

# CHAPTER 1

## The Product Development Project in the Company

### 1.1 Introduction

Product development is a basic activity in the food industry. Each company has a product mix, often including hundreds of products, which is constantly evolving - old products dying, products reaching maturity, products contributing to rapid growth and new products being introduced. To achieve a live and enduring product mix requires a far-sighted and organised product development programme which directs innovation in line with the objectives of the company's business strategy. The product development programme encompasses product improvement, product line extension and product relaunch, as well as product innovation. Product development involves all sections of the company from top management to the machine operator on the line, and it is only successful if there is integration across the company and also strong leadership from top management. As well as integrated company activities, there is a need for integrated company knowledge based on good communications and sympathetic, informed leadership. The individuals know not only their specific part in the project, but also what has happened upstream, what is occurring at the same time and what will happen downstream in the project.

New product development (NPD) covers not only technical research, but includes the total technology of the company, that is the company's internal organisation, the market and marketing, the customers and the consumers, the technological ambience surrounding the company including competitors, and also the social and physical environments in which the company operates. It is the company's ability to interrelate its own skills and knowledge with the complex ambience surrounding the company that leads to successful product development. Companies recognise that they lack some of the knowledge of the total technology and the resources to find this knowledge, so they

have to be selective in the knowledge they collect but need still to ensure that decision-making involves the total technology. The knowledge selected includes the tacit knowledge already held by individuals in the company, and new knowledge from outside the company and from research.

The cultures of the company and of the individuals in the company have a strong influence on the product development programme. Companies may be high risk or low risk, knowledge seekers or tacit knowledge users, casually organised or bureaucratically organised, old-fashioned or new-technology driven, democratic or autocratic, technically driven or market driven - all these different cultures create different types of product development programmes and different types of innovations. They may be perfectly correct for the time and the place, but companies need to be fully aware of the decisions they make and the influences affecting those decisions, and perhaps the need to change those decisions. This means acquiring new knowledge of the total technology, improving communication and cooperation, and establishing new criteria for product development and even for the business strategy regarding innovation.

It is useful in the company, from time to time, to study the degree of product innovation achieved during the last few years and then to relate this to some of the factors important to successful product development.

Important factors to check are:

- knowledge-seeking objectives and methods;
- coordination of product, processing and marketing research;
- integration of consumer research into the total programme;
- evaluation of the market, in the early stages and before launching;
- financial soundness of the projects;
- top management involvement in product development;
- 'go/no-go' decisions by top management at all critical points;
- leadership by top management;
- resources for product development.

**Think Break 1.1**  
**Product innovation and company culture**

From studying the products that your company\* has launched in the last few years place your company and also the company's competitors on a scale from 'not-innovative' to 'very innovative'.

**Not innovative** **Very innovative**  
0 \_\_\_\_\_ 10

From the Introduction, identify some factors on which companies can be compared and draw basic linear scales for these factors, for example: 'no market research' to 'continuous market research', 'no consumer research' to 'integrated consumer research'.

Two important factors are resources for product development and top management leadership.

**Resources for product development**

**Poor** **Very Good**  
0 \_\_\_\_\_ 10

For example, this could be done on percentage of sales, '**Poor**' <0.5% of sales revenue, '**Very Good**' >10% of sales revenue.

**Leadership by top management**

**None** **High**  
0 \_\_\_\_\_ 10

'**None**' could mean management never involved and '**High**' top management leading product development

Score your company on the factor scales (and your competitors if you can) and decide what the factors are relating to your placement of the company on the innovation scale.

Repeat this for yourself, giving yourself an innovation rating, and studying your personal factors.

*\*If you are not in a company, select a company near you and interview them.*

## 1.2 The Product Development Process

Recognition of the need to coordinate the total technology, the culture and the innovativeness of the company led to the development of a multistage, multifunctional and disciplined system – the Product Development Process. The Product Development Process emerged in the 1960s and there have been many variations, with 6 to 13 stages, described in the last 40 years. Table 1.1 has four showing how the various stages have evolved.

