
15

PETERS AND BROWNES GROUP (WESTERN AUSTRALIA):

Review of Best Practice in the Adoption and Management of Technology¹

Introduction

This case focuses on the evolution of technological innovation in the Peters and Brownes Group of Western Australia over the period 1985 to 1995. It concentrates on the Peters WA Ltd (Peters) ice cream manufacturing facility and deals with various phenomena relating to innovation and technological uptake within the company. The main features of the evolutionary processes that outline the company's technological transition are the construction of a new ice cream factory in 1987 in association with a commitment to ongoing equipment and product development and management innovation. This has led to a widening and deepening of Peters's product portfolio as well as total market expansion through export. Supporting the company's total growth is the company's SQP (Safety, Quality, and Productivity) program, introduced in 1992 along with an enterprise bargaining agreement.

In specific terms, the Peters case highlights how a company has integrated new technology in manufacturing along with the functional integration of marketing, innovation, and quality. Consequently, the Peters case illustrates how a company has evolved from one with a local market focus and relatively outdated hard and soft technologies to one with a strong export focus underpinned by benchmark standards in the utilisation of leading edge technologies. The fact that this reorientation has been provoked by customer-driven product innovation remains the central thrust of this case.

Affirmation of the events that have transformed Peters from a mature but stagnant enterprise into a dynamic world class competitor stems from a visitation in 1994 by a consortium of ice cream manufacturers from around the world that regarded the company as having world class products and technological facilities.

Company Background

The Peters and Brownes Group has a long history in Western Australia (WA) extending back to the turn of the century. The forerunner to Peters was the Perth Ice and Refrigeration Company, founded in 1887. An American, Mr. Peters had established ice cream manufacturing businesses in almost every capital city in Australia, and in 1929 he bought the ice company and formed the Peters American Delicacy Company. The Peters entity commenced ice cream manufacturing as well as producing dairy products such as milk and cheese. Except for the Perth operations, every other site was consolidated into a single company. These were acquired by a number of corporate owners, which included Adsteam, then Pacific Dunlop, and more recently in 1995, Nestle Adsteam's strategic intent aimed to consolidate the marketing and R & D thrust of the various

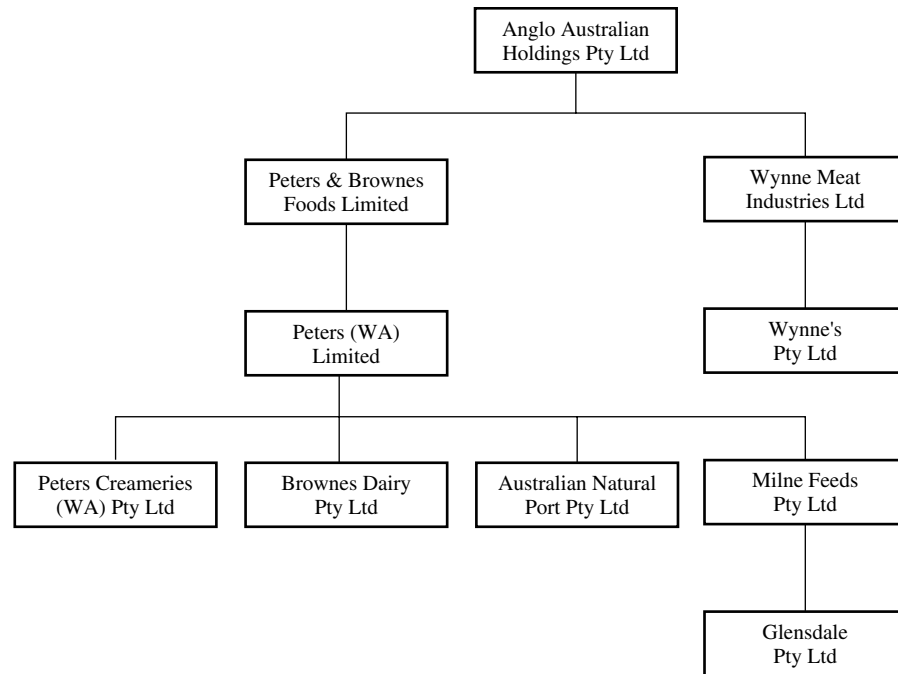
¹This case was developed for use in classroom discussion and is not intended to necessarily illustrate appropriate or inappropriate management practices. Case authors: Alan Brown and Marc Saupin, Edith Cowan University, 1996. The funding for this case production was provided by the Australian federal government's Department of Industry, Science and Resources.

holdings while at the same time corporatising the various entities under the one brand. This strategy was carried on by Pacific Dunlop and has recently been acquired by Nestle.

