a science or technology subject, per cent			
	Year 9 or less	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*
Anodyne	49	15	15	21	58	12	18	12	58	19	16	7
Bliss	44	20	11	25	51	19	9	21	59	12	7	22
Caress	41	22	12	25	51	18	8	23	54	18	10	18
Dream	28	20	32	20	33	21	33	13	59	19	16	6
Ecstasy	18	49	18	15	18	49	18	15	16	70	11	3
Felicity	26	15	18	41	30	18	16	36	33	19	17	31
Glamour	17	47	12	24	12	47	12	29	16	70	11	3

Table A6: Post-secondary studies: questionnaire responses

Firm	Percentage who are floor level personnel	Have undertaken a course for a nationally recognised qualification (in part or in whole), per cent		Have not undertaken a course for a nationally recognised qualification (in part or in whole)*, per cent
		Directly related to current job	*Not directly related to current job*	
Anodyne	75	12	6	82
Bliss	69	8	2	90
Caress	96	14	1	85
Dream	77	8	4	88
Ecstasy	87	13	5	82
Felicity	96	9	7	84
Glamour	86	0	12	88

*Additional employees may have undertaken modules but did not consider they were undertaking a nationally recognised course

Table A7: Footwear manufacture: skills and training at non-management level

	Anodyne	Bliss	Caress	Dream	Ecstasy	Felicity	Glamour
Purposes of training	Improved productivity, career development, satisfying developing business needs	Enable production to proceed; safe work practices	Return on investment and personal growth	'To achieve the cultural change we need to stay in business', i.e. to deliver the necessary skills'	Maximising return on investment; reducing turnover; succession; safety and quality; theory important for robotics	Quality; productivity; job satisfaction; reduced turnover; 'gives technicians more grounding for what they are doing'	Profitability through quality, minimisation of waste and work in progress; effective team membership; cultural change
Planning	Assumed that skills profiling will meet strategic requirements	There is no planning for training	Subset of the strategic planning process; all have a personal development plan	No Human Resource Development planning	General Human Resource Development plan in strategic plan but no individual plans except for trainees	Individual plans based on needs of the team; so only indirectly link to the strategic plan	Series of strategies from the strategic plan: induction, New Apprenticeships, etc.
Induction process	Buddy-trained till assessed by manager as competent (1 day to 3 months depending on task)	Training is informal, on the job, supervised by leading hand	Buddy or trainer trained for 1 month probation;iIf perform then offered permanency	Buddy-trained against company standards, but no systematic assessment or recording	After about half day off-the-job, trained by supervisor with decreasing levels of close supervision	Informal training on-the-job as part of a team for 3 month probationary period	Previously: informal on-the-job training against enterprise standards
Training standards	Standards are codified as a skills matrix with each skill area at 3 levels (for duration of this research); relation to industry standards not known	There are no set standards	National standards 'customised chapter and verse to the needs of the company'; ongoing monitoring: do not assume once competence is achieved it is retained for ever	Company standards have been 'matched' to industry standards at Levels I, II and III footwear production; so assume have customised national standards	1998: Levels I and II of national standards (customised) for footwear production, basis for operator training	Previously enterprise standards; now customised industry standards through a matching process; Level IV are treated as trade level (not Level III as is traditional)	Previously: partially codified enterprise standards; now: customised industry standards through a matching process; full multiskilling for team work may take 18 months
Accredited courses	Two apprentices each year in Footwear Production	Nil	Certificates in FP II (operative), III (trainer); Technician: IV in Workplace Leadership	Introduced the Cert. II in FP for 15 operatives in 1998	Certificate II in FP modules but not always full course; currently 12 trainees	With permanency enrol as Trainee Level II (7 months); may progress to Certificate III, IV	Now: 4–5 months off-the-job training at Certificate II; may progress to Certificates II and III
Short courses	OHS (operative); Various (technician)	Leading hands (some) may be sent on short courses e.g. Train the Trainer	Subsumed as modules under the accredited courses	Internal courses for VAM team members, OHS (operatives) Technician: various	Short courses in Quality Awareness, Safety (operative)		WELL course (operatives); Supervisor/technician: various
Recruitment	Stable work history; basic literacy and English; Technician: trade or equivalent qualification	Develop proficiency during probation, basic English and numeracy (operative); Technician: across factory experience	Technical competence and good work history (experienced) or good school record, communicator (inexperienced)	Experience in process work, Year 12 (preferred) (operative); Technician: technical, interpersonal skills	Year 10, hand-eye co-ordination, positive attitude (operative); Technician: trade qualification, interpersonal skills	Basic literacy, numeracy and English; interpersonal skills (team members) (technicians not treated separately)	Basic literacy, numeracy and English, 'aptitude' (operative); Technician: qualified trade

Table A8: Ways that current job was learnt: questionnaire responses

	Anodyne	Bliss	Caress	Dream	Ecstasy	Felicity	Glamour
Having the work explained by another person	75%	67%	77%	69%	97%	79%	81%
Being shown by another person	97%	85%	95%	90%	92%	82%	75%
Reading manuals or watching videos	12%	7%	23%	8%	33%	20%	13%
Courses have undertaken	18%	6%	17%	12%	18%	9%	6%
Classes run by the firm	15%	5%	14%	8%	13%	10%	6%
Classes outside the firm	9%	5%	10%	15%	8%	2%	0%
Via a computer (packages, distance learning, internet etc.)	6%	1%	2%	4%	8%	0%	0%
Seminars and conferences	9%	1%	2%	23%	0%	9%	0%

Table A9: Wire products manufacture: combined quantitative data

		Adept	Brilliant	Crackajack	Dazzle	Elan
1995–96	Kilograms of metal processed per hour of labour	NA	6.83	NA	5.69	3.90
	$ value added per hour of labour	NA	42.4	NA	8.01	32.4
	Percentage waste	NA	1.5	NA	NA	3.5
	Training $ total per capita	NA	1210	NA	146	192
	Training $ per capita non-management	NA	809	NA	94.5	185
1996–97	Kilograms of metal processed per hour of labour	NA	653	NA	5.63	3.94
	$ value added per hour of labour	NA	36.2	NA	8.48	27.8
	Percentage waste	5	1.5	NA	NA	3.5
	Training $ total per capita	260	348	NA	206	228
	Training $ per capita non-management	0	263	NA	133	221
1997–98	Kilograms of metal processed per hour of labour	20.7	656	4.13	5.50	3.19
	$ value added per hour of labour	65.6	40.7	36.2	7.33	25.8
	Percentage waste	5	1.5	1	NA	3.5
	Training $ total per capita	41.5	865	446	286	277
	Training $ per capita non-management	41.5	311	456	167	270
First half 1998–99	Kilograms of metal processed per hour of labour	15.8	6.91	5.17	5.41	3.23
	$ value added per hour of labour	50.1	42.6	43.1	5.04	26.5
	Percentage waste	5	1.5	1	NA	3.5
	Training $ total per capita	30.6	389	261	351	298
	Training $ per capita non-management	30.6	357	289	220	291
1995–99	Mean kilograms processed per hour of labour*	18.2	6.70	4.64	5.56	3.57
	Mean $ value added per hour of labour*	57.9	40.5	39.7	7.22	28.1
	Mean percentage waste*	5	1.5	1	NA	3.5
	Mean annual training $ per capita**	121	800	484	335	174
	Mean annual training $ per capita non-management**	34.2	474	517	240	315

*Half year figures for 1998–99 treated as applying for full year. **Half year figure for 1998–99 has been doubled.