**Table 1.1 Emergence of formal stages in the Product Development Process in the food industry**

<i>Stage</i>	<i>1967</i>	<i>1971</i>	<i>1984</i>	<i>1995</i>
1. Business Strategy		Management determination of product fields - improved, new and new-look products	Develop clear corporate objectives Draft strategies and operating plans	Strategic plan Market opportunity assessment Product business plan Product definition
↓				
2. Product and process development	R&D	Exploration Screening Evaluation  Development	Generate new concepts Screen, test and prioritise new concepts Translate concepts into optimised prototypes Refine prototypes with consumer sensory tests Scale up production from pilot plant to commercial operations	Prototype development   Scale up and trial production
↓				
3. Product testing	Product testing	Testing	Conduct in-home use test	
↓				
4. Market testing	Test marketing	Marketing communications development Market testing	Products in market simulation tests Test new product line	Market strategy and testing
↓				
5. Product launch preparation		Building production capacity and inventories Readying sales force and distribution		
↓				
6. Product launch	Limited area introduction Full-scale Introduction	Full-scale introduction	Product line into national distribution	Product introduction
↓				
7. Post launch evaluation		Measurement and evaluation		Product support

Source: Earle, M.D. (1997) 'Changes in the food product development process', *Trends in Food Science and Technology*; 8(1)19-24

There was firstly the recognition in the sixties that product development did not start with research and development (R& D) but with management, and gradually it was recognised that it began with the business strategy working through the product strategy to the new product area definition. The later stages including post launch evaluation were identified as important, particularly the development of the marketing methods and organisation. Product concept development and the integration of the consumer into product design and testing, as well as the integration of market and technical research in all stages were other significant developments. Critical analysis of information and a go/no-go decision between each stage was an important addition. There was recognition that product development is an integrated process which starts with the business strategy and does not stop at the launch but includes the post-launch activities.

The Product Development Process in this book developed from study of past processes. There are four major stages, and between each of these stages, there are critical points where top management should evaluate the project and give go/no-go decisions. At these critical points, management decides to go on, to stop, or to review the project. A 'go' decision represents a substantial added resource commitment.

**Top management CRITICAL DECISIONS between stages**

<b>FURTHER ACTION</b>		<b>RESOURCE COMMITMENT</b>
Review	▲	11
Discontinue	X	1
Continue	▼	1111111111

