

Case study of nissan motor manufacturing uk limited



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Nissan Motor Manufacturing UK Limited (NMUK) is the UK's largest car manufacturing plant, which is located near Sunderland. In terms of the number of cars produced annually for every person employed, it has been Europe's most productive car plant for the past seven years. (quickmba)

This achievement is no accident. It was designed and planned for from the beginning.

NMUK handles all aspects of the manufacturing/assembly of the Primera, Micra and Almera ranges

By the end of 2003, NMUK produced 331, 924 vehicles, over 70% of this output was exported to 55 markets worldwide.(company's website)

Strategy – Cost Leadership

With this strategy, the objective is to become the lowest-cost producer in the industry. Many (perhaps all) market segments in the industry are supplied with the emphasis placed minimising costs. If the achieved selling price can
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at least equal (or near) the average for the market, then the lowest-cost producer will enjoy the best profits. This strategy is usually associated with large-scale businesses offering “standard” products with relatively little differentiation that are perfectly acceptable to the majority of customers. Occasionally, a low-cost leader will also discount its product to maximise sales, particularly if it has a significant cost advantage over the competition and, in doing so, it can further increase its market share.

Examples of Cost Leadership: Nissan; Tesco; Dell Computers

ACHIEVING COMPETITIVE ADVANTAGE THROUGH OPERATIONS

Clearly, strategies differ. And each strategy provides an opportunity for operations managers to help the company to achieve its competitive strategy through the implementation of accurate operations strategy.

Therefore, operations strategy is the total pattern of decisions which shape the long-term capabilities of an operation and their contribution to the overall business strategy’ (Slack, 2002).

Studies suggest that competitive advantage can be achieved when managers make effective decisions in good and services design, process, capacity design, location, process technology and control. These decisions are the support that operations management can make in order to support company’s mission and therefore its business strategy.

Design

Effective product strategy requires selecting, designing and defining a product and then transitioning that product to production.

Only with this strategy is carried out effectively can this production function contribute its maximum to the organisation. The operations manager must build a product develop system that has the ability to conceive, design and produce products that will yield the competitive advantage for the firm.

Product decision, therefore are fundamental to an organisation's strategy and have major implication throughout the operations function. For instance, Nissan's diesel engines are a good example of the strong role product designs plays. The diesel engine has allowed the company to achieve not only to remain as cost leader but also to gain market share in the European market through its new Micra Nissan Uk.

Nissan provides an extensive range of diesel engines in the Micra, Almera, Almera Tino and Primera. Some engines are shared models with Renault.

Process

After examined the need for selection, definition and design of goods (or services), we now turn to their production. Accordingly to Slack (2002) a major decision for the operations managers is finding the best way to produce.

A process or transformation strategy is to find a way to produce goods and services that meet customer's needs and product specifications within the cost and any other managerial constrains.

For Nissan, car assembly is a complex operation with many components requiring skilled assembly. For example,

www.nissan-global.com

That is a basic indication of what is involved. Management are particularly keen to monitor total machine-hours and total labour-hours that each vehicle requires.

So far, Nissan has invested over £2. 1 billion in the Sunderland site, taking its production capacity to 500, 000 vehicles per year. (annual report 2000)

‘ Production methods must be able to produce what customers want, in the quantities customers require, at a price consumers are willing to pay, and at a cost that yields a profit to the business. That means that being efficient is vital to success.’ (President Carlos Ghosn)

The aim of the process here is mass produce standard models, with individual consumer choice being accommodated by offering various colours, interior designs, and optional extras within a limited flexible production process. People can still personalise their cars further e. g. by choosing a particular car registration or accessories.

In search of high output at low average cost, car manufacturing typically uses a continuous flow production method, where sub-assemblies are brought together in a final assembly area. (the manager). This is the most cost effective and efficient method of production and the speed of the final assembly line can be adjusted to match consumer demand. If demand picks up, the production line can be accelerated, within predefined limits.
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At NMUK[1], the production flow draws on three main production shops, as well as support areas. The three main shops are body assembly, painting and final assembly. And the Supporting manufacturing areas are press shop – produces panels for the vehicles, plastics shop – makes bumpers (fenders) on site, castings shop – makes engine parts e. g. cylinder heads, engine shop – assembles engines, installs oil, coolant fuel and axle plant – produces axles that are joined to engines in final assembly.

NMUK production flow

Moreover, the decisions about a particular process require decisions about equipment and technology.

The selection of equipment for a particular type of process can also provide competitive advantage. Nissan's Sunderland plant for instance, is technically highly advanced. It uses sophisticated robotics and computer integrated manufacturing techniques to create a carefully monitored production process that reduces errors to an absolute minimum.