Table A10: Wire products: major enterprise characteristics

Characteristic	Adept	Brilliant	Crackajack	Dazzle	Elan
Company type	Private	Private	Private	Public	Public
Product covered by study	Springs	Springs and wire spring shapes	Springs and wire forms	Wire mesh	Springs, tile clips
Main market	Other manufacturers and assemblers	Other manufacturers and assemblers	Automotive, whitegoods manufacturers	Other manufacturers and distributors	Other manufacturers, assemblers and building industry
Size	20–50	20–50 (but now <20)	50–100	100–200	100–200
Mode of operation	Mix of small production line, mass production and single person manufacture for specialist job lots	Small job lots	Core and job lots; Cellular; persons singly or in teams (teams preferred but had clashes)	Essentially cellular, non-team-based, with mainly repeat job lots	'Lean manufacture'—persons operate mainly singly; aim is high tech, high value adding
Claimed competitive edge	Skilled staff in specialist areas, ability to build and innovate; service to customers; quality and delivery	Low overheads; quick response time	Consistent standards of quality and service	A brand that has become synonymous with quality and reliability	People with the skills to utilise the newer high tech machines
Key objectives	Profitable return on business; satisfied and competent staff	Maintain a comfortable lifestyle for the owners; pass on the company to the next generation by year 2008	Profit; meeting customer requirements; continuous improvement in quality system and manufacturing	To expand the range so as to be a 'one stop shop' including installation	'A well trained and loyal workforce by a mile'
Challenges	Management agreeing on measures for productivity, efficiency and coming to terms with preventative maintenance	To survive with increasing competition and reducing margins, i.e. to increase productivity	Recruitment and retention; OHS compliance; tariff reduction, internal communication	Supplying an innovative product on time (reduce setup times); cost of supplies; conflict between staff and labour	Shedding poor performers and retaining high performers; Workcover premiums as a site legacy
Planning	Five-year out-planning for products and processes/ equipment purchase	Two-year strategic/operation plan: products and equipment purchase with 10-year overview	Five-year strategic plan aiming for diversification, export and overseas strategic alliance	Three-year company strategic plan, 1-year operation factory plan; sales, profit, manufacturing	Three-year plan for production continuously reviewed in light of technology change

Table A11: Wire products: production characteristics

	Adept	Brilliant	Crackajack	Dazzle	Elan
Productivity strategy	Most over-award; no bonuses; rates: machine-based; reduce setup and changeover, skilled people, adaptable technology, 'never buy a machine if can make or adapt one'	Over-award; no bonuses; multi-skilling; overtime and possible second shift; carry large stock of materials to support responsiveness	Most over-award; no bonuses; rates: machine-based; 'Innovation is rate improvement'; continuous technological change to increase productivity	Over-award; no bonuses; rates set on basis of past production; casuals employed to meet peaks; establishing standard operating procedures with multi-skilling	Over-award, no bonuses; standard rates of machines; about half the work is low-skilled, providing flexibility in moving labour about the floor
Standards	ISO9001, QA9001: The company has long-standing customers, as evidence of quality	ISO9002: quality checks in production and post production	ISO9001, QS9000: motor firm accreditation: all springs tested as come off machine; benchmark against competitors for parts per million rejected	ISO9002: issue is short lead times, yet to achieve adequately. 'The customer expects quality these days and doesn't have to mention it'	ISO9002, QS9000: motor firm accreditation; claim to be 'pretty well in the top percentile' in terms of quality
Production Machinery	Machines: NC wire cutter; many old, some PLC adapted	Two CNC machines: complex springs, 8-year-old PLC adapted	Mix of leading edge and adapted older machines	Mix of very old and state of the art e.g. robots	Mix of very old machines and some new NC machines
Repair and maintenance	Maintenance unit: developing a preventative system but to date has been breakdown driven; problem as mostly ones in constant use; operators daily lubricate but no repair	Monthly preventative maintenance program; operators daily clean, lubricate and adjust; breakdown, if operator or manager cannot repair, then send out for maintenance	Preventative maintenance schedule; operators: weekly, monthly scheduled servicing of machines including basic repairs	Operators clean and lubricate but not yet to a satisfactory standard; also attempt repair; engineering provides major repairs	Preventative maintenance schedule for the newer machines; also service breakdowns; operators: routine (generally daily) cleaning and lubrication
Innovation and improvement	Product: some in collaboration with customer; Process: priority is developing new and better ways to make customers' required products	Product: CAD based product design; Process: gradual upgrade seen as essential to survival	Product: issue is working out how to meet customer specification; Process: key issue—adapting technology to increase profitability	Product: not much in ten years, but recently two new products; Process: adoption of new technologies for increased productivity, but manual machines still more flexible	Product: work with customer design team; Process: based on feasibility studies for new product; NC: complex springs, not flexibility nor necessarily, speed

Table A12: Employment breakdown: questionnaire responses

Firm	Overall response rate	General characteristics			Years with current firm, per cent					Years in current job, per cent				
		Male: Female	*Peak age bracket*	*Percent NESB**	< 1	1 to 2	2 to 4	5 to 10	> 10	< 1	1 to 2	2 to 4	5 to 10	> 10
Adept	28%	93:7	30–39	14	7	7	36	43	7	15	8	37	31	7
Brilliant**	NIL													
Crackajack	73%	66:34	30–39	53	10	7	25	23	35	10	10	32	24	24
Dazzle	15%	75:25	20–29	15	12	19	38	19	12	31	25	19	12	12
Elan	59%	75:25	40–49	72	8	8	22	22	41	10	10	23	20	36

*Non English speaking background
**Brilliant declined to participate in the questionnaire component of the study

Table A13: Post-secondary studies: questionnaire responses

Firm	Percentage who are floor level personnel	Have undertaken a course for a nationally recognised qualification (in part or in whole), per cent		Have not undertaken a course for a nationally recognised qualification in part or in whole)*, per cent
		Directly related to current job	*Not directly related to current job*	
Adept	70	50	0	50
Crackajack	88	36	5	59
Dazzle	25	50	0	50
Elan	89	43	2	55

*Additional employees may have undertaken modules but did not consider they were undertaking a nationally recognised course

Table A14: Wire products: skills and training at non-management level

	Adept	Brilliant	Crackajack	Dazzle	Elan
Purposes of training	Enhancing organisational performance; motivating personnel; career development; safe work practices	To become more efficient	Equip personnel to meet or exceed standards of quality and service demanded by clients; ensure personnel know not to change processes without the agreement of their supervisor	For the company first but confers benefits on the individual in the labour market also; people at higher levels with skills 'to move us toward our vision'; recognise achievement through qualification; shop floor need highly skilled operators who can problem-solve, analyse	To raise the skill level; to multi-skill and allow multi- tasking
Planning	There is no plan as such; twice-yearly assessments against job specifications, plus personal career plans indicate training needs	There is no plan; skills program is considered to address the training need	To date no human resources planning	At company level human resources/ human resource management addressed at strategic level for management only; annual appraisals of individuals (non-management) look at accountability, goals and effectiveness and may lead to training recommendations	Projected manufacturing program analysed to establish skills profile for the floor
Induction process	Induction responsibility of supervisor; induction booklet, safety videos, manuals; usually commence as a casual through labour hire company; 'If does not perform quickly, does not return'; for 'permanents' training is part of work; assessment is informal	After a brief discussion goes to the floor; foreman responsible for training; then spends 3–4 months to achieve competence (foreman assessed) on each of five machine types (about 2 years in training)	Brief introduction, read safety booklet and sign off, then to the floor; team leader trains; if at basic level training is informal, but if high level e.g. computerised machine, training is structured; may take 12 months to be fully competent	Recruit to the floor as casuals through labour hire company; buddy trains and supervisor oversees and judges performance; if acquire 2 different skills in 3 months (may extend) then appointment may be offered; no recording of skills etc.	One day off the floor induction then assigned to a team leader for training; commence observing others; then develop skill with assistance of training manual

Table A14: Wire products: skills and training at non-management level (cont.)