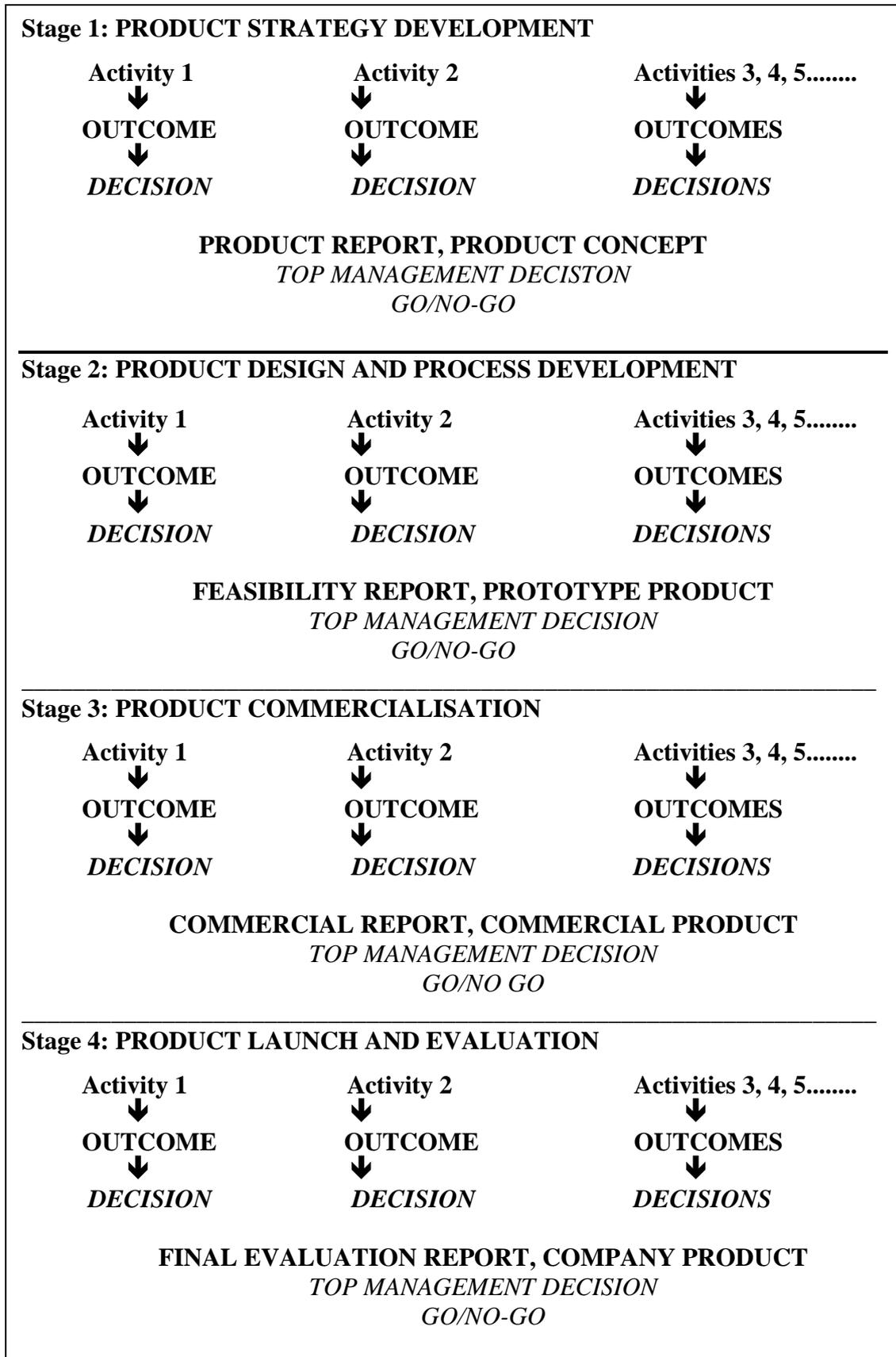
The management decisions are made on the outcomes (information) from the activities in each stage. The outcomes are usually combined for top management in a report (product report, feasibility report, commercial report, final evaluation report), plus a product (product concept/product design specifications, product prototype, commercial product, company product). The flow from activities, to outcomes, to decisions, to report, to top management decision, to go/no-go, is shown in Figure 1.1.

**Note: Figures and tables throughout the book differentiate between:**

***DECISIONS: OUTCOMES: Activities: Techniques***

by typeface as shown, decisions as italic, capital; outcomes as regular, capital; activities as regular, small; techniques as italic, small.

**Figure 1.1 The Product Development Process**



The four main stages are:

- **product strategy development** identifies the project and the product area;
- **product design and process development** create the product and process;
- **product commercialisation** designs marketing, production, distribution;
- **product launch and evaluation** organise production, launch, post-launch.

Product strategy is a time of laying the essential foundation; product design and process development is a time of creativity and innovation; product commercialisation is a time of integrated forward flow; product launch and post-launch is a time of review and decision-making. There is no clear division of activities into the stages. For example, in some companies product design specifications can be at the end of Stage 1, in others the beginning of Stage 2; the final consumer test at the end of Stage 2 or the beginning of Stage 3, and the market test at the end of Stage 3 or the beginning of Stage 4. The demarcation is set by the accumulated knowledge needed by the top management to take the critical decisions.

Each stage has **activities** which produce **outcomes**, and on these outcomes the management **decisions** are made. The activities are broad areas in which a number of **techniques** are used; for example, 'creating product ideas' includes brainstorming, product morphology and consumer focus groups; 'screening product ideas' includes checklists, company focus groups and probability screening. The outcomes are also umbrella headings for a number of results; for example, product design specifications could include a profile of the product characteristics as defined by consumers, the product structure and composition, safety parameters, convenience and aesthetics, and also indicate the manufacturing/processing variables and their effects on the product qualities. There are not always straight-line relationships between activities, outcomes and decisions, but often the interlocking of different activities focussed to give one outcome. This gives fluidity but also integration to product development.

The stages are controlled by the product development management, who make, in cooperation with the project team, the management decisions. Involvement by senior management in the first stage and between stages assures the project is controlled by the overall business strategy. When planning each stage, the project team identifies the decisions that have to be made at the end of the stage, then the outcomes, on which these are based, and finally the necessary activities and the levels of these activities.