Capacity

After selection of a production process, determining the capacity is required. Meredith (2002) defines capacity as the 'throughput' or the number of units a facility can hold, receive, store or produce in a period of time.

The capacity affects a large portion of fixed cost and it also determines if demand will be met or if facilities will be unused. For instance, if the facility is too large, portions of it will be still idle and add cost to existing production or clients. On the other hand, if the facility is too small customers and

perhaps markets will be lost. Therefore determining capacity is critical in order to help to the achievement of company's strategies.

Most organisations operate their facilities at a rate less than design capacity[2]because they have found that they can operate more efficiently when their resources are not stretched to the limit.

In support of this, in NMUK the machinery is scheduled to work at a given level although when demand requires it; there is flexibility in regard to both the machinery and the workforce of 4, 300. At the moment, with a two-shift pattern, NMUK has a total production capacity of around 360, 000 units/year – a third shift can be introduced which would take production up to 500, 000 units/year if and when required. (Nissan-uk)

Location

One of the most important strategic decisions made by companies such as Nissan is where to locate its operations because location greatly affects both fixed and variable cost. For instance, depending on the product and the type of production or service taking place, transformation cost might be too high. Another cost that might as well affecting the location are taxes, wages, raw material cost and rent.

In order for a company to select its location, first it needs to decide the country following by the selection of the region. The final step is choosing a specific site within a community.

When the company is evaluating the different alternatives, it must keep into account factors such as, labour productivity, foreign exchange, culture, government policies, and proximity to markets, suppliers and competitors.

Returning to our example lets to evaluate why did NMUK decide to locate in Sunderland:

For its UK factory, Nissan chose in 1984 a 300-hectare former airfield near Sunderland. Sunderland's attractions included firstly, skilled labour force; manufacturing has a long tradition in the area. A decline in other local manufacturing meant that skilled labour was readily available.

Second, communications. Sunderland has good road and rail links to all major UK areas. This makes it relatively easy to bring in supplies from 105 separate UK component and sub-assembly suppliers, and also to distribute completed vehicles. A nearby deep water port (Port of Tyne) gives ready access to export markets and for the import of vehicles to the UK.

Finally, government support. The government provided financial and other incentives to manufacturers who set up in an area where employment opportunities had reduced sharply and new jobs were needed.

Since 1984, Nissan has increased the scale of its Sunderland operation; almost 3.5 million cars have already been made (annual report 2002).

Control

Strategic control systems are needed to monitor and evaluate performance in an organization.

There are various tools that a company can use in order to help its monitoring process. The adoption of one or some of them depends upon the companies necessities and therefore not all of them will be successful for every company .

Total Quality Management

In practical terms TQM involves identifying customers and their requirements, establishing and using objectives (targets) for all areas of activity, basing decisions on researched hard facts rather than on hunches, identifying and eliminating the root causes of problems and educating and training employees (the manager)

Nissan knows that success comes from the quality of management as well as of the product-and that the company must act more globally. Addressing this is Nissan Management Way, intended to provide innovative thinking and faster decision-making abilities for the company. (Annual report 2002)

Total Quality Management (TQM) is a key feature of Nissan's way of working. TQM involves making customer satisfaction top priority. Given this goal, everything the organisation and its people do is focused on creating high quality. To achieve this, Nissan has to understand customer requirements, consider the processes involved in providing quality, not just the end result, prioritise and standardise tasks to deliver quality and educate all employees to work in this way

TQM is an ongoing process; a way of thinking and doing that requires an 'improvement culture' in which everyone looks for ways of doing better.

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Building this culture involves making everyone feel their contributions are valued and helping them to develop their capabilities.

A cycle of Plan, Do, Check, Action becomes part of every employee's thinking, because it represents Nissan's way of working (annual report 2002).

Just-in-time technology

With a just-in-time approach, specific vehicles and their components are produced just-in-time to meet the demand for them. Sub-assemblies move into the final assembly plant just as final assemblers are ready to work on them, components arrive just in time to be installed, and so on. In this way, the amount of cash tied up in stocks and in work-in-progress is kept to a minimum, as is the amount of space devoted to costly warehousing rather than to revenue-generating production. Nissan's just-in-time process depends not on human frailty but on machine precision.

Every vehicle is monitored automatically throughout each stage of production. A transponder attached to the chassis leg contains all of a vehicle's production data e. g. its required colour, specification and trim. This triggers sensors at various points along the production line thus updating the records.

When, for example, the transponder sends a message to the production system at a supplying company to produce a seat in a particular colour and trim, this triggers the relevant response and a seat to the required

specification is produced. Further along the production line the specifically produced seat arrives to meet the vehicle to which it belongs – just in time.