	Adept	Brilliant	Crackajack	Dazzle	Elan
Training standards	National or enterprise standards are not a management tool, though having people with the relevant licences and qualifications is important; toolmaking, fitting and machining, forklift	No codified standards; rather, have checklists of tasks for each machine plus standards of performance as understood by foreman and managers	There are training manuals (in use mainly for apprentice tool makers), but there has been no use or knowledge of standards; records are kept of tasks and machines mastered; (Now each person on floor being classified against C14–C1 scale)	To date, standards have not been codified; a skills matrix is under development; individual levels C14 to C10 result of history, not skills assessment	Enterprise standards (no link to national metals standards) matrix, four levels for floor (trainee, competent with limited supervision, competent to work independently, competent to train others); national trainer and assessor standards recognised
Accredited courses	Funding support may be provided to do TAFE course, modules (e.g. pneumatics post-trade) as a result of the job assessment-based process (no time release); have indentured apprentices at various times	Not used	Preference has been to indenture and train tool makers; always have had three; but problems in attracting suitable young people while being able to bring in suitable older people means now moving to all on-the-job, informal training	Workplace English Language and Literacy (WELL) course; other training has been on-the-job, informal	Not used
Short courses	Various short courses are provided as needed e.g. time management	Foreman may take safety courses	Informal course in information sharing, taken by all	External short courses in safety, incident reporting, TQM, problem-solving	Various in-house, short courses and videos (e.g. product status identification, process control, manual handling
Recruitment	Trades and part-trade trained, and unskilled labour recruited to work at different levels	Year 10 is the level required	Consistent employment record; for apprenticeship, maths and English	No particular scholastic level required	For highly skilled work e.g. CNC training through TAFE diploma

Table A15: Secondary education background: questionnaire responses

Firm	Highest level of secondary education (or equivalent) completed, per cent				Highest level of secondary education (or equivalent) completed a mathematics, subject per cent				Highest level of secondary education (or equivalent) completed a science or technology subject, per cent			
	Year 9 or less	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*
Adept	7	43	0	50	21	36	7	36	8	38	0	46
Crackajack	20	29	10	41	25	33	10	32	25	35	5	35
Dazzle	6	6	13	75	6	6	25	63	6	25	31	38
Elan	26	24	12	38	29	26	10	35	33	24	12	31

Table A16: Ways that current job was learnt: questionnaire responses

	Adept	Crackajack	Dazzle	Elan
Having the work explained by another person	67%	78%	64%	68%
Being shown by another person	67%	78%	71%	68%
Reading manuals or watching videos	8%	27%	43%	18%
Courses have undertaken	33%	32%	50%	28%
Classes run by the firm	0%	8%	43%	6%
Classes outside the firm	8%	12%	29%	16%
Via a computer (packages, distance learning, internet etc.)	0%	5%	43%	7%
Seminars and conferences	0%	12%	14%	13%
Other—with explanation*	0%	0%	21%E 7%S	5%E

*Method given: E = self-taught through trial and error; S = technology sharing between companies

Table A17: Hotels: major enterprise characteristics

	Amiable	Benevolent	Congenial	Delightful	Eminent	Festive	Gallant	Heavenly
Star rating	4.5	5	5	4	5	5	5	5
Company type	Chain-based operation; building and contents separately owned	Chain-based, owned and managed	Public company owned and operated; fee to brand owner	Chain-based operation; building and contents separately owned	Chain-based operation; building and contents separately owned	Chain-based operation; building and contents separately owned	Chain-based operation; building and contents separately owned	Privately owned and operated
Main market	Corporate	Corporate, leisure	Air crew, corporate, tourism	Air crew, tourism, corporate, government	Corporate, leisure, tourism	Corporate, tourism, air crew	Corporate, air crew, leisure	Corporate, government, leisure, tourism
Size	100–200 employees; 100–200 rooms	200–300 employees; 200–300 rooms	400–500 employees; 300–400 rooms	200–400 employees; 400–500 rooms	500–600 employees; 300–400 rooms	400–500 employees; 500–600 rooms	500–600 employees; 300–400 rooms	200–300 employees; 100–200 rooms
Claimed competitive edge	Personnel	Hotel's physical attributes	Experienced, skilled and loyal personnel	Size provides flexibility; service standard	Market niche: friendly and willing personnel	Personnel 'down to earth'; location	Personnel: friendly, helpful; product quality	Personnel: skills, attitude; facilities
Key objectives	A gross operating profit at least to the agreed level; exceptional customer service	To deliver a return to the owner; to operate a five-star hotel in the city and to deliver an experience to match it	Customer loyalty through service, quality and value for money	Achieving financial objectives; consistent level of service that is seen as genuine and individual	To be the benchmark; to attract, develop and satisfy personnel; to be financially successful	Continuous improvement in guest, employee and employer satisfaction, owner relations, market share	Meeting provision for return on investment	To increase profitability through excellence in all layers of the hotel, increased guest return ratio (repeat stays)
Challenges	Responding to company policy changes; dealing with the 'millennium bug'; increasing competition	Delivering a consistent quality of service in line with what people expect	Personnel retention; motivated personnel	Maintaining income across the hotel; communication across cultural barriers in housekeeping	ROI; dealing with changes in eradicating the 'millennium bug'; increasing competition	Recruitment and retention of suitable people; getting best mix (guest groups and rates)	Costs of refurbishment; internal communication across the hotel	Personnel turnover and irregularity; payroll costs; increasing guest expectations; industry image of low skills, poor conditions
Planning	An annual business plan provides basis for all aspects of the business including human resources	Planning for the hotel is about five years out with emphasis on profitability; human resources at that level is only senior management; Rooms Division human resources annually to set budget	A five year strategic plan provides broad direction; annual operational plan is updated quarterly	Annual business plan in context of company 5-year strategic plan; addresses all areas of the business including human resources and human resource development	For the duration of the project no strategic planning was in place; only now being instituted	Annual business plan that is informed by an international intra-company personnel survey	A five-year rolling plan, with divisional plans developed each year that feed into the business plan	General direction provided by general manager; main planning at divisional level, governed by the budget and positioning of the hotel

