

*Review and control of design process*

The design process delivers the optimum product in the predicted time and costs – too idealistic? Yes, the design process is creative and working in the unknown, so it is difficult to be specific about product quality, time and costs. But there is a need to follow the product by regular testing – by the design group in the beginning and by consumers as the prototypes become more refined – to see that it is delivering the product. There also needs to be a time and resource plan which can be reviewed at different times in the design process by peer review to see if the project is effective and efficient (Fox, 1993). Problems will be encountered and there needs to be a recognised method of problem solving available to solve the problem quickly before the project collapses.

**3.2.3 Conclusions to product design and process development**

It is important that there is a clear end to this stage, and also the knowledge available to make the decision to go on or stop the project before the more expensive next two stages. This may not be the time to commercialise or the time to launch, so the project has to be shelved; or it has to be admitted that the product did not fulfil the expectations and the project must stop. Five important outcomes are:

- clearly defined final product prototype with consumer acceptance;
- product specifications including processing method, physical distribution;
- market strategy including distribution, promotion, pricing;
- prediction of investment needed and financial outcomes;
- probability of achieving project completion and financial outcomes.

***Think break***

1. For the product design specifications you prepared in the last Think break, identify the stages in designing the product prototypes and developing the process
2. Create the basic product options by doodling on paper or computer or on the bench evaluate them and select the most suitable basic product.
3. Identify the raw materials and processing variables related to the specified product qualities, and outline an experimental programme to identify the ranges of variables where the optimum product could lie.
4. Design an acceptable aesthetic product using the basic product, including appearance, shape, colour, sensory attributes and relating the product to the present culture of the target consumers.
5. Identify the packaging needs for the product, including protection and use, and also the needs for promotion of the product.
6. Combine all the knowledge you have so far created, and develop the final design for total product and package

### 3.3 Product commercialisation

Stage 3: product commercialisation, is full scale-up of both production and marketing. These two developments need to be integrated throughout product commercialisation. Also design continues for the product, the production and the marketing, leading into the operational production and marketing. There is a need for integration, between the design and the operations. Product commercialisation ends with full integration of the product, production and marketplace. So the important factor in commercialisation is integration. Other factors to consider are the costs and the time. The costs really start to increase at this stage – maybe a plant has to be designed, built and commissioned; or fast-food outlets designed and built, or new distribution facilities built, all having a high capital cost. The risk of high financial losses increases as shown in Fig. 3.9.

There are four important stages in product commercialisation:

1. Setting up the commercialisation.
2. Design of marketing, production and distribution.
3. Testing of marketing, production and distribution.
4. Final integration of marketing, production and finance.

#### 3.3.1 Setting up the commercialisation

The first activities in the product commercialisation are to agree on the aim, the resources and the final definition of the product and consumer relationship by developing an integrated project plan, and finalising the market and the product as shown in Fig. 3.10. All the people who are to be involved in the commercialisation need to be in the discussion, together with the product designers, so that there is technology integration between the design and the commercialisation. The