During that time, Peters (WA) remained largely unaffected by the succession of buyouts, deciding instead to remain independent of events taking shape in the eastern states. The geographical isolation of WA was partly responsible for this. In 1983 Peters in Brisbane was merged with Pauls Ice Cream to form Australian United Foods, while in Perth, Peters acquired Pauls Ice Cream in an endeavour to consolidate their market leadership. Today, the group is the largest producer and distributor of frozen and chilled foods in Western Australia with its base in Perth, the capital city of Western Australia.

While the name Peters is synonymous with ice cream, the Peters and Brownes Group also produce dairy and meat products as well as bulk stock feed. In relation to these products, the main divisions of the group are: Peters Ice Cream, Brownes Dairy, Peters Creamery, Clover Meats, and Milne Feeds. For the most part, this corporate portfolio has some strategic appeal in that Peters is able to control the volume and quality of its raw materials such as fresh milk and cream. Clover Meats adds to the Peters and Brownes product portfolio with a wide array of value-added pre-cooked frozen food products.

Diagram of operating companies structure



Apart from its own brand products, it is also under license to produce Pauls ice cream and Cadbury ice cream and dairy products. The Balcatta premises also house Peters's distribution centre for its products and for a variety of branded products for other companies, and is effectively the hub of a distribution network spanning some 2.5 million square kilometres in WA alone.

The company has developed overseas markets in a number of Asian countries, including Singapore, Malaysia, Hong Kong, and Japan and is now a major Australian exporter of ice cream.

Much of Peters's international business is conducted with industrial food buyers such as Fujya and Akagi in Japan, who in turn market to the Japanese retail sector.

The Peters and Brownes Group is a privately owned Western Australian company that ranks 51 on the list of Australia's largest 500 private companies (*Business Review Weekly*, 27/7/95). With approximately 60 percent share of the Western Australian ice cream market, sales turnover in 1994 was AUD 300 million.

In 1994, exports were about 25 percent of sales. Such sales are somewhat variable since they depend on the business fortunes of overseas partners. For instance, the Borden Company in Japan who was one of the strategic partners sold their ice cream interests to Lotte in 1994, resulting in the termination of a large contract.

Approximately 1,100 people are employed throughout the entire group with nearly 500 of these in the ice cream plant and distribution centre. A large proportion of the process workers are casual employees due largely to the seasonal demand for the product, although new markets in the northern hemisphere are helping to balance employment throughout the year.

The company mission is "To profitably satisfy customer needs within and outside Australia for food ingredients by utilising our competitive advantages in the production, processing, marketing, and distribution of quality food and food ingredients."

Quality Policy Statement

The Peters and Brownes Group is Western Australia's largest food manufacturer and distributor. We market dairy products statewide, nationally and overseas. The nature of our business demands a high standard of professionalism. We must deliver quality consistently.

Under the Safety, Quality and Productivity programme (SQP), the Group is committed to the quality management systems needed to give us a competitive edge. Our objective is to produce products that meet customer and legislative expectations of quality and safety.

To achieve these objectives, the company will maintain an effective quality assurance programme which integrates with other management functions and complies with AS/NZS ISO 9002. The determination of whether products meet customer and regulatory requirements before release will be made only on objective evidence of quality.

The quality and consistency of our products is the responsibility of every one in the organisation at all times.

This statement is made to underline the board's commitment to the process of continued quality improvement. Properly implemented this will lead to company success and employee satisfaction.

Issue Date 8th June 1995

GS Laitt

Managing Director

Factors Setting the Context of Change

In analysing change within the Peters and Brownes Group, the focus is not on a single event but rather, the process of continuous improvement from around 1985 to the present (1995). This evolutionary process is marked by a change in ownership that provoked a dramatic shift in management attitudes toward technological change, a commitment to product innovation and market expansion beyond WA's borders.

Up until the early 1980s, Peters was producing ice cream using outmoded ice cream making equipment located in a number of old buildings in central Perth. Manufacturing was relatively labour intensive and there was little or no R & D into either new product development or capital equipment upgrade. The R & D that did take place locally was confined mainly to providing product range extensions and solutions to operational problems. As a consequence, the company's product lines had remained relatively narrowly defined for many years. The main factor that enabled

Peters to maintain their market leadership in the local Perth market was the company's name, which had been established solely on the basis of product quality, and the extensive distribution infrastructure.

In 1982 Peters first established the R & D department under Adrian Tutan, focusing on new product development for the local market. In the same year, Dr. Nigel Thomas, a science graduate from Oxford University and a recent employee of industrial R & D at Unilever, was appointed to the newly created position of R & D manager. The company set about expanding the role of the fledgling R & D department and encompassing marketing as the fundamental driving force behind the company's future growth. In the course of events, Mr. A.K. Ching was appointed as export marketing manager and with direct commercial experience in Asia, was able to give the R & D and marketing team the much-needed insight into marketing in Asia. These moves signaled the company's intention to diversify both its product and market portfolios and the tacit recognition of the role that technological change would play in the company's future.