Table A18: Four and five star hotels: quantitative data

		Amiable	Benevolent	Congenial	Delightful	Eminent	Festive	Gallant	Heavenly
1995–96	Housekeeping: rooms per hour of labour	hotel not open	NA	1.07	NA	NA	1.19	0.944	0.800
	Rooms Division: rooms per hour of labour		NA	0.690	0.540	NA	0.613	0.341	0.364
	$ takings rooms per hour Hk labour		NA	112.4	NA	NA	180	150	120
	$ takings rooms per hour RD labour		NA	78.7	58.6	NA	97.7	54.4	63.5
	Mean occupancy		NA	80.9%	66.9%	NA	72.4%	64.3%	64.5%
	Training $ total per capita		NA	370	543	NA	NA	323	NA
1996–97	Housekeeping: rooms per hour of labour	hotel not open	NA	1.20	NA	NA	1.23	0.977	0.734
	Rooms Division: rooms per hour of labour		NA	0.781	0.600	NA	0.610	0.283	0.348
	$ takings rooms per hour Hk labour		NA	145	NA	NA	207	145	126
	$ takings rooms per hour RD labour		NA	101.3	68.7	NA	108	42.1	69.2
	Mean occupancy		80.8%	85.7%	78.3%	NA	70.1%	69.6%	66.3%
	Training $ total per capita		78.7	318	560	NA	209	160	319
1997–98	Housekeeping: rooms per hour of labour	1.18	1.12	1.17	NA	NA	1.17	1.01	0.743
	Rooms Division: rooms per hour of labour	0.595	0.459	0.778	0.587	0.446	0.596	0.414	0.348
	$ takings rooms per hour Hk labour	125.2	143.7	163	NA	NA	200	148	125
	$ takings rooms per hour RD labour	70.60	83.3	114.0	71.1	84.23	104.6	60.5	66.3
	Mean occupancy	60.2%	76.9%	80.2%	84.2%	76.3%	61.6%	76.1%	65.5%
	Training $ total per capita	656	69.7	439	626	80.1	383	167	137
First half 1998–99	Housekeeping: rooms per hour of labour	1.06	1.30	1.13	NA	NA	1.55	NA	0.713
	Rooms Division: rooms per hour of labour	0.666	0.513	0.744	0.580	0.463	0.771	NA	0.317
	$ takings rooms per hour Hk labour	86.77	163.9	157	NA	NA	242	NA	116
	$ takings rooms per hour RD labour	57.82	91.90	110.0	68.6	82.9	127	NA	59.8
	Mean occupancy	74.2%	75.3%	81.9%	83.2%	82.1%	79.1%	NA	59.8%
	Training $ total per capita	351	30.36	310	333	67.7	318	NA	127
1995–1999	Mean rooms per hour Hk labour	1.12	1.21	1.14	NA	NA	1.28	0.977	0.748
	Mean rooms per hour RD labour	0.631	0.526	0.748	0.577	0.454	0.647	0.346	0.344
	Mean $ takings per hour Rooms Div labour	64.2	87.6	101	66.6	83.6	109	52.3	122
	Mean occupancy	67.2%	77.6%	82.2%	78.2%	79.2%	70.9%	69.6%	65.1%
	Mean rooms per hour FO labour	1.45	0.930	2.17	NA	NA	1.31	0.534	0.634
	Mean annual training $ per capita	676	69.7	437	599	108	409	217	236

Rooms Division for this purpose is taken as Housekeeping plus Front Office. Housekeeping but not Rooms Division figures are adjusted to reflect additional demands of suites etc.
Hk = Housekeeping RD = Rooms Division FO = Front Office

Table A19: Hotels: service characteristics

	Amiable	Benevolent	Congenial	Delightful	Eminent	Festive	Gallant	Heavenly
Productivity strategy	Having a core of air crew; low rate but committed plus the balance in the corporate market	Move from an 'Asian' autocratic management system to a more self-driven workforce; retraining of managers under way to this end	Flexibility in 'zip-kings', connecting rooms; but moving from casual personnel as greater loyalty: 'motivated people' the key strategy	High proportion of casual room attendants delivers flexibility; all aspects of the hotel reviewed for streamlining with standards maintenance	Guest recognition program; balancing costs and benefits from increasing service; client mix; permanent/casual mix	Flexible roster arrangements for full-time room attendants; want to have more multi-skilled personnel in the longer term	Computer-based system for optimising mix; also up-selling; part-time room attendants provide flexibility	Flexibility through high level of permanent part-time; The hotel's old-style luxury cannot be replicated
Standards	The chain specifies standards that must be met; the hotel is clean if somewhat austere; surroundings pleasant	Guests opinions are sought; records of guest requests are maintained; decor pleasant but showing signs of wear; management considers that hotel is not delivering a consistent 5-star service	Elegantly if fairly plainly furnished, and high quality service consistent with the brand; cleaning of high standard	Furnishings and fittings of high standard for 4-star hotel, if a few soft furnishings a bit worn; very friendly personnel	Hotel receives highest guest approval and occupancy ratings locally; decor comfortable and attractive	The hotel is less opulent than would expect of a 5-star hotel; friendliness of personnel is aimed at balancing this	Rooms opulent, surroundings very attractive; public areas not as clean as would expect; individualised, luxury service	Rooms opulent; surroundings very attractive; service intense and unobtrusive, rather than friendly
Repair and maintenance	Room attendants responsible for notifying faults; Maintenance staff of three, on duty 24 hours a day	Room attendants responsible for notifying faults; all housekeepers and porters trained to fix minor faults; maintenance staff of seven on duty 18 hours per day	Supervisors and checkers prime responsibility for notifying faults; maintenance staff of 15; preventative maintenance, with monthly, quarterly and annual servicing	Has been reactive rather than preventative; calls made through rooms co-ordinator	Room attendants check and report faults; immediate repair; also a preventative maintenance schedule; maintenance dept. 16 persons	Room attendants responsible for notifying faults; also a preventative maintenance schedule; engineering 15 persons	Room attendants responsible for notifying faults; 12-month schedule of preventative maintenance, 24-hour servicing	Engineering staff of five; maintenance has been reactive rather than preventative; this is changing
Innovation and improvement	The hotel is leading edge in technology; computer-based management system, computer-based engineering	Computer-based management system due for installation; engineering computer-based; email, internet for staff and guests	Computer based management system, engineering manual system; new trolleys designed and introduced	Email, internet for staff and guests; management software in place for some years; engineering a manual system	Email, internet for staff and guests; new management software being installed	Computer based management system; engineering is manual; possible innovations evaluated; latest 1-number dial	Innovation is company policy; latest is integrated management and communications system; engineering due for upgrade	Computerised payroll and records system; innovation seen as inconsistent with conservative image; some e.g. guest voice mail

Table A20: Employment breakdown: questionnaire responses

Firm	Overall response rate	General characteristics			Years with current firm, per cent					Years in current job, per cent				
		Male: Female	*Peak age bracket*	*Per cent NESB**	< 1	1 to 2	2 to 4	5 to 10	> 10	< 1	1 to 2	2 to 4	5 to 10	> 10
Amiable	25%	43:57	20–29	40	55	45	#	#	#	70	30	#	#	#
Benevolent	15%	47:53	20–29	13	37	3	47	13	0	60	7	30	3	0
Congenial	32%	37:63	20–29	37	18	11	42	13	16	39	8	32	8	13
Delightful	15%	43:57	20–29	40	35	11	38	13	3	48	22	22	8	0
Eminent	NIL**													
Festive	58%	52:48	20–29	45	36	8	21	29	6	44	10	17	25	4
Gallant	18%	17:83	20–29	17	0	17	26	22	35	17	22	22	22	17
Heavenly	15%	33:67	20–29	13	31	14	34	14	7	34	21	31	14	0

*Non English-speaking-background **Did not participate in the questionnaire component of the study # Hotel not open

Table A21: Secondary education background: questionnaire responses

Firm	Highest level of secondary education (or equivalent) completed, per cent				Highest level of secondary education (or equivalent) completed a mathematics, subject per cent				Highest level of secondary education (or equivalent) completed a science or technology subject, per cent			
	Year 9 or less	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*
Amiable	30	0	10	50	5	21	16	58	55	45	0	0
Benevolent	7	10	20	63	14	17	21	48	37	13	47	3
Congenial	11	11	26	52	11	17	22	50	34	13	42	11
Delightful	8	6	8	78	17	8	3	72	38	13	38	11
Festive	10	17	12	61	10	17	15	58	42	29	21	8
Gallant	9	30	26	35	22	30	13	35	35	22	26	17
Heavenly	10	17	13	60	27	20	10	43	38	14	34	14

Table A22: Post-secondary studies: questionnaire responses

Firm	Percentage who are floor level personnel for accommodation	Have undertaken a course for a nationally recognised qualification (in part or in whole), per cent		Have not undertaken a course for a nationally recognised qualification (in part or in whole)*, per cent
		Directly related to current job	*Not directly related to current job*	
Amiable	73	50	0	50
Benevolent	47	63	0	37
Congenial	71	45	3	52
Delightful	56	59	0	41
Festive	88	48	6	47
Gallant	91	43	0	57
Heavenly	80	57	7	33

*Additional employees may have undertaken modules but did not consider they were undertaking a nationally recognised course

