

# COMPETING THROUGH MANUFACTURING

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## INTRODUCTION

The relationship of manufacturing to the present and future markets for its products is determined through the adoption of appropriate manufacturing strategy that incorporates the process of manufacture and the infrastructure to support production. The tenets of focused manufacture must be a key consideration when formulating manufacturing strategy. Manufacturing systems strategy and human resources strategy, although seen as separate independent initiatives within a company, must be aligned with the production process and manufacturing strategy.

### 1. RELATIONSHIP OF MANUFACTURING TO ITS MARKETS

The relationship of manufacturing to the present and future markets for its products is dependant upon manufacturing strategy.

1.2 To understand the relationship between the products/markets and manufacturing it is important to examine the following :

- manufacturing strategy linked to marketing strategy
- order winning criteria
- choice of processes appropriate to the market requirements
- future products, in terms of their design
- product life-cycle.

I will discuss these points at length, using examples from my own work experience to emphasise particular aspects.

1.3 The way in which a company is aligned to the needs of the market place, in terms of its manufacturing capability, will have a dramatic effect on its performance. Hill [1] regards the single most important reason for a company to define the correct relationship between manufacturing and its market is through the inability of management to think, talk and act strategically. The way in which strategy is developed and implemented precludes most manufacturing personnel making an effective contribution to the planning process.

1.4 The inherent problems with the perception of the manufacturing function is that it must react to the demands other groups within the organisation may place upon it. For instance, the marketing department usually require a broad product range to meet every possible requirement a customer may have. Sales departments regard every sale made with equal value although the production department may not see them in the same light. Some products may be more complex to manufacture than others, and a broad product range means lower efficiencies, smaller runs and higher costs.

1.5 Manufacturing must be aligned to the needs of the market. This can only be achieved if a manufacturing strategy is developed that links with the corporate marketing strategy. Hill recommends five basic steps to achieve this :

1. Define corporate objectives.
2. Determine marketing strategies to achieve these objectives.
3. Assess how different products win orders against competition.
4. Establish the most appropriate mode to manufacture these sets of products - process choice.
5. Provide the manufacturing structure required to support production.

1.6 It is steps 3, 4 and 5 that define the relationship between manufacturing and markets for products.

1.7 Hill develops the idea of 'order winning criteria'. Success in the market place may depend upon one critical order winning criteria, that manufacturing must meet. He breaks down the areas of importance into the following :

#### ● Price

If the market is price sensitive, the manufacturing department's task is to provide the lowest priced product possible.

#### ● Product Quality and Reliability

These aspects are provided primarily by the manufacturing process of the business.

#### ● Delivery speed

The customer's delivery requirement may be greater than the process time, so inventory will be held.

#### ● Delivery reliability

Delivery of product on or before the delivery date.

#### ● Other criteria

Hill believes the previously mentioned criteria are the most important. However there are others, such as technical liaison, meeting launch date, and product and colour range supplied.

1.8 The most important aspect of production's relationship with the market for its products is probably the process chosen to make the product. There are five distinct types of process: Project; Jobbing, Unit or One-off; Batch; Line and Process.

1.9 The link between the demand for the product and the investment in processes to complete the task is fundamental to the decision of which process to use.

- 1.10** The Project process is characterised by experience, know-how and skills required to meet the individual needs of customers. These companies operate within markets that need a high degree of expertise, rapid product change and low sales volume. Manufacturing must meet this by having general purpose equipment with some specialist plant to meet particular project requirements. Processes will be highly flexible and able to cope with low production volumes of the market and the design changes that will occur during production.
- 1.11** Jobbing is very similar to Project except that more emphasis is placed upon the labour requirement. The process still needs to be flexible to meet the requirements of its customers, with major concern surrounding the utilisation of labour.
- 1.12** Line process reflects the other end of the continuum to jobbing. The businesses sell standard products which to be successful will be based on price and are associated with large customer orders. The level of product change will be restricted, and options may be supplied within strict guidelines. The process will be dedicated to the predetermined product range. High costs of change are associated with this type of process. Volumes will be high and need to be so in order to achieve utilisation necessary to justify the immense capital outlay.
- 1.13** Batch production is characterised by increased volumes of jobbing production. The batch continuum starts at low volume in which capability is important with a high degree of product change and new product introduction. At high volume where price becomes more important, products become standardised, order sizes are increasing and product change is lower. This illustrates the shift in production/marketing relationship towards line. The consequences on manufacturing are that a wide range of products and production volumes must be accommodated. Processes will be general purpose with a high degree of flexibility built in to meet the demand of the market. Utilisation of some parts of the plant may be low.
- 1.14** Continuous process is suitable for markets where product change and the rate of new product introduction are low. Companies will be selling product rather than capability, and orders will be won largely on price. The manufacturing facilities to support the market will be low cost production. The process will be highly dedicated where the cost structure is based upon high production volumes.
- 1.15** When developing new products there has been a tradition of designing things on a sequential basis. This means that the right relationship between a product and its manufacturing process may not be aligned correctly, because the manufacturing aspect comes last.
- 1.16** The general development of production capability may not account for the product life cycle of an item. This aspect of the market/production relationship means that during the initial launch of a product, production process required may be totally different from the process required during peak demand.
- 1.17** In summary, it can be said that in order to link manufacturing with products and markets a strategy is needed. This strategy will encompass the process choice and infrastructure.