In other words, the Product Development Process is not regarded as a series of steps where you start at the beginning and work through them, but it seeks out firstly the decisions that have to be made and the outcomes needed for these decisions, and then the activities needed to produce the outcomes, and finally the techniques to be used in the activities. When the decisions, outcomes and activities are identified then the product development process can be planned. From this, the product development project can be planned by choosing the techniques to be used. Strategically, the Product Development Process is designed to focus innovation in a direction that achieves the objectives laid down in the company business strategy. The product development project is designed to coordinate creative and efficient activities incorporating knowledgeable techniques so as to achieve the necessary outcomes.

### ***Think Break 1.2***

#### ***The Product Development Process: knowledge required***

The following are two common decisions made in the product development process:

- Select specific product development project.
- Launch the new product onto the market.

Identify the knowledge needed in the outcomes on which to base these decisions.

What activities could be used to build up the knowledge for the outcomes, and how could the activities be integrated?

## **1.3 Stage 1: Product strategy development**

This stage ends with decisions on the type of product to develop and the viability of the project for the company; the two main outcomes on which the decisions are based are respectively the product design specifications (the product concept) and the project evaluation (the product report). The activities therefore form two interlocking groups - one developing product ideas and product concepts, and the other gathering the information and analysing it for the production, marketing, financial, legal, environmental and social evaluations.

Some of the important pathways of activities, outcomes and decisions in the first stage are:

<b>Activities</b>		<b>OUTCOMES</b>		<b>DECISIONS</b>
Business strategy	➔	Product mix strategy	➔	New product areas
Change prediction	➔	PD possibilities	➔	PD plan
Information search	➔	PD project identified	➔	Project aim
Idea generation	➔	Product concepts	➔	Product concept selected
Concept engineering	➔	Design specifications	➔	Technical acceptance
Market analysis	➔	Sales/profits prediction	➔	Market acceptance

Note that these pathways are often interlinked; for example, the product development possibilities come from the product mix strategy as well as the technological, consumer and social change predictions. The market and technical information search may lead to product ideas as well as to the project aim. The product design specifications come from the product concept through concept engineering. These paths are more of a thought checklist rather than paths that are taken in every project.

This is a stage of both creativity and evaluation. There is a need to collect information on as many areas as possible, to determine its accuracy and then to build up the whole base for the project from it.

**At the end of this stage, there is an assessment by senior management of the probability of success in the market, the time/costs for the remainder of the project and its continuing harmony with the business strategy. Finally there is the decision to go on with this product and provide the resources.**

The product development project starts with the selection of the project and then continues to the end of Stage 1 and into Stage 2: product design and process development. There is not a definite demarcation between the two stages - it depends on the company and the type of product. Sometimes the decision to go on is taken after the product concept is completed if design is not technically difficult; at other times it is taken after the product design specifications. It should be realised that both the product concept and the product design specifications continue to develop throughout the design process.

Product strategies change with time as can be seen in Case Study 1 which shows some of the strategies of McDonald's, the hamburger chain, in the USA in the 1990s.

### ***Case Study 1.***

#### **McDonald's: Can it Regain its Golden Touch?**

In 1991, Business Week chronicled the millions McDonald's was pouring into experiments for new products for the US market. In 1998, they listed the flops:

- **Carrot Sticks:** still available as an optional item in some US restaurants.
- **Fried chicken:** This was no McNuggets. Though available in much of Asia, it's off the menu in the US along with the corn-on-the-cob that came with it.
- **Pasta:** McDonald's tried the old favourites, spaghetti and lasagne, with garlic bread. Neither is available anymore in the US.
- **Fajitas:** The McDonald's version of this popular Mexican dish never took off, though it's still available in a few US restaurants.
- **Pizza:** The company devoted an entire annual franchise meeting to talking up this fast-food favourite. Pizza survives in Canada, but it is no longer in the US.
- **McLean Deluxe:** This low fat sandwich debuted in 1991 to woo health conscious customers. It was erased from the menu in 1996.

Last successful product: **Chicken McNugget** in 1983.