The impetus for this reorientation began to emerge around 1984. With the ownership of Peters slowly undergoing change it was becoming increasingly obvious that product quality along narrow lines was not sufficient to sustain market dominance over the long term. This recognition was mainly derived from Mr. Graham Laitt, a lawyer by profession, who between 1986 and 1990 gradually bought all the shares in Peters and took over the role of managing director in 1988. Over this period, Graham devoted considerable efforts to developing a sustainable export focus, attended to new purchases of capital equipment and the refurbishment of existing equipment, and with the rest of the executive team, set about expanding the number of product lines for export markets.

Thus, prior to the new ownership, the management culture of the company had not been one in which product innovation was a driving force, nor had there been much serious attention focused on technological upgrade. By and large, Peters had for many years seen itself as a Western Australian-based ice cream producer that faced very limited competition from interstate or overseas, due in part to WA's geographic isolation, but also because their name was historically linked to ice cream. In the perceived absence of either market or competitive pressures, sufficient to provoke the need for change, management attitudes had remained complacent by largely ignoring the subtle but perceptible shifts occurring in their company's market, competitive, and technological environments.

Recognition of the Need to Change

Internal Drivers. Several factors help to explain the new direction that the company took from about the mid-1980s onwards. First, the ownership of the company had changed. The new managing director, Graham Laitt, had the necessary entrepreneurial skills and vision and saw considerable opportunities for Peters. At the time of takeover, the company was seen as a Western Australian-focused company with only about five percent of turnover in Singapore and Hong Kong. Second, a more strategic focus was adopted that envisaged Western Australia as a major company base for tackling national and international markets, in particular, the latter. Third, the existing ice cream manufacturing facilities were underutilised. The company had acquired a large tract of land in 1972 at Balcatta, a northern Perth suburb, and in 1978 built a fully automated frozen food warehouse and distribution centre on the site. The current arrangements between manufacturing and central distribution meant transferring stock some 15 kilometres between factory and warehouse. The choice of relocating manufacturing to a Greenfield site offered greater logistical economies of scale and overall improved operational efficiencies. Moreover, the capital equipment at the previous Perth factory had undergone a series of incremental improvements over time so that production could keep in step with the growing export market. However, production ceilings were achieved quite rapidly due primarily to the lack of space for expansion. The

facilities at Balcatta offered expansion possibilities as well as enough incentive to invest other kinds of capital equipment that embodied the latest technology.

The appointment of Nigel Thomas as R & D manager to the company's executive team in 1986 was tangible evidence of the recognised importance that the company was attaching to R & D in product, equipment, and processes operations. The person appointed to this position had a background with a large international company (Unilever) and had joined Peters in 1982. He was later appointed to general manager, ice cream manufacturing and technical divisions. He considered that having a technologically trained and oriented person on the management team helped focus the company to look toward the future rather than maintaining an operational perspective of remaining stable.

Finally, the new managing director felt that the company had an unacceptable profit performance and was seeking to lift performance.

External Factors. Increased globalisation of companies with international brands creating greater international competition poses a particular threat to medium-sized companies such as the Peters and Brownes Group. These global companies are also restructuring by divesting noncore activities, making them leaner and more competitive. At the same time they are acquiring core businesses outside their geographical location. While the company was not facing any immediate or strong competitive threats within Western Australia, Peters was a mature but stagnant company. It did hold a considerable share of the Western Australian market but to the new owners the opportunities that lay await offshore offered a challenge. Several factors help explain why the export focus came about. First, the globalisation of industry, across the board, meant that international food producers were able to compete on the basis of economies of scale and scope in product offering. It would, therefore, have only been a matter of time before international competitors reached the WA market and outpaced Peters on price and product offering. Streets Ice Cream had started selling in the WA market in 1983 so it could be considered a potential threat. Peters faces the situation of having to decide whether to reduce product range in order to focus resources to face this challenge.

Second, the Western Australian market remains small (1.6 million people in 1995) and therefore had limited expansion opportunities; not so much in scale since Peters had a dominant market position. Moreover, with the brand name history and with the Peters Group under the ownership of Pacific Dunlop in the eastern states market, Peters was unable to take the Peters brand name east.

Third, the inclusion of ice cream and related products in the list of products under GATT [General Agreement on Tariffs and Trade] in 1990 meant a freeing up of export markets in general. The removal of quotas for ice cream in Japan offered a specific opportunity for expansion. Finally, both Graham Laitt and the executive team considered that the need for technological change across product, process, and production, coupled with innovative management and marketing, was fundamental to future growth and such change could only be realised by an internationally oriented company. These factors were sufficient impetus for change that resulted in the first trial shipments to Japan in 1988.