Table A23: Ways that current job was learnt: questionnaire responses

	Amiable	Benevolent	Congenial	Delightful	Festive	Gallant	Heavenly
Having the work explained by another person	80%	80%	89%	94%	79%	78%	71%
Being shown by another person	90%	80%	89%	92%	83%	91%	89%
Reading manuals or watching videos	20%	17%	22%	39%	40%	26%	39%
Courses have undertaken	35%	37%	38%	58%	44%	26%	32%
Classes run by the firm	20%	10%	27%	36%	21%	22%	25%
Classes outside the firm	10%	20%	16%	33%	10%	4%	18%
Via a computer (packages, distance learning, internet etc.)	20%	13%	3%	14%	23%	4%	29%
Seminars and conferences	20%	20%	8%	28%	15%	9%	14%
Other—with explanation	5%E	3%E	5%E		2%E		

E = self-taught through trial and error

Table A24: Hotels: skills and training at non-management level

	Amiable	Benevolent	Congenial	Delightful	Eminent	Festive	Gallant	Heavenly
Purposes of training	To be able to deliver a quality service competitively; to motivate personnel	'Training is a tool to achieve objectives defined in your overall goals; that is what you are doing and how you achieve it; if you are pulling training off the shelf you won't achieve it; have to move on'	'Training gives the background information to have the confidence to interact with the client to make a sale; the information for them to make the decision on behalf of management'	So that the hotel has a group of people able to give the customer what they want; they can anticipate what it is and work together to provide it; it includes hygiene, quality, skills, personality	To decrease employee turnover through improved job satisfaction and career development with sense of employer commitment; to develop skills, to increase morale and self-confidence	To help give people the skills to do their jobs; develop the company culture; help personnel achieve their own goals e.g. English language	Achievement of standards and 'way of creating standards in the property', development and updating; reduction of WorkCover costs; improving ROI, identification with organisation	To deliver basic skills, standards of quality and attitude; to raise staff standards; to raise the delivery of service so that it is of a consistently high standard
HR planning	The business plan includes a human resources plan 'that places HR well and truly within the organisation'; skills audits and job mapping used in developing targeting training program; KPIs to measure training impact on productivity; annual competency appraisals link to individual profiles	Individual training plans as part on appraisal system; but have not necessarily linked to overall strategy; hotel has suffered from lack of customer-focused culture	Historically, has concentrated on the immediate issues (currently OHS, food handling) rather than being driven by long-term planning; seen as needing to change; annual appraisals (3 months for recruits) identify training needs; each department submits list of priorities to human resource development	A human resource development plan developed annually based on the business plan and human resources plan; the HRD plan links to individual plans arising from the personnel review process that provides feedback, goal setting, training needs analysis and career planning	In 1998 a human resource develoment plan was developed in absence of a strategic plan; now moving to a linked planning process	The performance appraisal system provides the basis for development of individual plans through negotiation	Human resource development plans for managers are developed as subset of business plan employing training needs analysis; at unit level TNA leads to unit development plan; what complaints have been received, what problems are being experienced, what is urgent?	An annual human resource development plan prepared on basis of best practice and training needs analysis that draws on employee satisfaction survey and interviews, guest feedback; individual plans through performance appraisal gives specific training commitments
Induction of room attendants	Three hour, off-the-job introduction, then work under guidance of mentor and do 6-hour customer service short course	Two days off the job induction, 5 core modules in customer care (not assessed); buddied for 10 days or as needed, with increasing tasks; assessed by buddy and supervisor; recorded	One day off the job induction; trainer-buddy for 5 days then to supervisor; about 3–4 weeks to reach target	One day off the job then a graded program on the job with a trainer; takes a week to a week and a half to get to 12–14 rooms	Ten days on the job induction under the direction of the assigned training; then work 'not far from their trainer' until proficient	Recruit assigned to a buddy or trainer; After the work being explained, work under close supervision; number of rooms gradually increased over about two weeks	A 'brief' introduction then buddied; may take weeks or months to reach full load; standards not to be compromised; supervisor checks and counsels	Three hour orientation; trainer inducts against checklist of tasks and standard operating procedures; reaches load after a week or two

Table A24: Hotels: skills and training at non-management level (cont.)

	Amiable	Benevolent	Congenial	Delightful	Eminent	Festive	Gallant	Heavenly
Training standards	National training package now customised; some competencies were judged irrelevant and others missing; the hotel's package is accredited; there remain aspects of the work that cannot be codified e.g. 'clean'	Room attendants have a training manual listing duties and tasks but not 'standards'; all personnel have a competency (not nationally recognised) checklist against which they are assessed within 4 weeks of commencement as part of the appraisal process	The hotel considers that its standards in its training manuals are equivalent to but of a higher standard than national ones; the Certificate II and III in Hospitality (F&B) that it is jointly providing with a TAFE registered training organisation employs the national standards	The hotel has used the national standards interpreted in the context of the hotel, for about 8 years; covers all phases of the hotel F&B, housekeeping, front office and kitchen; had RTO status but now prefers to use TAFE	Certificates I and II in Hospitality use the national standards customised to the hotel (F&B, front office and housekeeping); Certificate III in Cookery (apprenticeship) also	Certificate II in Hospitality commenced in 1999 as a traineeship; until then a standards approach had not been in place; in future, all induction training will be equivalent to the traineeship in the nature of the training (though not nationally recognised as a certificate)	Work standards are not codified and training depends on demonstration, explanation and criticism; front office standards are now being codified; some short courses are codified as mix of process and outcomes; national standards have not been used	Hotel considers that its performance standards attached to standard operating procedures are of a higher standard than national standards; all recruits train to and are assessed against these
Accredited courses	Certificates I and II in Hospitality (traineeship) and Certificates III and IV in Supervision; Cert. in Hospitality taken elsewhere is recognised following successful reassessment within the hotel; otherwise, retrain	Front office personnel have mostly completed a Certificate II in Hospitality or Diploma of Hospitality Management; hotel provides practical placement for VET providers and universities	See above; WELL course is delivered in the hotel also by the RTO	Provide the Certificates II and III in Hospitality, IV in Hosp; Management and a post-graduate Diploma; Cert. in Hospitality taken elsewhere is recognised following successful reassessment within the hotel; otherwise, retrain	See above; also Train the Trainer	See above; Certificate in Management Studies is undertaken with an Australian university	Managers have undertaken external courses e.g. MBAs and graduate certificates	Train the Trainer, WELL and recognised industry short courses e.g. Australian Hotels courses are undertaken by personnel
Short courses	Hotel conducts various informal short courses	Hotel conducts various informal short courses; may send people out for accredited courses e.g. Train the Trainer	Hotel conducts various informal short courses; a recruitment licensing course must now be completed before a staff member selects personnel	Hotel conducts various informal short courses	Hotel conducts various short courses, most of which are formal (specified outcomes, assessed and recorded)	Hotel conducts various short courses, most of which are formal (specified outcomes, assessed and recorded), e.g. Train the Trainer, Supervision	Hotel conducts various short courses, most of which are formal (specified outcomes, assessed and recorded) e.g. Train the Trainer	Hotel conducts various short courses, that have objectives and are informally assessed, but not recorded