The company has now emphasised that the heart of the company's menu will remain the same - the burger. "We will extend our line, rather than going in more radical, different directions."

They have been opening new stores, rather than launching new products. They are developing a new kitchen production system.

Imagine the possibilities: the company uses its powerful brand to figure out a way to grow in its own backyard. The new kitchen production system allows executives to think more broadly about high-quality menu additions. Domestic earnings no longer drag down international growth but add to it. And overseas markets, upon saturation, have a model for future growth.

(Reprinted from the 9 March 1998 issue of *Business Week*, by special permission ©1998 by McGraw-Hill Companies.)

### ***Think Break 1.3***

#### ***Product strategies: new products from McDonald's***

In the 21<sup>st</sup> century, McDonald's have continued to introduce new products and indeed new part menus, such as breakfast, in the USA.

Look up McDonald's USA Food News on the web site:

<http://www.mcdonalds.com/usa/eat/features.html>

Suggest the reasons that the company might have in introducing these products – the consumers and their needs, company strategies, changing environment.

You will see that there is nutrition information provided on this web site for consumers. Discuss the main aims of this information as regards product and menu selection...

Visit your local McDonalds and compare the products with those available in the USA.

## **1.4 Stage 2: Product design and process development**

At the end of this stage the decisions to be made by management can be divided into the product, the production and distribution, the market, the financial predictions and the level of risk. Management need to know:

- Is the product satisfying consumer needs and wants?
- Is it safe?
- Is it legal?
- What is the market and can the company service this market?
- Can the present market channels be used or new ones needed?
- Are there raw materials available?
- Will the production be accommodated in the present equipment or is new equipment needed?
- What are the costs of further development and commercial production and marketing?

- Can the present storage and transport methods be used or is a new method needed?
- What are the estimated profits and probabilities of success?

Some of the important pathways of activities, outcomes and decisions in the second stage are:

<b>Activities</b>		<b>OUTCOMES</b>		<b>DECISIONS</b>
Product design	→	Prototypes	→	Technical capability
Consumer testing	→	Acceptance	→	Market suitability
Product optimise	→	Final prototype	→	Company compatibility
Process design	→	Process conditions	→	Technical feasibility
Market testing	→	Sales prediction	→	Market success
Costing analysis	→	Costs (capital and operating)	→	Financial success

Certain product characteristics are defined in the product design specifications. The technologist designs, makes and tests the product against these product standards. Product design specifications cannot be rigidly maintained: there has to be the opportunity for creative design of the product. Product concept engineering continues in the design stage, as more information is gathered to define the product characteristics quantitatively.

The raw materials and the processing conditions are investigated as the product is developed. Important considerations during this product design/process development stage are the test procedures used; these are related to the qualities required by the customer/consumer and not to arbitrarily chosen standards. As early as possible in the development, some of the future buyers and users of the product use and eat some of the product prototypes. It is comparatively inexpensive to change a formulation or a product form at this stage, but expensive if done during the plant trials and even more so during final production. Therefore, it is important to experiment as much as possible with the product and the process at this stage.

The basic packaging design is started at this time as it is usually an integral part of a food product, giving protection and use. This is also related to the proposed physical distribution, including storage and transport, which really is a continuation of the

processing design. The product prototypes are tested under the conditions expected in the physical distribution so that the shelf-life of the product can be predicted.

Finally in product design, preliminary production trials are organised and the final product prototype put through a large consumer test so that the level of technical success and market acceptability can be predicted.

**At the end of this stage, there is an assessment by senior management of the product, the target market, the compatibility with production and marketing, the predicted capital investment, the time/costs for the remainder of the project, the risk of failure in the next stage and the continuing harmony with the business strategy. The decision - to go on to product commercialisation, a much more expensive stage - is an important one.**

#### ***Think Break 1.4***

##### ***Product design: design methods in food product development***

Product design is not often used in the food industry to describe this stage but is the common name in other industries.

3D design such as furniture and utensils was in the past what people imagined as design, but design has expanded into electronics, computer soft ware and in recent years into pharmaceuticals, a process engineering based industry like food. Food has always had some elements of design for example in baked goods and in more recent years in extruded foods.

Discover what are the basic factors and methods in design and show how these would be useful in designing food products.