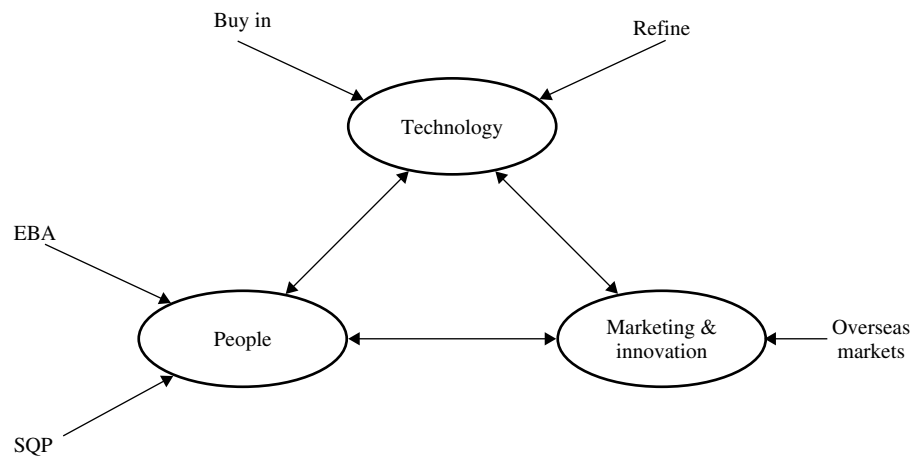
Entry into the Japanese market was a milestone in the technological evolution of Peters. It effectively set the company along a path that depended upon an ongoing effort toward maintaining a sustainable innovative culture that encompasses a continuous process of technological uptake. The Japanese market for ice cream is led by what could only be termed sophisticated industrial buyers who scrutinise all aspects of Peters's production, product quality, packaging, and distribution in very precise terms. This attention to detail has compelled Peters to upgrade every aspect of their operations.

The main conclusion drawn is that the opportunities for expansion and growth arose primarily from recognition of the subtle but important changes taking place external to Peters as opposed to any immediate competitor threats or a sharp move in the tastes and preferences in the local Perth market.

Process (and Content) of Change

The process of transition driven by the adoption and management of new technologies is not one that can be conveniently outlined by a single event that took place within the Peters and Brownes Group. While it commenced in the mid- to late-eighties with the construction of a new factory and the development of an R & D focus, it should be seen as a continuous process that links product innovations and process technology with a sound technological capital base. Management and marketing coupled with effective R & D are much needed and therefore remain fundamental to this process.

The milieu for the management and uptake of new technology in Peters



The Milieu for the Management and Uptake of New Technology in Peters

The model describes the milieu for innovation in Peters. Certain aspects between the linkages that exist between these broad functional areas are particularly enlightening and intrinsically innovative. For example, R & D and marketing are coupled together in both a strategic manner and evident in an operational sense.

The following discussion of the process and elements of the transition focuses on the three main elements as outlined in the diagram.

A. New Technology (Technological Capability/Technology Strategy). Both the engineering manager (Arnold Cooper) and the manager of technology (Nigel Thomas) played a significant role in seeking the most appropriate technology to use in the new factory. This comprised mostly new manufacturing equipment sourced from a variety of suppliers from around the world. It was not exclusively ice cream manufacturing equipment but also came from all areas of the food industry. Some of the equipment such as some freezers and filling equipment came from the old site. However, the new production facility had a significant level of computer control. Employees also had some say in the plant layout, particularly from an operational logistics point of view.

Completion of the new manufacturing facility in 1987 dramatically increased production capacity and provided scope for considerable increases in output coupled with flexibility of operation. Apart from providing a better facility for production in the local marketplace, this new facility was also designed to provide the basis for enabling the company to launch new products and develop new markets. The challenge therefore has been to seek new markets through exports and new product lines. Exports offered an effective means of increasing capacity utilisation.

A significant element that brought about a modernisation of the plant was the computer aided specifications and manufacturing, implemented from around 1987, which effectively provides for constant monitoring of raw material inputs, mixing and dispensing (spraying/pouring), freezing, and subsequent warehousing throughout the entire operations of the plant. The computer network is also integrated with the company's financial and accounting systems to provide an overall control facility.

An important feature of this was the development of computer-controlled processes. Modeled on a system used in breweries, the company wrote its own program that enabled specifications on a program logic controller (computer) to drive the ice cream factory.

While this meant considerable time in development (approximately 5 percent of the factory cost in 1987) since no package was available "off the shelf" and since it required considerable detail, the benefits have been flexibility, integrity, and confidentiality. Factory employees are able to obtain computer printouts of daily production requirements.

The extensive cold storage and distribution centre not only handles Peters's products but also those of other companies. This includes a 7,000 pallets cold store that is fully computerised and uses automated guided vehicles.