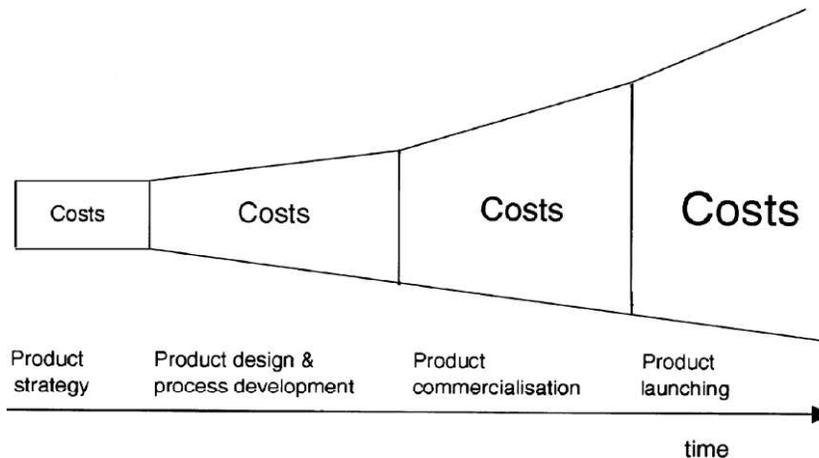
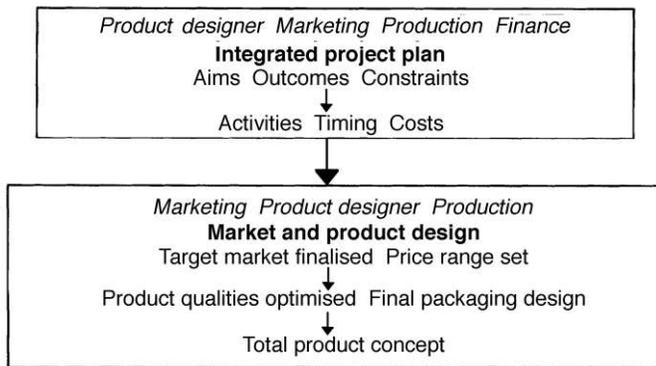


Fig. 3.9 Increasing costs in the product development process.



**Fig. 3.10** Setting up product commercialisation.

business strategy is revisited at this stage to ensure that the product is still in harmony with the business. The aims and outcomes are becoming more specific because of the increasing knowledge created in the product design. It is very important that the aims, constraints and outcomes for the product commercialisation are considered in a combined discussion so that the different groups are not going in diverse directions and working towards different outcomes. For a drastic example, marketing and production may be aiming for different sales volumes, or marketing may be working to a price outcome not related to production's cost outcome. From the joint agreement on aims and outcomes comes joint identification of the necessary activities and then integration of the activities in the project plan. New constraints may have appeared because of competitive actions or changes in raw material availability, or changes in the finance for capital investment and some of them may have become critical. It is important to revisit and re-identify the critical constraints. Finally the timing and the costs for the various activities are identified so that the combined plan for commercialisation can be as efficient and effective as possible.

The other consideration in setting up the product commercialisation is to finalise the product and relate it to the target market. The total product concept needs to be built up from the market and product design (Earle and Earle, 2000), defining the core product, the total company product, the consumer's product concept and the society's product concept. There may be a need for some further product design to optimise the total product concept.

### 3.3.2 Commercial design

There are four types of design in product commercialisation – marketing, product qualities, physical distribution and production plant, as shown in Fig. 3.11. This is a time for many creative activities and they can career off into different directions. Nothing is worse than product qualities at variance with the marketing image of the product; for example product designers designing high-vitamin dog food and marketing building an image of a high-protein food. It is