## **2. GETTING THE FOCUS RIGHT**

- 2.1** Skinner regards focused manufacture as the key to success, and that companies that operate focused manufacturing gain competitive advantages. Technologies, volumes, markets, policies and services must all be tightly focused to meet the needs of the marketplace.
- 2.2** Focused manufacturing according to Hill is where the facilities within a factory are linked to the appropriate market forces. The tenets of focused manufacturing relate to manufacturing strategy in a direct and relevant way. Without focused manufacturing there can be no manufacturing strategy: a manufacturing strategy must include focused manufacture. "Focused manufacturing deals with the issue of linking an organisation's manufacturing facilities to the appropriate competitive factors of its business(es) with the aim of enabling that company to gain a greater control of its competitive position". (Hill 1985).
- 2.3** The Boston Consulting Group examined the experience curve of eleven companies. They were expecting to see that companies that had been operating in a market for some time could demonstrate reasonable better returns. However, they came to the conclusion that specialisation and product focus were the key to profitability within the companies they examined.
- 2.4** In companies where the marketeers have developed company strategy, and production is not focused, items tend to be produced on existing processes, using the same infrastructure and overheads allocation. This may provide economies of scale in the provision of supporting resources, but does not provide a company focus and doable task for the production people. Compromises are made to accommodate marketing requirements.
- 2.5** One of the options is to simply increase capacity. The ramifications of this are no better. More complex systems are created, with the resulting bureaucracy. This results in formalised systems which Schmenner believes will be unresponsive to the needs of the marketplace. In a changing environment with no clear strategy, performance will be sub-optimum.
- 2.6** Specialists tend to propose piecemeal solutions to fundamental problems. Vested interests and conflict means that sub-optimum solutions are implemented. Panaceas such as TQM, JIT and MRPII are implemented without good cause.
- 2.7** When developing strategy, the manager must be aware of the trade-offs in focused manufacture between size reduction and manageable units. By adopting focused manufacturing within a manufacturing strategy the volume split, product/market split and process split must be considered.
- 2.8** It may be appropriate to consider a 'plant-within-a-plant' configuration. This would make the size of production process manageable and concentrate appropriate resources in the areas where they would be required. Costs can be more closely monitored, too.
- 2.9** What generally prevents a manufacturing focus being developed is that marketing departments may develop a broad product range. In some companies, manufacturing are faced with problems that prevent them focusing the process: unions are too strong; investments costs prevent physical changes; general uncertainty.

- 2.10 The short-term approach to Return on Capital Employed is an unfortunate problem of the British economy. Whereas the Japanese regard long-term growth and stability more important than short-term profits, British industry operates on a totally different maxim. 'Short-termism' is prevalent in the stock markets, banks and financial management of industry. These various problems contrive to making focused manufacturing difficult to achieve. Manufacturing strategy must take account of these issues.
- 2.11 Most manufacturing companies require some sort of Material Requirements Planning capability. Whether this be on a micro, or a mainframe depend upon the size and complexity of the production process. This could be a calculator, spreadsheet facility, or a formal system developed in a programming language.
- 2.12 Other types of controls that may operate would largely be dictated by the type of process. The type of manufacturing control systems used should not include informal, ad hoc sources of information. The design and implementation of manufacturing control systems is now more rigorous and disciplined than it used to be. Most people are not used to using formal systems to control mechanistic activities. This is slowly changing as more and more people are exposed to benefits that accrue if formal systems are used.
- 2.13 Human resource considerations are again generally reflected by the process chosen. Complex machinery in a jobbing shop will need a capable, highly trained work

-force, whereas continuous process production may only require machine minders, with highly trained technical support staff.

### 3. CONCLUSION

- 3.1 In summary, manufacturing strategy must include consideration of the process required to match production with the requirements of the market place. Manufacturing control systems should be aligned to the production process, product complexity and information needs of the management. Human resource requirements again should be aligned to the production process used to manufacture products.

### REFERENCES

- [1] T. Hill, *Manufacturing Strategy*, Macmillan (1985).

### About the Author

David Petie currently works for RHM Foods as a Manufacturing Systems Project Manager and has worked for a variety of Software Houses, and Manufacturing Companies as a systems consultant. He is an Associate member of BPICS, a Business Graduate (Lancashire Polytechnic) and currently is studying for an MBA with the Open University.

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