### **1.5 Stage 3: Product commercialisation**

At the end of this stage, the top management decision is to go on or to stop before committing to the large expenditure of the launch. Management study the feasibility of production and distribution, the viability of the market strategy, the finance and the

other resources needed for the next stage, the predicted returns on investment and the relationship to the other strategic plans of the company. For this they need product and production specifications, a marketing strategy, capital costs, investment returns, predicted operating costs and profits, and again the risk in the further development.

Some of the important pathways of activities, outcomes and decisions in the third stage are:

<b>Activities</b>		<b>OUTCOMES</b>		<b>DECISIONS</b>
Marketing study	➔	Market strategy	➔	Market plan
Marketing testing	➔	Buying behaviour	➔	Sales predictions
HACCP* process	➔	Process control	➔	Product safety, quality
Process engineering	➔	Plant, production	➔	Production plan
Financial analysis	➔	Costs, prices, profits, investments	➔	Returns on investments, risks

\*HACCP - Hazard Analysis Critical Control Points - a preventive system to eliminate or minimise potential biological, chemical and physical hazards to the safety and quality of foods. It is the basis for a Food Safety programme. If the new product is an addition to a present product line or an improved product, there may be a Food Safety programme in place, but it is always important to check because there may be a change in raw materials and in the process.

Packaging design is completed in this stage; it is started as part of the product design but the aesthetics cannot be completed until the promotion is planned. Packaging design is based on protection of the product, on consumer needs and uses of the product, and on the market presentation.

At the third stage, the cost of the project in terms of finance, people and time escalates, and many expensive product failures occur because of lack of control at this stage. At the end of this stage, there is enough information to detail the market for the product and to draw up a complete market plan for launching the product including channels of distribution, pricing, methods of selling, promotion and advertising. Process equipment is designed or, if present plant is to be used, the layout and adaptation of this equipment for the new processing conditions is determined. The production method is optimised and a complete plan developed for both production and physical distribution of the

product. A more exact costing of production and launching is made, sales revenues predicted and a detailed financial evaluation prepared.

The product can be tested in town market trials where the product is put into the shops in a certain area and sold with the aid of all the pricing, promotional, advertising and selling techniques to be used in the final market. This demonstrates that the product will actually sell in the marketplace and identifies any difficulties which might emerge during marketing. It also gives an opportunity to test the production system at higher production rates, and to improve quality, yields and costs.

**At the end of this stage, there is an assessment by senior management of the capital investment, the return on investment, the risk of failure in the market, the human resources needed and available, the possible effects on the society, the effects on their other products and businesses, and the continuing harmony with the business strategy.**

### ***Think Break 1.5***

#### ***Product commercialisation: coordination of resources and project timing***

In product commercialisation, there is research and development by the production, marketing, and finance sections of the company as well as the product development team.

Discuss the problems of coordinating this work, and how this coordination could best be achieved.

How can times for the activities in the various areas be estimated and an overall timed plan developed. How can this be managed to prevent time over-runs and to ensure completion of the stage for a suitable launch date?

## **1.6 Stage 4: Product launch and evaluation**

At the end of this stage, top management decides the future direction of the product and its acceptance into the company's product mix. Management set standards to judge the launch before the launch takes place, and also consider their strategy for reacting to

competitors' actions. They plan for the future of the product - will there be further products added to the product line, or a relaunch with improved product and packaging, or a reduction in price related to increasing efficiency of production? The launch is not an end but a beginning and there is a need to plan for the future at the same time as the mechanisms for a successful launch are being started. Management study the product on the basis of future product strategy and therefore future business strategy.

Some of the important pathways of activities, outcomes and decisions in the fourth stage are:

<b>Activities</b>	<b>OUTCOMES</b>	<b>DECISIONS</b>
Marketing organisation	→ Time, people, costs	→ Effectiveness
Production organisation	→ Quality, quantity, costs	→ Specifications met
Distribution organisation	→ Time, costs, convenience	→ Efficiency
Launch sales analysis	→ Sales/customers	→ Marketing changes
Product, production study	→ Quality, efficiency	→ Improvement

For marketing, the next steps are to train the sales staff and to persuade the retailer to accept the product. The decision of the retailers to accept or reject is based on product attributes such as strong growth in the product category, a new product or a me-too product, acceptable product quality and high expected profit contribution, but they are also influenced by strong promotion and advertising, competition, adequate funds for the retailer's promotion and discounts. The retailer is very often a supermarket chain and they may have product specifications which have to be met (and should have been recognised much earlier in the project). They may also charge for shelf space and have a pre-determined price range.