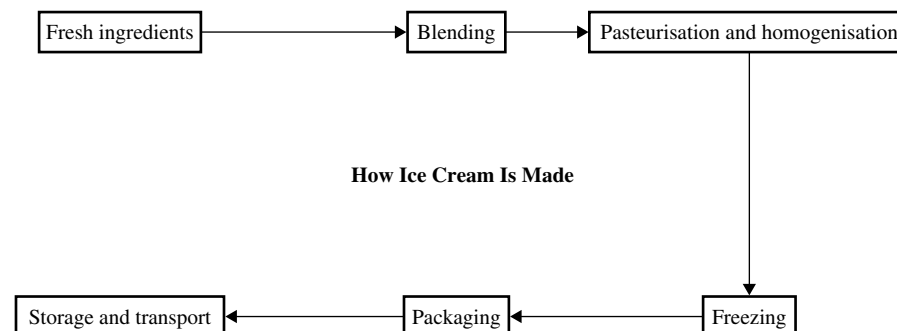
Forms of technology employed by the Peters and Brownes Group at its ice cream plant and distribution centre include:

- Automated storage and retrieval.
- Automated guided vehicles.
- Computer aided manufacturing.
- Computer numerically controlled machines.
- Computer integrated manufacturing including computer controlled formulating and mixing and computer aided integrated specification system.

At the most aggregate level of conceptualisation, ice cream manufacturing [see the accompanying diagram] can be described as the intersection of mixing and freezing technologies applied to fluid and semi-fluid mediums under legally enforced and industry-prescribed quality guidelines:

- Mixing of ingredients.
- Pasteurisation and homogenisation.
- Packaging of mixtures or moulding products.
- Freezing of products.
- Testing, weighing of products.
- Storage of final goods.

Diagram of ice cream manufacturing processes



Aspects of the ice cream manufacturing facility have been continuously developed and upgraded since the initial construction. For example, in 1990 a new facility was introduced that has the ability to handle real rather than compound chocolate for ice cream production. A new syrup-manufacturing machine has been introduced along with a strawberry processing plant to enable fresh strawberries to be put into ice cream. These were developed using the company's engineering expertise to modify equipment to suit the company's production requirements.

Technology plays an important role in the Japanese market. As indicated above, new business development in this competitive market usually involves the Japanese making inspections of the company's technological facilities before products are discussed in detail. They tend to regard technological capability as being the first most significant detail to be discussed in any potential contract deal.

While it has been reported that Australian industry sees improved technological capabilities as being only fifth in order of reasons for growth (Pace of Change 103), the case of Peters shows that it was a necessary precondition that then permitted development of export markets and so on. Technology was one of the enablers. Substantial new technology has also been installed at the group's Brownes Dairy operations and the Creamery in the 1990s.

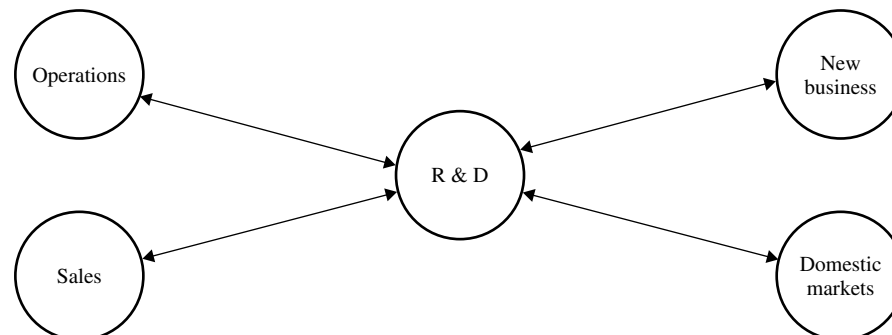
The company has had a technology strategy since 1985. This was considered to be rather rare within Australian food processing companies at this point in time. It is also integrated into the corporate plan, which provides recognition that technology is a strength of the company and a normal part of the business.

B. R & D and Product Innovation (Development of an Innovation Culture). As indicated above, prior to the late 1980s, innovation had not been recognised as part of the culture within Peters. Since the mid-eighties, R & D has been seen more in terms of a benefit rather than a cost to the business. During the past 10 years, steps have been taken to develop such a culture in aspects of:

- Product development.
- Process development.
- Management and systems improvement.

The technology team at the Peters and Brownes Group is responsible for three things: R & D per se, quality, and the laboratories. They link with four main areas of the company operations: new business, sales, domestic markets, and operations [see accompanying diagram].

Linkages between R & D and other activities



Fifty percent of the budget for R & D is for new business. The technology division also conducts contract research for other food companies and government agencies. The Japanese are also involved in R & D operations at the Balcatta plant. Certification to AS 3902 in 1994 was also largely prompted by the move into the Japanese market. The R & D division is also involved in the development of new products for other companies such as Japanese ice cream manufacturers and also conducts contract R & D for mainly Japanese companies.

Marketing and R & D play an important role in product innovation and developing new products for the local markets and overseas. An export R & D section has been operational since 1988. New product design is often driven by customers, particularly those in overseas markets. There is also R & D that looks at developing new products for the local market.

