本考科禁用掌上型計算機

1. 針對明基 (BenQ) 購併西門子 (Siemens) 手機部門失敗個案，請
   以企業創新策略能力中的企業組織與文化的內涵分析。(60 %)

2. What were the strategic changes to Allstate Chemical Company did
   or should pay attention? (40 %)
The Company

Allstate Chemical in the 1970s

Allstate Chemical Company (ACC) produced commodity and specialty chemicals and distributed commodity chemicals for virtually every major chemical producer in the United States. Its distribution philosophy, supported by the largest distribution network in the country, was “Tell us what you want, and we will get it to you.” ACC itself supplied about 15 to 20 percent of the product sold through its network. Distribution accounted for about half of total revenues. Another 15 percent of sales came from the production of diverse specialty chemicals such as adhesives, foundry products, and electronics chemicals, most of which ACC had acquired during the last decade. Like Allstate’s existing divisions, these additions operated with considerable autonomy and possessed the full range of functions needed for P&L accountability. (See Exhibit 1.)

Relationship with the corporation. Allstate Chemical was a wholly owned subsidiary of the $8 billion Allstate Oil Corp. (AOC). During most of the 1970s, according to Jack Cousins, who became president of ACC in mid-1983,

chemicals were not perceived as a significant growth or investment area. It was tacitly understood that our mission was to provide a positive cash flow to the corporation for use in other areas.

Refinery closings and divestment of some oil-producing properties in the late 1970s reduced the pressure on ACC to be a cash provider and generated funds for reinvestment in businesses other than oil. For the first time, chemical distribution and specialty chemicals were targeted for reinvestment and growth. Corporate expected a high return from the chemical business—12 to 15 percent ROI—as well as long-term growth. This sometimes produced conflicts: $4 million per year for a development project, for example, translated into 1/4 percent less ROI.

Strategic shift toward specialty chemicals in the 1980s. Such pressures from AOC were one of several factors leading ACC management to decide that its future lay in specialty chemicals (coupled with a continued focus on distribution) rather than commodities. Because of differences between the two types of chemicals, major organizational and policy changes were required to support the shift. Customers bought commodity chemicals to meet a specification and because the price was right. Products were generic, and the market determined their price. Purchasing departments made the buying decisions, largely on the basis of price, quality, and delivery. Commodities were sold to end users and fabricators. Because the cost of the chemical was a key part of these customers’ costs, a supplier that was 1–2% higher usually lost the business. This emphasis on cost led to in-house manufacturing, in which, one manager noted, “life revolves around the plant because low cost wins the game.” Although high volume had brought ACC healthy profits, margins were less than for specialties, where performance set the price.

In specialties, the approach was usually to start from the customer’s use and work backward. Applications were critical. Specialty chemicals were usually a small part of the price of the customer’s product; as long as products performed as needed, business was not lost over pennies. Purchasing played a largely administrative role because de-
sions to buy or specify critical ingredients were made by design engineers and plant people. These demands increased the need for marketing and technical staff. Because specialties were sold in the tens of millions of pounds per year rather than in billions, they were less likely to be made in batches than by continuous processes. This enormously reduced the scope and cost of capital investment—from hundreds of millions of dollars to tens of millions. But commodity plants could not be converted to specialty production. Specialties, however, allowed a company to forge in-house manufacturing, particularly in the early, risky stages of a product's life.

Cousins explained:

With an uncertain new product, why own a plant when you can rent a reactor? You would only want to bring manufacturing in-house if you had a well-established, high-volume product, or if you couldn't protect the technology, or if the manufacturing sequence was very complex and no outside company could do it right or very consistently.

In specialties, ACC management felt it was important to be a leader rather than a follower. An early entrant could not only gain market share, set the price and ground rules, and gain lead time; it could also dictate the performance parameters a competitor would need to exceed to displace it. Later entrants had to provide significantly better performance, because their products were seldom "drop-ins" for the customer's equipment and process. Switching costs might include new molds or repiping and, most significantly, requalification testing, which could take years and cost millions of dollars. Second entrants also had to overcome reluctance to change from the known to the unknown.

Between 1980 and 1985, Allstate closed and sold several commodity businesses, including plants, and added specialties by acquiring and building facilities and using outside processors. Specialties doubled from 15 percent of Allstate's business to 30 percent, while distribution of commodities continued to account for about half of the company's sales. George Prince, general manager of the Polymers Division, which now derived most of its profits from specialties, commented on what the changes had meant for his division.

You have much more exposure in the corporation when you're identified as a division that needs to be grown. We have made timely acquisitions that fit our technological and customer base, and we intend to make more since the corporation is now willing to fund them. Our staff has increased dramatically. Two years ago, we did no market development. But now, for example, we are trying to get engineers to design in our resin for the Pontiac Firebird, and that requires marketing.