Table A25: Supermarkets: major enterprise characteristics

	Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
Floor size and range size	Medium area Range: average	Medium area Range: average	Medium area Range: large	Medium area Range: average	Medium area Range: average	Medium area Range: average	Large area Range: large	Medium area Range: average
Most recent refurbishment	1990 (area doubled)	1996	NA	NA	1998–99	1995	1998	1995–96, next about to start
Main market	Young, middle class families	Middle class, affluent families	Families, mixed socio-economic	Middle class, affluent families	Middle class, affluent, elderly	Families, mixed socio-economic	Families and elderly, mixed socio -economic	Middle class, affluent families
Chain, location	1 Victoria	1 Victoria	1 Tasmania	1 Tasmania	2 Victoria	2 Victoria	2 NSW	2 South Australia
Claimed competitive edge	Location being visible and free-standing; car park size: very large; range: size and diversity	Ease of access, and quality of presentation of fresh food relative to competitors	Customer service 'we are known to provide more service to an individual customer than our competitors do'; size of range	Arcade that offers complementary services; store standards; location: between two main traffic thoroughfares	Location: centrally placed in a wealthy area with demanding customers	Customer service: main competitor has merchandise split between three stores; trading hours, 24 hours	The range of products carried; new concepts in retailing that have (recently) been introduced	The store is technologically advanced, and clean and tidy; 'The chain provides value for money'
Key objectives	Sales and profit; to generate employment for local people, to train people to go into other stores (being large allows training to be more efficient)	Customer service through always having in stock all items held; delivering service in a customer supportive way; good hygiene and presentation; being organised and systematic	To give the best service possible; to make the customer's shopping experience enjoyable; 'Got to be done through staff having career objectives and given achievable goals'	Profit through sales; staff retention; customer retention	To accept national and State missions/visions; to be innovative industry leaders who provide customers with value, convenience and superior service; to be the (local) dominant retailer	'To be able to offer the customer what they want; to offer a clean and safe shopping environment'	'To range up the store to give range to customers;' to improve quality of service to customers	'Servicing the customer has got to be number one'; achieving a safe place to work; 'Through the above achieving sales and profit and meeting our KPIs'
Challenges	Taking people off-line to train with pressures to increase profit and reduce labour hours	Cleanliness and presentation, given the age of the store; keeping stocks full '60% short aisles and shallow shelves and 40% skill of people'; ordering/ management of labour time	Sales growth: decline in the region as a retail centre; middle managers who are good operationally but who are yet to adjust to using data as a management tool	Attracting and retaining customers from competitors	Renovations make work difficult; dealing with complaints: have now reduced incidence to about one a month (through improved management)	'To utilise time best to manage our people'; budget that limits time that can be spent on training; maintaining a high morale; ensuring people work efficiently	To manage the store to ensure regulatory compliance in OHS; maintaining store presentation round the clock; 'The ongoing one of motivation and morale'	Impact of the current refurbishment on personnel and customers; training: finding time, changing entrenched attitudes and people skills in older workers

Table A26: Supermarket item check list

Item	Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
Pantene hair conditioner 200ml	4.28 (0, 0)	4.28 (0, 0)	4.77 (0, -2.3)	4.77 (8.8, 0)	4.28 (-15.0)	4.28 (0)	4.39 (0, 0)	4.07 (0, 0)
Golden Canola margarine 1kg	3.85 (6.0, 0)	3.85 (5.9, 5.9)	4.03 (5.0, -3.2)	4.03 (0, 0)	3.63 (NA)	3.69 (1.9)	3.74 (NA, NA)	3.65 (NA, 0)
Whiskas Lamb & Kidney cat food 400g	NA (A, A)	1.02 (NA, 0)	1.18 (0, NA)	1.18 (0, NA)	1.02 (-10.8)	1.02 (0)	1.05 (NA, NA)	0.98 (1.0, NA)
Omomatic laundry powder 1.5kg	7.18 (0, 0)	7.18 (0, 0)	7.50 (0, -12.8)	7.50 (0, 0)	7.16 (-8.8)	7.18 (0)	7.05 (-2.0, -2.0)	7.19 (3, 0)
McCann Pizza Perfection 670g	6.19 (0, 0)	6.19 (0, 0)	6.89 (-1.4, 1.1)	6.89 (-1.3, 0)	6.19 (NA)	6.19 (0)	6.27 (0, 0)	6.29 (-0.6, 0)
Sara Lee Blueberry Danish 400g	2.97 (0, 0)	2.97 (0, -4.0)	3.29 (0, NA)	3.29 (0, 0)	3.19 (-18.8)	2.97 (NA)	2.92 (-1.2,+1.0)	3.11 (-1.8, 0)
Arnott's Teddy Bear biscuits 250g	1.69 (1, 0)	1.69 (NA, NA)	1.90 ((NA, -2.6)	1.90 (NA, 0)	1.68 (-6.8)	1.69 (0)	1.62 (NA, NA)	1.75 (-0.6, 0)
Cottees Sweet Orange marmalade 500g	2.57 (0, 0)	2.66 (NA, NA)	2.89 (0, NA)	2.89 (0, 0)	2.57 (-15.6)	2.73 (NA)	2.41 (0, -9.3)	NA (NA, NA)
Campbells Classic Minestrone (conc) 400g	1.99 (NA, 0)	1.99 (0, NA)	2.19 (0, 0.91)	2.19 (NA, 0)	1.99 (-9.5)	1.99 (NA)	1.99 (NA, NA)	1.99 (1.0, 0)
Heinz Tomato Ketchup 600ml	2.23 (0, 0)	2.23 (-5.4, 0)	2.67 (0,0)	2.67 (0, 0)	2.23 (-17.9)	2.23 (0)	2.34 (0, NA)	2.32 (0, 0)
Distance to competitor	Two stores 4km	Two stores 1.8km	Two stores 2km	Two stores 4km	One store 1.4km	One store 0.2km	Two stores 2.5km	Two stores 3km

Prices are in dollars and non-special, as listed by the store. Figures in parenthesis are [(price at supermarket—price at competitor) ÷ price at supermarket × 100].
NA = Not available (out of stock or not carried). Items were selected on the basis that they give a spread of purchase type, are branded so as to allow comparability and are popular lines but with few if any equivalents.

Table A27: Supermarkets: combined quantitative data

		Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
1995–96	Number of items sold per hour of labour	NA	NA	63.6	64.3	NA	NA	NA	106.8
	Value of sales per labour hour	NA	NA	155.7	149.8	NA	NA	NA	NA
	Training $ per operative	NA	88.7	3.06	3.47	22.4	22.7	22.7	22.2
1996–97	Number of items sold per hour of labour	67.8	73.1	63.4	63.5	NA	NA	NA	107.2
	Value of sales per labour hour	162.8	175.3	153.9	149.5	NA	NA	NA	250.9
	Training $ per operative	NA	34.1	4.70	5.18	40.4	42.4	43.0	41.3
1997–98	Number of items sold per hour of labour	74.3	71.1	66.6	65.2	85.5	78.1	91.7	89.0
	Value of sales per labour hour	183.6	181.3	157.0	156.0	199.2	182.7	217.3	251.0
	Training $ per operative	NA	103.7	9.75	10.30	34.2	34.9	34.7	33.7
1998–99	Number of items sold per hour of labour	75.4	74.0	66.3	65.3	72.1	79.5	119.5	97.0
	Value of sales per labour hour	196.9	194.0	157.0	153.7	179.5	195.0	285.6	237.7
	Training $ per operative	NA	53.6	6.47	8.72	23.2	23.5	23.2	22.6
1997–99	Mean number sold	74.8	72.6	66.5	65.3	78.8	78.8	105.6	93.0
	Mean Value Added	190.2	187.6	157.0	154.8	189.4	188.8	251.4	244.3
	Total training operative $	NA	210.9	22.69	27.74	80.60	81.90	81.10	78.90

Table A28: Employment breakdown: questionnaire responses

Firm	Overall response rate	General characteristics			Years with current firm, per cent					Years in current job, per cent				
		Male: Female	*Peak age bracket*	*Percent NESB**	*< 1*	*1 to 2*	*2 to 4*	*5 to 10*	*> 10*	*< 1*	*1 to 2*	*2 to 4*	*5 to 10*	*> 10*
Avocado	32%	39:61	20–29	4	12	15	33	19	21	23	21	29	15	12
Broccoli	66%	35:65	20–29	4	7	7	36	26	24	18	9	42	15	16
Cumquat	45%	40:60	< 20	3	22	12	32	19	15	32	12	33	17	6
Damson	49%	24:76	< 20	3	18	8	24	26	24	22	11	28	25	14
Elderberry	44%	44:56	20–29	19	23	9	43	14	11	28	17	40	9	6
Fennel	7%	14:86	20–29	0	14	14	29	14	29	14	14	29	14	29
Gourd	36%	37:63	< 20	1	37	14	27	4	8	51	17	20	4	4
Hazelnut	14%	15:85	20–29	0	23	8	27	19	23	23	16	19	23	19

*Non English speaking background.

