

The way forward for operations strategy

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Japanese manufacturing success, particularly in cars and consumer electronics, was the topic of business debate in the early 1980s. Just-in-time (JIT) manufacturing and total quality management (TQM) became household terms. As a result, managers realised the operations process could be a source of competitive advantage and, if ignored, could cause a company's decline.

More recently, companies have realised that improvements in their market position from streamlining operations are limited by supply chains. They are beginning to emphasise supply chain management (SCM), including inventory, production, procurement, product development and relationships with customers and suppliers. Is supply chain management another buzzword soon to fade away? How does a manager make sense of JIT, TQM and SCM, not to mention time-based competition and other hot topics? This article develops a framework to put these trends in context.

Three-level framework

Operations strategy has three levels: mission, objectives and management levers. However, operations strategy should be integrated with other areas of strategy, including marketing, finance and human resources. Sometimes, however, one function should take precedence over others. For example, one company went through a painful period of not responding to customer needs in a long-term effort to improve customer satisfaction. This was because the operations group needed to develop the capability to manufacture high-quality items in large volumes. To avoid disruptions during the process, customer desires were neglected and marketing personnel were frustrated. In the long term, however, customers were delighted.

Mission

The operations mission defines a direction. McDonald's, for example, uses four terms for its operational mission: quality, cleanliness, service and value. The annual report in 1988, more than 30 years after defining those terms, still devoted a page to each. Because the mission should not change significantly over time, the statement is often vague. Otherwise, it would have to be reworded frequently. Employees need to know there is a consistent direction for the company.

A sleepy statement of direction, resembling the mission of other companies, would make it difficult to attract the best employees. Therefore, a mission statement should incorporate the excitement of top management and should proclaim this is an excellent company.

Objectives

If the mission is vague, it is difficult to know whether it has been achieved. So the next level of strategy, operations objectives, provides measurable goals. For more than 20 years, companies have used four operational objectives for this: cost, quality, delivery and flexibility.

Objectives must be defined carefully, clearly measurable and ranked. They must be defined carefully because these terms are often used loosely. Quality at a McDonald's restaurant is very different from quality at a five-star restaurant, which is very

different from quality in a hospital. The objectives should be measurable so managers know whether they are meeting their goals. It is quite possible, and perhaps desirable, to use more than one measure for each objective (for instance, warranty cost and parts-per-million defective for quality).

The objectives should be ranked so managers can prioritise when making trade-offs. A manager of a high-volume manufacturing line made it quite clear that cost was more important than delivery. When questioned further, however, he noted that he had occasionally gone over budget by using overtime to meet a deadline. In other words, his behaviour indicated delivery was more important. Subsequent discussions with senior managers helped clarify that delivery was more important.

In the 1970s, many people in operations thought cost and quality were incompatible, as were delivery and flexibility. More recent experience, however, suggests that cost and quality are complements rather than opposites. Warranty, prevention and detection costs decrease as quality improves. Rework and congestion on the factory floor also decrease, thereby reducing costs. In addition, rapid delivery of customised products is now possible. This is especially true with technologies such as flexible automation, electronic data interchange and the web. Most companies have instances, however, in which trade-offs must be made. Therefore, although combined improvements are possible, objectives should be ranked.

The first objective, cost, can be considered in one of three categories: low, competitive or premium. In a low-cost environment, such as discount retailing, the goal is to have the lowest cost products or services. Companies that aim for competitive costs do not necessarily strive for the cheapest products, but rather want to be competitive with most competitors. Some companies produce prototypes or have a unique product for which they can charge a premium; hence, cost is less important. Cost measures include price per unit, inventory turns and labour hours per unit. In the US, low cost tended to be the primary objective of manufacturing companies from the 1950s to the mid-1970s.

The quality objective rose to the fore in the mid-1970s with the inroads made by Japanese products in the West. In particular, the car industry felt the effects of high-quality Japanese products. Quality can be defined by understanding which of its multiple dimensions are important. An article by David Garvin that adds depth to a discussion of quality describes eight dimensions of quality: performance, conformance, reliability, durability, serviceability, features, aesthetics and perceived quality. Quality measures include parts per million defective, per cent returns, results from satisfaction surveys, warranty costs and so on.

Third, delivery can be defined by speed and reliability. For instance, some companies compete on delivering within 24 hours. Others take longer, but assure customers that goods will be delivered reliably within the quoted time. Some companies rank delivery last among the objectives. Prototype printed circuit boards, for instance, may be completely customised and, therefore, require long delivery times. Measures for delivery include per cent on time, cycle time from request to receipt, per cent out of stock and so on.

The fourth objective is flexibility, which has three dimensions: volume, new product and product mix/customisation. Volume flexibility is the ability to adjust for seasonal variations and fluctuations. It is particularly important for fashion clothing. New product flexibility is the speed and frequency with which products are brought from concept to market. Western car makers have made great strides in new product flexibility. A niche car allows a company to enter profitable, low-volume markets quickly. This flexibility is impossible if development time is eight years, as was traditionally the case. Japanese manufacturers, on the other hand, halved these development times, which were subsequently matched by Chrysler and Ford. Once again, however, Toyota has raised the bar by introducing the Ipsum in just 15 months.