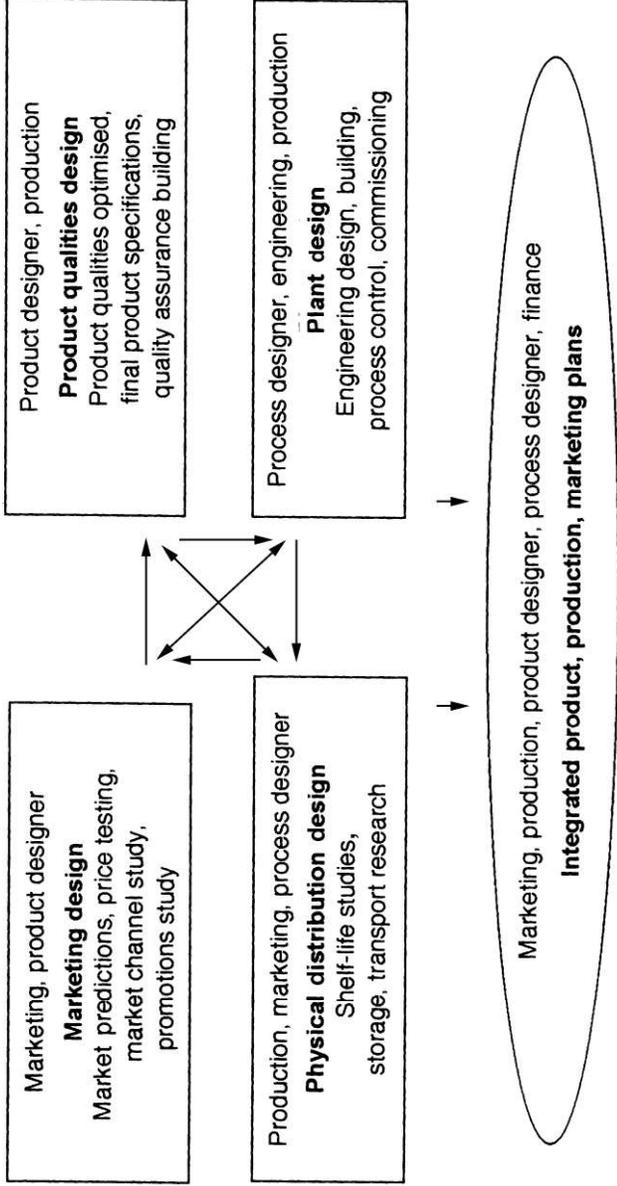


Fig. 3.11 Design in product commercialisation.

too late when the advertising designs come out and the designers say that that product is not what we designed! There needs to be close integration during the design and a final integration in the operational plans.

These are the general areas of activities but the choice of specific activities and techniques depends on (Earle and Earle, 2000):

- the type of product (incremental, innovation);
- the type of marketing (consumer, industrial, food service);
- the amount of learning needed by the company, the distributors, the consumers (high learning, low learning);
- scale of entry (local, national, international);
- the time (long, short) and timing (wide range, crucial).

For example, the time for the launch could be crucial because of competitive activity or the season, but the design has taken longer than expected, so the product commercialisation has to be rushed and the risk taken to drop some of the important activities. Companies often drop test marketing and business analysis when rushing to launch. But in all projects, time is expensive during commercialisation – an extra two weeks may make the costs shoot well over budget. So it needs to be well controlled.

Creating knowledge is another important aspect of the marketing and production design – as in all other designs. This is a major area of industrial research. For the incremental new product, the company has a great deal of past production and marketing knowledge and it is a case of fine-tuning the knowledge to include perhaps some production improvement and some new competitive marketing activities. But for the product innovation, it is a learning experience for company staff, distributors and consumers. The path of diffusion of the new product is identified, through all functional groups and top management in the company, the sales staff, the storage and transport operators, the retailers, the buyers, the users and the final consumers of the food. The learning experiences of all participants need to be incorporated in the activities in the final plan. Costs, revenues and profits are now assuming major importance and need to be followed carefully in the designs so the final financial plan is acceptable to the top management and the launch agreed.

### **3.3.3 Testing**

The final product testing includes many aspects of the product:

- technical product qualities – core product qualities, packaged product qualities, agreement with regulations, services with the product;
- consumers' product concept – acceptance, competitive difference, uniqueness, aesthetic worth, brand attitude, product worth;
- marketing's product – product image, product position, promoted product, product price, retailers' product image;
- company's product – market share, sales revenue/profits, product effectiveness in business strategy, product problems, company fit;