For production, the plant is built or organised, the production personnel trained, quality assurance programme put in place and production begun. The stocks of the product are built up in stores and finally distributed to the retailers. For marketing, the final step is to ensure the distribution of the product, its placement on the retailers' shelves with any in-store promotion and then the release of the advertising. All is then ready to commence on the product launching date - the advertising is placed in the media and the product is put on the shelves in the supermarket or the store. The only step remaining is for the consumer to buy the product so that the retailer will keep on ordering it. The

sales personnel, particularly the merchandisers, have to ensure that the shelves are kept stocked, the displays are attractive and the retailers' problems with the products are solved.

In the evaluation after the launch, the sales of the product are monitored, and the product's performance checked in production, distribution, storage and the supermarket. The retailers' attitudes to the product and their placement and promotion of the product in the supermarket are studied - as well as, of course, the consumers' attitudes and behaviour towards the product. On the production side, the yield of the product and the quality of the product are monitored, but also important are the raw material quality and quantity, the equipment functioning and the labour content. This monitoring usually leads to product improvement, production and quality assurance improvement, and cost trimming, and often to changes in distribution and in marketing methods. The time after launching is a time of constant improvement of product and process, of reduction in production costs and of increase in the effectiveness of the marketing methods.

**After the launch, there is an assessment by senior management of the financial returns and the effect this product is having on the business strategy. Decisions are taken at set times to either pull the product from the market or adopt it into the product mix.**

### ***Think Break 1.6***

***Product launch: PD methods for large and small numbers of new product launched per annum***

A household appliance company may only launch two or three products per year, but a large food company may launch 50-100 products. What effects will these differences in new product numbers have on the Product Development Process, the types of products launched and the methods of launching the products?

## **1.7 Variations in the Product Development Process**

This description of the Product Development Process has been based on the development of a consumer product, but many food products are industrial ingredients

marketed by food processors and primary producers to food manufacturers and food service companies. There are differences in the Product Development Process because there is normally a much stronger relationship between seller and buyer in industrial marketing. Therefore, especially for new ingredients, there is cooperation between the food processor and the food manufacturer, sometimes in Stage1 but certainly in Stages 2, 3 and 4. The prototypes can be tested by the manufacturer during the design and certainly at the stage of the final prototype. There is a need for close cooperation so that the ingredient is not only correct for the manufacturer's process, but also for the final consumer product. Similarly in the food service industry, the supplier's Product Development Process and the recipe development by the chef of the meal or snack need to be coordinated.

This comprehensive outline is intended for the development and introduction of an innovation, a major new product. If a product improvement or a simple line extension or a relaunch is planned, many of these activities can be avoided as the knowledge is already in the company. Also a company, even with a brand new product, may reject some activities because they judge that the risk attached to a lack of knowledge is small. The Product Development Process is a guide, not a bureaucratic restriction, and basing it on the management decisions to be made, ensures it is adapted to the needs of the company and the project. But it means that there has always to be top management involvement in innovation and product development.

## **1.8 Summary**

Product development is a complex, multi-disciplinary company procedure, and every company needs to outline a Product Development Process as a template for product development in their company. A four-stage process is useful as top management usually need to make go/no-go decisions at the end of developing the product concept, the product prototype, the product commercialisation plan and after the product launch. To make these decisions, they need information which is found during the product development; these are the outcomes from the activities in the product development. The product development team select the techniques to be used in these activities. The important flow in product development is:

Activities (*techniques*)    ➔    OUTCOMES    ➔    DECISIONS

The business strategy of the company and the decisions to be made by top management are the basis for the product development project. The resources and constraints made by top management determine what techniques can be used.