Specialties are also more quality oriented, and there's been an emphasis on how we control processes and how we report data to customers. For that reason, we do all of our own specialty manufacturing, and are investing in things like computer control of reactors. Our productivity has gone up because we're not making off-spec product.

Research, 1977–1986

Formation of Venture Research

Until 1977, Allstate Chemical had no significant central research organization. Small research groups in each division focused on short-term technical service to customers. Under the impetus of Cousins, who was then administrative vice-president for research, engineering, and finance, 25 percent of the company's research budget and people were pulled from the divisions to form Venture Research (VR).

VR's charter was to develop projects that would lead to major new businesses, with major-defined as at least several hundred million dollars in annual sales. The group was to look for home run outside existing division interests. Initially, Cousins and other senior managers wanted VR to focus on breakthrough process changes for producing high-volume, commodity chemicals. To head VR, Allstate recruited Dick Winthrop, whose process work at a competitor had won several industry awards.

Research strategy: From process/commodity focus to product/specialty. Process research required a broad range of chemical and engineering skills, a large commitment of people for long periods, and heavy investments in capital equipment. During the research stage, for example, this might mean building a series of reactors of increasing size, each of which could study a larger number of process variables. If the researchers succeeded in creating a commercially viable reaction, engineers would then have to create the equipment to make it. Process research typically started with petrochemicals that could be refined from crude oil (such
as benzene, and sought cheaper ways to produce derivative monomers (such as styrene) or polymers (such as polyethylene), by significantly reducing the costs of raw materials, of capital, or both.¹

VR's initial strategy aimed to replicate what Winthrop had accomplished at Soho. Process changes had so dramatically lowered Soho's price for a high-volume monomer that they had "knocked the bottom out of the market," as one manager put it. Although Allstate did develop two new processes, neither achieved commercial success. In one case, the cost advantage was not large enough; in the other, ACC had to compete with potential customers' captive monomer production. The 1981-83 industry recession and the domestic industry's shift to offshore production dealt the final blows to ACC's process/commodity research strategy. Cousins ruefully acknowledged: "It took five years and $50 million to see that this was the wrong way to go." ²

As process research was cut back, VR slowly gravitated toward product/specialty research. By 1984, its charter had shifted to supporting and strengthening the divisions. Prince described Polyesters' changing relationship to VR:

"We used to do almost no new product development; what we did was hand-holding, fire-fighting, and low-level product improvement to satisfy specific customer needs. Now we are identifying market opportunities and developing new chemicals for which we want VR's expertise. We want them to do original chemistry, to invent new polymers that we develop for the market. Therefore, we need close contact to see that they are on track—we don't want them doing any blue-sky stuff. So when we see an opportunity for expanding our product line, I lobby Jack and the others, and they go to Dr. Winthrop and tell him to work on it."

Less capital intensive than process research, polymer research normally involved working with a certain type of chemistry (such as esters, urethanes, or alcohols) to produce either an entirely new molecule or improvements in the performance of existing molecules. Results were typically the product of years of studying such basic phenomena as what

¹Monomers are small molecules (i.e., molecules having low molecular weight), usually in liquid form. Also called resins or prepolymer, they are an intermediate product that needs further polymerization (polycondensation) before making into a product. Monomers are the bricks and mortar for constructing the polymer "house." Polymers are large molecules that have been put together to create a solid material that, when molded, has desired properties such as stiffness or strength.

²Strategic Expansion Project (SEP) Board

Shorty after becoming president, Cousins established the Strategic Expansion Project Board to oversee research. Its members were Cousins and five group vice presidents, and its charter was to identify and fund those research projects that had significant strategic and commercial potential. The board looked for projects that fit Allstate's strength in technology or markets, and could open up new business. Such projects had to be more than mere line extensions, which remained the responsibility of divisions. VR could still fund projects at a relatively low level from its own budget, but continued funding, or significant expansions of the work, required board approval. SEP-approved projects were funded from "Jack's budget" until they broke even.

With this mechanism, the company's chief operating offices supported the start-up costs of new businesses from company rather than division profits, and exercised control over funding. If necessary, the board could kill a project that was not showing significant progress or whose commercial potential had waned. Cousins was satisfied that commercial considerations now guided Allstate's research in new areas. He noted, however, that "Dick Winthrop doesn't totally approve of this approach. There are areas he would like to expand that don't have a chance of succeeding commercially. But he knows that I will not approve a test-tube project." Winthrop conceded that "they have shelved a few projects I would like to have continued," but pointed out the board's usefulness in giving VR direction:

They advise us of areas to keep away from and give me guidance on time frames and capital expenditures so that I, in turn, can provide better guidance to the projects. The cross-play between divisions is valuable, and they may see areas we don't know about. But I would like them to do more in the way of suggesting areas of R&D that would be good for Venture Research.

One of VR's earliest polymer projects—and one that did gain SEP approval—was eventually commercialized as Dynarin. In the beginning, however, Dynarin was a molecule without a purpose or a home.