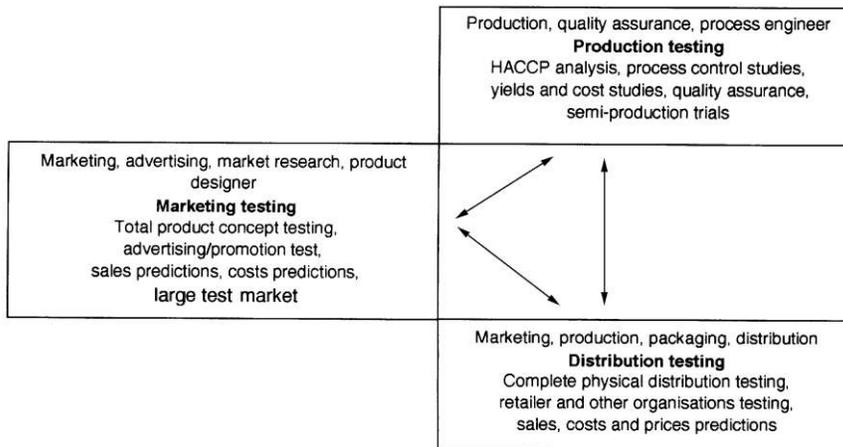
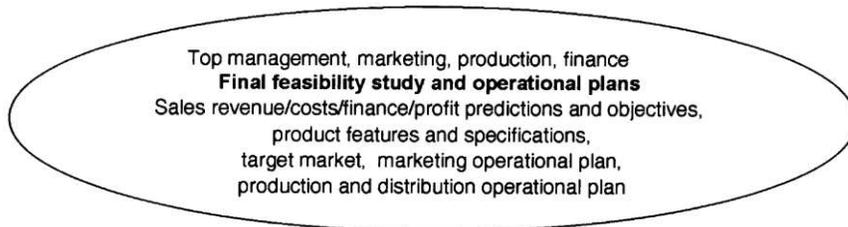


Fig. 3.12 Testing in product commercialisation.

- society's product – reliability, truthfulness of claims, protection from defects, value for money, social responsibility, environmental responsibility.

Combined with the testing of the product, there is production, distribution and marketing testing as shown in Fig. 3.12. Consumers test at least the total company product, with the packaging, advertising and public relations material; if time and cost allows the total product and the total marketing is studied in a test market. This can be an individual market or it can be the first phase in a roll-on marketing programme. Other important testing in the food industry is distribution testing which tests both the changes in product during transport and storage, and also the reactions of the retailers to the product. All food deteriorates with time – some in a few days, some in a year, and the effects of the temperatures, humidity, atmospheres and time during the transport and storage before sale has to be predicted. This is related to the label of the food with 'best by' dates.

An important aspect of testing today, which will increase with the trends into nutraceuticals, is ethical product testing. Ethical testing is related to a particular society; and the type and degree of testing depends on the ethics of the society. Basically people want to trust the food industry: firstly not to harm them and in fact to improve their health, and secondly not to use fraud and deceit when providing them with food. It is not ethical for the food industry to claim a lack of knowledge when being criticised by the society for unethical behaviour. When launching a new food product onto the market, the company must have extensive and detailed knowledge of the product's benefits and defects, of the raw materials and ingredients, and of the truth of the advertising claims. Always, the company knowledge must be more than the general knowledge in the society and in particular the consumers' knowledge, and the company must be willing to provide their knowledge. The company must not deceive any one about either



**Fig. 3.13** Integration of product commercialisation.

the benefits or the defects or the problems associated with the product (Legge, 1999).

### 3.3.4 Final integration

The final step in product commercialisation is to bring together the knowledge from the design and the testing and to decide if the product is feasible; if it is, how it should be launched on the market. Integration is vital at this stage so that the launch can be efficient and effective (Andreasen and Hein, 1987). Obviously good decision making by top management is also vital, but management can only make decisions with the knowledge provided. The integrated knowledge is shown in Fig. 3.13.

The strategic orientation and the organisational capability are detailed at this stage. It is useful to develop a method of problem solving which can be introduced to everyone before the launch. Problems nearly always do occur in a launch and it is necessary to have a method of solving them to reduce both the chances of failure and the time taken for problem solving.

#### **Think break**

1. For your product designed in the last Think break, identify the aims, constraints and outcomes for the product commercialisation.
2. According to your expertise and knowledge, design the production, distribution or marketing. Ask some colleagues with different expertise to design the areas outside your knowledge
3. Integrate the three design areas to give the total product/production/distribution/marketing of the product commercialisation.
4. Evaluate the integrated design for its effectiveness in achieving the project aims and for obeying the constraints on the project.

## 3.4 Product launch and evaluation

‘Effective product launch is a key driver of top performance, and launch is often the single costliest step in new product development. Despite its importance,