## 1.9 Suggested readings

- Ali, A. (1994) 'Pioneering versus incremental innovation: review and research propositions', *Journal of Product Innovation Management*, 11(1), 46-61.
- Cooper, R.G. (1996) 'Overhauling the new product process', *Industrial Marketing Management. Special Issue: New Product Development*, 25, 465-82.
- Earle, M.D. (1997) 'Changes in the food product development process', *Trends in Food Science and Technology*, 8(1), 19-24.
- Page, A.L. (1993) 'Assessing new product development practices and performance: establishing crucial norms', *Journal of Product Innovation Management*, 10(4), 273-90.
- Rudolph, M.J. (1995) 'The food product development process', *British Food Journal* 97(3), 3-11.

### Some more recent readings

- Cooper, R.G., Edgett, S.J. and Kleinschmidt, E.J. (2004) 'Benchmarking Best NPD Practices 11' *Research-Technology Management* 47 (3), 50-59.
- Erikson, P.L. (2008) 'Partnering for Innovation' *Food Technology* 62 (1), 32-37.
- Institute for Manufacturing, Engineering Department. Cambridge University. 'Managing the NPD Process' [http://www.ifm.eng.cam.ac.uk/ctm/idm/resources/npd\\_process.html](http://www.ifm.eng.cam.ac.uk/ctm/idm/resources/npd_process.html) (accessed 15/10/2008)
- Inwood, D. (2008) 'The multinational food business – strategic, organisation and management issues for product development', Chapter 2, *Case studies in food product development*, by Earle M. and Earle R., (Eds.) Cambridge, Woodhead

## ***Project Break 1***

Product Development is a practical subject and learning is achieved by taking an active part in a project. Therefore readers are strongly urged to work through the ideas in each chapter in an industrial application. If possible choose a product development project in your company, preferably a project that is starting but a completed project can be used. Because some students may not have a company project, actual projects are included in the book (see Project 1: following). There is a different project in each chapter and readers can either work with all of them or carry one through as an individual project.

### **Company Project**

Discover the company's business strategy, the product strategy and the product development strategy for this product area. If there is no product strategy or product development strategy write one, and have it assessed by management. Discuss how the product development project fits in with these strategies. Study how product development has been organised in the past and select the method that you think would be the most successful for this project.

### **Project 1 (at end of chapter)**

Compare the four methods of exploring export product development for the company and then select the method that is most likely to be efficient and successful. For this method, outline a business strategy for the company, a product strategy and a product development strategy.

Outline several ways that product development could be organised in the company and select the most suitable method remembering that this is a small company without large resources.

### **For both projects**

1. Design a Product Development Process and determine what top management decisions are to be made at the end of each of the four stages of the PD process, and then relate these to the outcomes for each stage.
2. From this, write the aim for the product development project and see how it 'fits' with the company's strategies.

### ***Project 1: Frozen Bakery Snacks***

A medium-sized bakery company has essentially built its business on the domestic consumer market with fresh bakery products, but has also a single substantial export line in bulk frozen pastry to one overseas country, Malaysia. It wishes to explore the possibility of marketing consumer packs of frozen, fryable, pastry snacks to retailers in the same market.

The bakery has a managerial structure of an owner/managing director, a plant manager, a sales manager and a secretary/accountant. They need their new export product to stabilise and increase their business. They have concluded that the product development needs to be done as well as possible and so they are prepared to commit substantial resources.

The managing director met a Malaysian entrepreneur in an international Rotary gathering, who indicated that he would like to nominate a product, sort out its practicalities and distribute it. The plant manager plays squash with a locally based Malaysian, who has cousins whom he is sure could organise a suitable product and handle it. The secretary thinks they should employ a firm of international accountants, which has set up a management/marketing subsidiary and claims product development expertise, to deliver a complete product, production and marketing package.

There is debate and indecision. The management committee decide to temporise and employ a new product development graduate on a short contract to prepare a structural proposal for a product development team within the company. This team would not only explore and hopefully generate the Malaysian frozen product but would also give the company an enduring capability on which business and product expansion in the future would be built. The product developer is also asked to comment on the general merits of the new proposal weighed against the suggested out-of-house alternatives. The management also want the product developer to develop a plan for the project.

Lai, Pai Wan (1987) Development of a bakery snack for export from New Zealand to Malaysia, Ph.D. thesis, Massey University, New Zealand