Table A29: Secondary education background: questionnaire responses

Firm	Highest level of secondary education (or equivalent) completed, percent				Highest level of secondary education (or equivalent) completed a mathematics, subject per cent				Highest level of secondary education (or equivalent) completed a science or technology subject, per cent			
	Year 9 or less	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*	*Year 9 or less*	*Year 10*	*Year 11*	*Year 12*
Avocado	8	15	22	55	8	15	32	45	11	29	27	33
Broccoli	6	11	21	62	13	13	31	43	13	30	22	35
Cumquat	9	42	16	33	11	43	30	16	15	61	12	12
Damson	11	51	17	21	15	56	14	15	16	66	11	7
Elderberry	17	14	14	55	14	17	23	46	12	34	17	37
Fennel	0	43	14	43	0	43	43	14	0	42	29	29
Gourd	11	31	17	41	12	29	14	42	15	48	13	24
Hazelnut	0	4	35	61	4	11	35	50	8	11	50	31

Table A30: Post-secondary studies: questionnaire responses

	Percentage who are non-management personnel	Have undertaken a course for a nationally recognised qualification (in part or in whole), per cent					Have not undertaken a course for a nationally recognised qualification (in part or in whole)*, per cent
		Total	*Bachelor or higher*	*Certificate or Diploma in Retail*	*Other—directly related to current job*	*Not directly related to current job*	
Avocado	82	39	19	4	12	4	61
Broccoli	85	53	31	2	18	2	47
Cumquat	89	29	3	20	6	0	71
Damson	90	33	4	18	8	3	67
Elderberry	91	43	11	23	3	6	57
Fennel	100	57	14	14	29	0	43
Gourd	84	44	18	6	17	3	56
Hazelnut	83	27	4	4	15	4	73

*Additional employees may have undertaken modules but did not consider they were undertaking a nationally recognised course

Table A31: Supermarkets: skills and training

	Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
Purposes of training	'To have the knowledge and confidence to do the job; to ensure consistent offer; to instil a feeling that they matter to the employer through a tangible demonstration, not just words'	'To enable personnel to achieve store/company objectives; to develop the individual person for the company's longer term benefit and their benefit'	'In making a major and obvious difference [in personnel behaviour], especially in promoting the quality end of the market'	Self-satisfaction; job knowledge; meeting customer expectations; increasing returns through skilled and committed personnel	That personnel are multi-skilled so as to be able to perform effectively in as wide a range of tasks as practicable	Introducing change: 'Formal training is necessary to create change'; maintaining focus; informal training is necessary to maintain the proper standards'	Getting better people 'coming through'; skills and knowledge for delivery of high quality service found it motivates people to compete to exceed others' performance	'To have a standard against which staff can be taught the job'; so people reach their potential
HR planning at service assistant level	Development is at the level of the individual and depends on whether shows application and commitment to a career in retail; traineeship is now viewed as the basic plan (no one in store has been enrolled to date)	As for Avocado, including no retail trainees to date	Over study period, development has been at the individual level based on career goals and annual assessments; traineeship has been in place for the duration of the study, though none currently undertaking it	As for Cumquat; currently all service assistants are recruited as casuals; traineeship becomes available only if made permanent	Not as such; 'Motivated people are encouraged to progress'	There has been no planning for human resource development; process seems to have been very ad hoc; see view of on floor personnel (below)	Not as such	Not as such for most personnel; trainees have structured training plans
Induction of service assistants (those on register or in deli undergo additional initial training, typically 2 to 4 weeks off to on the job on register or additional one to two day off the job training for deli)	Over time of the study a 4-hour off-the-job induction program, health and hygiene etc., then on the job with assessment at end of weeks 1,3 and 6; recorded; new employees shall be able to enrol as trainees in the Level II Certificate	As for Avocado	As for Avocado but with assessments in weeks 4, 8 and 12, plus possible initial day at the company's retail college	As for Cumquat	Informal; since 1997, recruits may have been selected to enrol as trainees in the Certificate in Retail Operations; (most are assigned from Head Office;) work performance is appraised every twelve months	As for Elderberry but retail trainees commenced at the store in 1995; as far as was known, the store has not however had its own service assistants in the program; all induction has been informal, on the job and in view of some employees not well done	Off-the-job day 1 for 9.5 hours, then on-the-job under department manager; retail trainees at store since 1998; store is now a major participant in the Retail Certificate	Off-the-job for 9 hours, then on-the-job under department manager; on-the-job modules to be completed within three months with submission of work book for assessment; Retail Certificate introduced in 1996

Table A31: Supermarkets: skills and training (cont.)

	Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
Training standards (Trades: butchery, bakery standards have applied across all stores)	One person; fork-lift licence; while no-one has undertaken the retail traineeship, four people have been deemed as competent at Level II and may proceed to Level III; competencies are customised national standards; induction program has had defined outcomes, informal assessment and recording, though not as competencies; prior to 1997 it seems almost no training took place	Three department managers now undertaking the Certificate in Retail Level III; competencies are customised national standards; but competencies have not been part of training for the period of the study	State standards Levels I–VI have been in place but now being replaced by national standards for the company supermarkets; are somewhat broader; while the State has had a CBT system for the duration of the project, it seems that the store has not been a major participant in it	State standards Levels I–VI have been in place but now being replaced by national standards for the company supermarkets; are somewhat broader; while the State has had a CBT system for the duration of the project it seems that the store has not been a major participant in it	Retail traineeship, competency-based, commenced in 1997; have had about 18 trainees at all times since 1997; management traineeship is not competency-based; currently 20 trainees, (replaced cadetship)	Retail traineeship, competency-based, commenced in 1995; have had about 5 trainees at all times since 1995; management traineeship is not competency-based; has had 5 trainee managers also across the period of the study (hitherto as cadetship)	Retail traineeship, competency-based, commenced in 1998 with 4 trainees (about to complete); now have 17 retail trainees; management traineeship, not yet competency-based; have 22 trainees	The Retail Certificate introduced in 1996 addressed retailing in general; now replaced by the Certificate II in Retail Operations that addresses national retail standards customised as supermarket competencies; trainees: 3 in 1995–96, 9 in 1996–97, 4 in 1997–98, 3 in 1998–99; management traineeship has not been competency-based
Accredited courses	The store has one apprentice in butchery and one in pastry cooking; certificates now being introduced	Certificates now being introduced	Certificates I–IV and Diploma, Advanced Diploma in Retail Operations/ Management	Store currently has two apprentice butchers; Certificates I–IV and Diploma, Advanced Diploma in Retail Operations/ Management	Certificate II in Retail Operations as a traineeship; short course in Hygiene, university accredited, is also undertaken in deli; managers may undertake other accredited training e.g. MBA	Store currently has two apprentice butchers; Certificate II in Retail Operations as a traineeship; managers may take other accredited courses e.g. TAFE, as required	Store currently has one apprentice butcher; Certificate II in Retail Operations as a traineeship; looking to extend to Certificates III and IV for management trainees	See above; attend company college one day per week, assessed on the job both by workplace coach and by head office assessor; company has RTO status with States recognised under it

Table A31: Supermarkets: skills and training (cont.)

	Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
Short courses	Video-based short courses used in training in all areas; front-end have about 9 videos, other areas 4 or 5; developed and replaced as required to support change	Video-based short courses used in training in all areas; front-end have about 9 videos, other areas 4 or 5; developed and replaced as required to support change	Team talks; most training is built into the competency-based program	Team talks; most training is built into the competency-based program	Team talks; managers: specific purpose short courses as required	Short courses at operative level mainly at induction; managers: specific purpose short courses as required	Team talks; managers: specific purpose short courses as required	Short courses at operative level mainly at induction; managers: specific purpose short courses as required
Recruitment	External at operative level, above mainly internal; main requirements at operative level; presentation, enthusiasm and comprehension	Externally at operative level, above 95% internal; main requirements at operative level: good work history, supermarket experience, good oral communication skills, 'spark'	Externally at operative level, above mainly internal; main requirements at operative level: good general education, willingness to conform to store image, service experience, interest in retail	Externally at operative level through a labour hire company, above mainly internal; main requirements at operative level: presentation, communication skills, success at school, uses time effectively	Externally at operative level, above mainly internal; main requirements at operative level: passes aptitude-test; willing to learn and to acquire new skills; 'humble'	Externally at operative level, above mainly internal; Main requirements at operative level: passes aptitude-test; presentation and grooming, communication skills, outgoing personality, understanding of customer service	Externally at operative level, now as retail trainees, above mainly internal; main requirements at operative level: literate and numerate, keen for a career in retail, displays common sense, good interpersonal and communication skills	Externally at operative level through State office and recruitment agency, above mainly internal; main requirements at operative level: 'a team player', 'personality', looking for a career in retail, unrestricted availability

Table A32: Supermarkets: service characteristics

	Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
Planning	Undertaken at State level; 'Not really an issue locally'; (but see immediately below)	Strategic planning at company level; store: continuous operational and financial planning	Undertaken at State level	May contribute to State plan; from 1997 operational plan based on State strategic plan: finance, human resources operation	Store plan is subset of State plan, KPIs for sales, profit, human resources etc.	Store plan is subset of State plan, KPIs for sales, profit, human resources etc.	A State responsibility; ftore active at detailed level; customer feedback and surveys used	Store plan is subset of State plan, KPIs for sales, profit, HR etc. weekly operational planning
Productivity strategy	Getting goods to customer in as streamlined way as possible and keeping stocks down; much better planning and cross-training over past two-and-a half years have improved productivity	Improve ROI by reducing stock through better inventory management; about 40% part time employees on the floor provides labour flexibility	Optimising distribution of the wage budget; flexibility:casuals and multi-skilling of permanents; well set out, bright store; purchase inducements; doing own display	'Really it is a matter of proving good service' within tight constraints of company guidelines	Hold a week and a half of stock aim for 99.5% in stock but often fail; inventory tracked as average weekly sales; store open 24 hours; niche marketing e.g. kosher	Adjust to match KPIs through weekly feedback from head office; attempt to have all items on shelf at all times; rate formula for carton unpacking in grocery; flexibility: casuals	Being at the cutting edge; trained and committed staff; ongoing checking of operators to see where can reduce time with maintenance of standards	Personnel agreeing to work flexible hours; multi-skilling and cross department support; more value adding by supplier e.g. processed meat products
Standards	The store appeared to be typical rather than outstanding; rotation of stock appeared to be operating effectively and no out-of-date items found; shelves mainly well stocked	The store appeared to be a bit shabby and not quite as tidy as most others; one out-of-date item found from a dozen or so checked; rotation of stock appeared to be operating effectively	Very well presented store; rotation of stock appeared to be operating effectively; no out-of-date items found; it was reported that had had problems including poor filing and stock control	Very well presented store; rotation of stock appeared to be operating effectively; no out-of-date items found though 'out of stock' running in region of 10%	Well presented store; rotation of stock appeared to be operating effectively; no out-of-date items found though manager said system had broken down previous day	Well presented store; rotation of stock appeared to be operating effectively; no out-of-date items found	The outstanding store in study in terms of presentation; assisted by large floor area; rotation of stock appeared to be operating effectively; no out-of-date items found though aim only for 90%	Fairly well presented store; refurbishment in progress may have been detracting; rotation of stock appeared to be operating effectively; no out-of-date items found
Innovation and improvement	Technology typical rather than leading edge; connected to company email two years ago	Store has not been a pace setter; national computer-based stock system introduced in past two months	Store is a pace setter: free coffees, customer weighing and ticketing of fresh produce	National computer-based inventory system, customer weighing and ticketing of fresh produce	National computer-based payroll, ordering system; trialing a personnel costing system for company	National computer-based payroll, ordering system; has been a pace setter, but no longer	Computer-based management system; email system reducing paperwork; up-market displays	Store trialed new computer-based training identification program; but otherwise not leading edge

Table A33: Ways that current job was learnt: questionnaire responses

	Avocado	Broccoli	Cumquat	Damson	Elderberry	Fennel	Gourd	Hazelnut
Having the work explained by another person	90%	94%	97%	86%	94%	86%	96%	92%
Being shown by another person	94%	96%	92%	94%	80%	100%	89%	96%
Reading manuals or watching videos	69%	76%	83%	61%	63%	100%	72%	84%
Courses have undertaken	18%	18%	30%	17%	17%	14%	15%	32%
Classes run by the firm	49%	36%	43%	41%	26%	0%	15%	36%
Classes outside the firm	4%	15%	16%	6%	6%	0%	7%	16%
Via a computer (packages, distance learning, internet etc.)	10%	4%	3%	0%	3%	0%	4%	8%
Seminars and conferences	29%	16%	6%	0%	9%	0%	11%	20%

Table A34: Enterprises, ranked by labour productivity level, scored against enterprise dynamic characteristics

Sub-sector and Enterprise		Work practices that empower the individual worker to exercise judgement and responsibility while working either as a highly skilled specialist, or as a member of a self-managing team in a broad range of tasks	Wages over award for skilled personnel, or a system of bonuses or other form of recognition in place	Human resource planning that is a subset of strategic planning	Business strategy that is concerned with organisational change, client needs, and innovation	✓
Footwear	E	✓	✓	✓	✓	4
	C	✓	✓	✓	✓	4
	F	✓	✓	✓	✓	4
	A	x	✓	x	x	1
	G	✓	✓	✓	✓	4
	D	x	✓	x	x	1
	B	x	✓	x	x	1
Wire products	A	✓	✓	x	✓	3
	B	✓	✓	x	✓	3
	C	✓	✓	x	✓	3
	E	✓	✓	✓	✓	4
	D	x	✓	x	✓	2
Hotels	C	✓	✓	x	✓	3
	A	✓	✓	✓	✓	4
	F	✓	✓	x	x	2
	B	✓	✓	x	✓	3
	H	✓	✓	x	x	2
	G	✓	✓	x	✓	3
Not in sequence	D	✓	✓	✓	✓	4
	E	✓	✓	x	x	2

Footwear manufacture and wire products manufacture: enterprises ranked by average labour productivity as dollar value added per hour. Hotels ranked by average number of rooms sold per hour of labour—front office. Enterprises are identified by initial.

The National Centre for Vocational Education Research is Australia's primary research and development organisation in the field of vocational education and training.

This is the first of a series of publications that specifically study the financial benefits to industry of investing in training.

Other titles include *Analysing enterprise returns on training by Moy and McDonald*, *Enterprise return on a training investment* by Doucouliagos and Sgro, also *Does training pay? Evidence from Australian enterprises* by Blandy, Dockery, Hawke and Webster.

ISBN 0 87397 671 1 print edition
ISBN 0 87397 672 X web edition