

FORWARD PLANNING

In 1980, the concept of forward planning, business planning, or strategic planning was not commonly associated with the purchasing function. Purchasing was most often thought of as a reactive function organized to support manufacturing. Marketing, on the other hand, was more often thought of as the proactive organization focused on the future of the firm. The failure of management to recognize the strategic and futuristic implementation of purchasing limited innovative actions when dealing with a firm's supply world.

The 1980 situation demanded new thinking and a new approach to the acquisition of semiconductors. The purchasing managers involved had little choice, given the circumstances. Purchasing had no experience with strategic planning. There were no guidelines to follow. The responsible purchasing managers started with a clean piece of paper, a mission, and a problem statement.

THE ENVIRONMENT

The first order of business was to develop a complete understanding of both the internal and external environments. The firm's engineers documented their future technology requirements in the form of a technology plan or road map. Once the internal requirements were understood and documented, the focus turned to the external environment, revealing an industry which was (and remains) dynamic, high growth, entrepreneurial focused, and technology driven - one that defies simple analysis.

AREAS OF STRATEGIC IMPORTANCE

Several major areas were identified as being of strategic importance to the firm's survival and future profitability: How can Universal ensure that it benefits from rapidly evolving technologies in the area? How can Universal obtain the desired/required quality? How can Universal best ensure a continuity of supply? What actions need to be taken to compress the time involved in going from

concept to customer? Can manufacturing cycle time be compressed? How can Universal best minimize the "all-in" cost associated with the acquisition and use of semiconductors?

THE MAKE-OR-BUY ISSUE

One of the major issues confronting the team had to do with whether the firm should make the required semiconductor devices or purchase them. This is representative of the complexity of decisions in the areas of design, source selection, pricing, and related procurement issues. Further, the make-or-buy decision impacts on all six of the areas of strategic importance.

In order to understand the make-or-buy question, management recognized the need for a complete environmental analysis of the semiconductor industry. A team of company experts including engineering, quality, purchasing, and manufacturing professionals was assigned to develop a program analyzing the semiconductor industry. Both primary and secondary research were conducted. The research led Universal executives to conclude that the decision was more complicated than simply deciding whether to acquire a semiconductor facility or buy the required components. It became apparent that the semiconductor make-or-buy issue consisted of many subissues. Accordingly, the entire process of designing, manufacturing, and testing semiconductors was broken down into stages.

The first stage (design) involved both human and computerized inputs. Computerized design was in its infancy. Carver Meade had recently written his book addressing cell-based design methodology. There was a CAD/CAM component to design. But most design was done without a lot of computer-aided blocks or cells by human design engineers.

The second phase consisted of the development of masks for the process. The third phase had to do with the actual manufacture of the semiconductor, including the manufacture of the silicon ingot and imprinting of the integrated