A second element of the Peters strategy has been product innovation through linking research and development and marketing. The position of general manager, marketing and technology was created in 1994. The incumbent is the previous manager of ice cream manufacturing and technical divisions.

Benchmarking is used to measure/monitor process innovation. Local and international visits are continually used to examine new technology that might be used. In 1995 the operations at some Western Australian breweries have been examined for possible ideas. Overseas companies have generally been happy to allow benchmarking since they don't see a Western Australian company as a competitive threat.

The demands placed on Peters to effect dramatic improvements to their products is best illustrated in preparing the Hazelnut Roll, a chocolate enclosed ice cream confectionary, for the Japanese market. It was the first time a WA company had used real chocolate, which required substantial modifications to chocolate spraying equipment and a measure of training and retraining for some of the company's more experienced equipment operators. It also involved developing a new formulation in the chocolate to stop it cracking since the Japanese buyers would reject the product as opposed to the WA market that seemed to have less fastidious preferences. This required designing and manufacturing new blending tanks incorporating innovative design and assembly compatible with existing manufacturing infrastructure.

Moreover, Japanese buyers were brutal when it came to quality control and hygiene. For example, the legal limit for bacterial content is 100,000 per gram; Australian legal requirement is 50,000 per gram; the Japanese industry code established by the Japanese industry body, JICA, demanded less than 10,000 per gram. While other Australian competitors rejected such standards of quality claiming that it was not feasible or at the very least sustainable, Peters responded and now consistently delivers products with bacterial counts around the 300 per gram mark.

Having painstakingly responded to the Japanese buyers' requests, the lessons drawn and the quality improvements that have followed have been transferred to their domestic WA market. While this has delivered quite considerable benefits to Peters, it also means that the WA consumer has benefited. Furthermore, where Peters's range was some 150 individual products in 1983, by 1995 their product portfolio has increased to around 350. Many of these products are sold to the WA market. Therefore, local consumers have received an increased choice of products coupled with world standards in quality.

Certain details relating to the relationship between Peters and its Japanese buyers are interesting and deserve brief mention. For example, all aspects of Peters's operations, from manufacturing and quality control through to product development and packaging, are developed by Peters's employees working very closely with their counterparts in the Japanese buyer organisation. In the case of new product development and launch, for instance, this has led to a reduction in the time to market (idea to shelf: 3 months), which is fundamental to sustainable competitive advantage in this industry. Peters itself organises its activities into new business units that draw on all functional areas of the organisation. As well as close interaction taking place between the members

of the new business unit, each member, depending of course on circumstances, then opens dialogue with his or her counterpart in the Japanese buyer organisation. In effect, this producer-user interaction has formed the basis of a strategic technical and economic alliance between Peters and its overseas partners and is a model being repeated as the cornerstone of their strategy for international expansion.

By 1995, equipment cannot keep in step with the volume of export demand. The allocation of resources for R & D shows product (50–60 percent), process (20–30 percent), and capital equipment (15–20 percent). The heavy emphasis on product R & D is to be expected given the short life cycles of ice cream products in the Japanese market (often less than six months) and that ice cream manufacturing equipment does require upgrade but the time period over which this generally occurs is quite long. In fact some of the equipment utilised by Peters in 1995 was some 20 years old.

C. Work Organisation and Management. The 1990s has seen a strong focus on improving quality and productivity through improved work processes. These come under two measures, an enterprise agreement and the Safety, Quality, and Productivity (SQP) program. The changing Australian industrial relations context has been one important impetus for this.

In March 1992, the company and four unions represented at the Balcatta site signed a “Memorandum of Understanding,” which established the SQP program. This led to removal of some demarcation barriers and the establishment of a single bargaining unit. It also meant that general managers had to take greater responsibility for management of people.

Also in March 1992, the SQP program was commenced and in July 1992 it won funding from the federal government as part of the best practice initiative. The objectives of this program included:

- To create a culture of continuous improvement.
- To foster employee participation.
- To improve employee skills.
- To provide an opportunity for job redesign.
- To link remuneration with productivity.

Responsibility for the overall management of the SQP program is vested in a steering committee and day-to-day management by a consultative committee comprising management, shop stewards, and shop-floor representatives. Teams are established by the committee to work on set projects and usually disband once it has been completed. They are trained in process analysis and improvement, using flowcharts to identify barriers and problems.

Initial teams focused on time and motion activities, which didn't work all that well. Other problems included the fact that many solutions involved expenditure, which were subject to budget constraints. Lists of potential problems were developed, which would then be prioritised by management for action. These included technical ones such as ice cream containers falling over on a conveyor belt or working conditions such as cold air causing discomfort or repetitive work. The teams identify solutions that are then considered for action by the consultative committee.

Under the SQP program several training initiatives were commenced. An induction program was developed that includes occupational health and safety, product quality, microbiology and hygiene, food preservation, plant sanitation, how ice cream is made, and how the SQP program operates.