Product mix/customisation flexibility is the ability to offer a range of products. This may simply mean the catalogue contains many items, or it may mean the company can develop customised products. Many machine tool companies produce a single product for a given customer and never make that product again.

Some have argued that delivery and flexibility are the most important objectives because cost-cutting and quality programmes have levelled the playing field in these areas. Such companies then compete with rapid introduction of new products and rapid delivery. "Time-based competition" has been used to describe this phenomenon.

Finally, note that objectives are dynamic. For instance, as a new product begins full-scale production, the company may emphasise flexibility to design changes and delivery so market share is not lost. As the design stabilises, the emphasis may change toward quality and cost.

Management levers

Although the operations objectives provide measurable goals, they do not indicate how a company should pursue those goals. Ten management levers provide the tactical steps necessary to achieve the goals: facilities, capacity, vertical integration, quality management, supply chain relationships, new products, process and technology, human resources, inventory management and production planning and scheduling.

Interestingly, in the late 1970s researchers did not include quality management, supply chain relationships, new products and human resources as management levers. Today, these are critical and new levers will be introduced. The categories for operations objectives, on the other hand, have not changed.

Facilities decisions concern the location and focus of factories and distribution centres. Are several facilities required? Does each facility perform all functions or is one focused on a market, process, or product? Many manufacturing companies have a parent plant responsible for oddball parts and new product introduction. When products reach high-volume manufacture, they are moved to a plant where efforts are focused on excellence.

Decisions on the size and timing of capacity expansion interact with location decisions. For instance, some companies set limits on the number of employees at any location, to encourage better teamwork. As demand grows, expansion at the site

would violate the limit, so a new plant must be found. One US textile manufacturer had rapidly expanding sales in Europe. When capacity at its factory could no longer meet demand, managers had to determine whether to expand near the same site, elsewhere in the US, or in Europe. The final decision was to build in eastern Germany to lower transportation costs and import duties and to take advantage of government tax breaks.

Make/buy decisions are at the heart of vertical integration. Some companies make components, perform final assembly and distribute their products. Others focus only on product design and assembly, relying on other companies to manufacture components and for distribution. Facilities, capacity and vertical integration decisions are primarily made for the long term because they demand significant investment.

The tools, programmes and techniques used to achieve quality goals comprise the quality management lever. This lever is distinct from the quality objective in that the objective provides the definition and measurable targets, while the lever specifies the means to achieve the targets. Quality management includes such things as statistical process control (SPC), Taguchi methods and quality circles. Note that different definitions of quality may dictate the use of different procedures.

The supply chain relationships lever focuses on dealings with suppliers and customers. These relationships may take very different forms. For instance, General Electric has a “trading process network” that involves putting part specifications on the internet so a large number of suppliers can bid. These “virtual markets” are growing, particularly in business-to-business transactions. Other companies maintain strategic alliances with a few suppliers or customers. Some recent supply chain initiatives, such as vendor-managed inventory (VMI), involve restructuring supply chain relationships, often reducing the number of suppliers and encouraging electronic communication.

The procedures and structures behind new product introduction are the core of the new products lever. Most companies now employ multifunctional teams of design engineers, marketing personnel, manufacturing managers and production line workers. The new products lever specifies reporting relationships as well as procedures for setting development milestones.

The process and technology category encompasses the choice of a production process and the level of automation. The product-process matrix is a useful framework for analysing process choices. This matrix illustrates how the characteristics of the product – sales volume, number of different models, etc. – should be aligned with the production process -- job shop, batch flow, or continuous flow, for example.

Human resources involves the selection and motivation of people. The inventory management lever encompasses decisions regarding purchasing, distribution and logistics and specifically addresses when and how much to order. Finally, production planning and scheduling focuses on systems for controlling and planning production.

Conclusion

First, researchers and practitioners are continually introducing terms that describe some aspect of management. An example is supply chain management. The supply chain relationships lever, of course, pertains to supply chain management, but so do inventory management, production planning and scheduling, vertical integration and new products. Occasionally it is necessary to introduce a new lever to focus attention on important issues.

Second, the policies in place for each of the 10 levers should be consistent, not only with the operation's objectives but also among themselves. If there are inconsistencies, managers should make changes. For example, many companies have pursued quality programmes without changing workers' incentives. Workers were rewarded for the volume of output without regard for quality. In other words, quality objectives were inconsistent with human resources policies. Reward systems had to be rearranged to support quality goals.

Finally, in auditing manufacturing strategy, managers should understand distinctive competencies at the detailed level of the management levers. These distinctive competencies should inform the objectives, mission and business strategy. Thus, information flows both ways, from business strategy to management levers and from levers to business strategy.

Further reading

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Box

Many companies are eliminating functional areas and organising by business processes. For instance, a major multinational food and beverage company recently re-engineered itself in a way that redefined roles to be more responsive to the customer. A common re-engineering approach is to replace the operations, logistics and marketing functions with teams that are process-focused.

One team may be devoted to generating demand, while another focuses on fulfilling demand. The members of the team working on generating demand perform tasks traditionally done by marketing, but they may carry out other functions as well, including product development. The fulfilment team often looks like the manufacturing or operations function but may include logistics, sales and marketing as well.

The idea is to align organisational structure with the processes the company uses to satisfy its customers. Barriers between functions that created delays and tension are removed, enabling the company to meet customer orders in a more seamless way.