Other initiatives introduced under this program include a comprehensive induction program, a workplace English language and literacy program, and on-the-job training linked to training manuals developed for the company. Funding was obtained from the government to run a Workplace English Language and Literacy (WELL) program. About 16 different nationalities are represented at the site. Initial participation was moderate. The company has then to conduct much of

its own industry-based training in the absence of courses being available at technical and further education institutions and universities.

A specialised food industry training company was engaged to conduct on-the-job training and also assisted in developing job and training manuals. The manuals integrate the national competency standards and AS 3902. The training manual incorporated job descriptions for all factory jobs. Apart from being the basis for consistency in induction and training processes, it provided the basis for developing multiskilled employees. Training of operators in a variety of job skills, based on the training manual, provides for job flexibility. Multiskilling allows rotation among operators on the production line in the ice cream factory. Reclassification for the factory jobs was undertaken in 1993 and other changes mean that production employees can work in the distribution centre.

Casual employees comprise about 60–70 percent of the ice cream factory staff, which would normally pose difficulties with training. However, many are long-serving casuals, the main reason for their employment status being the seasonal nature of demand for the product. However, the impact of this has been reduced somewhat with new markets in the northern hemisphere. Machine operators and leading hands are generally permanent employees.

In May 1994 a facilitator was appointed to the SQP program. Their role was to communicate the program to employees, maintain records for the KPIs [key performance indicators], and organise training. This was seen as an important recognition that the process needs a driver on a full-time basis. A major issue to deal with is communicating to all employees.

While the focus on enterprise agreements started in 1991 in Australia, the Memorandum of Agreement was made in 1992 and an enterprise agreement was negotiated between 1993 and 1994. The enterprise-based agreement was ratified in May 1994 by the Western Australian Industrial Relations Commission. This had taken about 12 months to finalise and covered the factory operators, van drivers, distribution centre employees, and R & D laboratory staff.

An important element of this agreement that has promoted productivity improvements is the use of key performance indicators (KPIs) to determine productivity-based pay increases. Under the agreement, pay increases of up to 6 percent per year over the three-year term of the agreement are possible. Wastage at the ice cream factory was selected as the primary indicator to determine pay increases.

Key performance indicators used at the ice cream plant include consumer complaints, inventory levels, ingredient wastage, absenteeism, compliance to budget, operational efficiencies, and so on. Measurement criteria have been identified for each of these. A housekeeping audit is also included. This comprises some 1,500 items throughout the plant that are audited every month to find a score with nine being regarded as excellent. Indicators are graphed and displayed and monitored and benchmarked.

Some initial difficulties were experienced and the system has required some fine-tuning. One major problem was caused by a storm that damaged the roof of the warehouse, leading to substantial stock wastage and at a similar time, the loss of a Japanese export contract. However, some recent projects have identified useful savings such as AUD\$14,000 in chocolate wastage during a three-month period.

Politics of Change

The managing director has played a relatively dominant central role at the most senior level by exerting an entrepreneurial style of management that has forced the company to become focused on export markets. Indications are that he had a major influence on the initial changes back in the 1980s and also during the early 1990s. The manager of the ice cream plant and technology has also taken a leading role in terms of identifying relevant technology and adapting it to the plant.

Most of the significant changes in technology occurred when the new factory was built. The fact that it was a Greenfield site probably helped to create a “fresh start.” The new plant was clean,

modern, and uncluttered when compared with the old site. The company was also able to draw on some government assistance during this process with the provision of \$450,000 under a best practice grant in 1992 and for the English language course. Dissemination of information was an important requirement of the best practice funding. This helped stimulate greater communication between management and employees.

The ice cream factory has been free of any industrial disputation for about 18 years. There were no real barriers or special difficulties with the unions and the employees that would impair the introduction of new technology or the continuous updating of it. On the contrary, the relevant unions appear to have played a supportive role in the transition process, particularly with regard to the new workplace arrangements that have resulted from the enterprise bargaining in recent years. Employees are represented by four unions, the Food Preservers Union, the Transport Workers Union, the Electricians, and the Metal Workers. Most factory employees are members of the FPU and since they are mainly casual, they tend not to be active union members. The union contribution has been greatest in the past three years with enterprise bargaining. There have only been a few "teething problems" that primarily related to machinery breakdowns.

An ex-official from the Food Preservers Union (FPU), representing most process workers on-site, considered that the move to the new plant had been handled relatively well by management. Efforts were made to keep employees informed via a video explaining the new plant and how it would work and workers had been taken to the site by bus. They also had the opportunity to have some input into plant layout and so on. For a transition period of about 18 months, production took place at both the Roe Street and Balcatta sites.

Long-serving employees have not found any major difficulties with the changes resulting from firstly the move to the new plant and then changes due to introduction of new machinery due to new products and new markets. For the leading hands, some felt that they faced more pressure as production had now increased and the increased number of casual employees had to be continually trained, sometimes resulting in production slowdowns. Some had found difficulty adjusting to a fully enclosed air-conditioned environment from the old open factory with windows to the outside. Others noted that the company is now less like a big family than previously. This may be more a reflection of the changes in management and perhaps the physical isolation at the new site. One view espoused was that better preventive maintenance on equipment could be made since machinery did break down and affect production levels.

Operation and Outcomes of the New Practices

It could be said that the change process is ongoing within the Peters and Brownes Group. Refinements and new additions to the technology are constantly being made as new markets are developed. Continuous improvement teams are now operating. Linking operations and research and development is also an important feature of the Peters and Brownes Group. Once the R & D team has developed new products they work with the plant operators and help train them in manufacturing processes for the new product.

Outcomes. Ice cream exports now account for between 25 and 45 percent of output and have shown steady growth as highlighted in the table below.

Percentage of Ice Cream Sales as Exports

1991	1992	1993	1994
10%	23%	31%	36%

Benefits for the local market have arisen as a result of exports. For example, a number of new products have been developed for the Australian market as a result of involvement in the Japanese market. These include premium quality ice creams and flavoured milk drinks.

Summary

This case demonstrates how a change in company ownership, a new manufacturing facility, and an emphasis on product innovation and development has turned a once mature and stagnant company into a successful exporter with considerable scope for further expansion. The general manager of marketing and technology considers that Australia has a considerable competitive advantage in food processing with its abundant supply of good quality raw materials.

This case highlights several phases in the continuous adoption and management of technology in a food processing company. Considered from time series perspective, the following can be identified:

Late 1980s	Build a new ice cream manufacturing plant on a Greenfield site. Combine this with an existing fully automated warehouse facility.
>1990	Seek new export markets. Combine R & D and technology.
>1992	Develop productivity and quality improvement teams. Achieve ISO 9002.

Key Competitive Advantages. Key competitive advantages include:

- Customer focused and driven R & D. The major driving force for continuous process and product innovation are customer needs. The company responds to this through R & D, equipment purchase and/or modification, process refinement, and so on. In essence they fit the technology to suit the new markets. An example of this was the need to install a tamper-proof sealing machine on one production line that packages tubs of ice cream for Japan.
- Technology.
 - CAM process.
 - Flexible manufacturing.
 - Cost efficient manufacturing.

Establishment of the new plant in 1987 (along with the warehouse) provided significant production capacity and flexibility. Additions have been made over the years. While the technology per se is not always new, the company has developed it in a way such as using computerised control of processes. Technology does not drive the company; instead it provides the mechanism for adapting to and developing new markets to achieve production efficiencies. The company's success and competitive advantage are linked to technological excellence and capability and understanding new product development. The company aims to maintain its technological capability and to be the best at this. Technology is seen as customer-driven, both internally and externally, and related to market opportunities.

- Work processes and HR systems. This is an area the company has put considerable effort into during the past three to four years. It is yielding rewards for both the company and the employees.

The Future. The company has considerable scope for increasing output within its existing plant. The mixing process for various types of ice cream is capable of making an enormous range, and equipment to mould the various products and package them is purchased as required.

Lessons

What lessons might there be in this case for other companies? This case highlights the multifaceted nature of technology and innovation. Apart from introducing new “hard” technology (new plant) and “soft” technology such as work processes, quality, and so on, the strong emphasis on R & D and marketing to develop new products and new markets is a central feature. The technological and quality capabilities are available with the facility, which enables the company to develop new markets, particularly overseas.

- Uses of technological capability and R & D have driven growth for Peters. This is ably supported by training, job redesign, work flexibility, and so on. Quality is also central. The need to integrate HR into operations needs to be acknowledged in order to maximise the benefits of the new technology.
- The main driving force for the adoption of new technology is the market and product development. Where new markets, particularly overseas, are found, the process and hard technologies are found, modified, or designed. One overriding factor here is a “can do” attitude. The managing director is a driver. Faced with significant export markets but with high standards and expectations to be met, the company does not shy away from these challenges.
- Specially allocating one or two people in the organisation who are given responsibility for technology helps maintain constant contact with the latest developments. New hard technologies need not be sourced from your own specific industry. Peters has applied equipment and ideas used in non-ice cream production (such as brewing) to ice cream.
- The physical manufacturing facilities of a company can be an important factor that potential customers take into account before negotiating contracts. With the Japanese market, this seems to be a necessary prerequisite as site inspections usually precede detailed contract negotiations over product and price. Customers want reassurance that the company they will deal with has the technological capability to deliver the product at a quality that they expect. To this end certification to ISO 9000 may also be required.
- Strategic alliances with other companies can provide a cushion for fluctuations in the market for your own products. Peters has developed these for ice cream products for other companies such as Cadbury’s.