

Strategies for  
Bringing Innovations to Market

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### Introduction

More and more business firms have come to accept the fact that product and service innovations will be the primary source of corporate growth and profitability. Over the years, studies by the Conference Board have attested to the invaluable role played by innovations in corporate success. In fact, a recent study by Booz, Allen & Hamilton Inc. suggested that nearly a third of business growth and forty per cent of business profits in the future will be generated by innovations.<sup>1</sup> This increasing importance of innovations can be attributed to four key forces in the marketplace:

- \* Changing Customers: The demographic profile of the United States is changing rapidly. The increasing number of the over-65 population, the increasing number of dual-income families, and the emergence of single person households are some examples of the changes taking place. These changes are fueling the need for innovative services and products.
- \* Advancing Technology: The twentieth century has witnessed the explosion of new technologies such as the semiconductors, the laser, and biogenetics. These

<sup>1</sup>See Booz, Allen & Hamilton Inc., "New Product Management for the 1980's", New York, 1982

technological advances have provided business firms the opportunity to commercialize innovative products and services.

- \* Tough Competition: Competition has transcended national boundaries, and is becoming more global in nature. Product innovation has become necessary to accommodate the differences in national regulations, raw material availability, or even climate.
- \* Role of Regulation: Rapidly changing regulations also encourage product/service innovation. For example, the trend towards deregulation in service industries such as telecommunications and airlines has led to a rapid influx of new competitors who have had to innovate for survival.

#### INNOVATION RESISTANCE

For business firms, innovations represent growth and profitability. For customers, innovations represent better ways of satisfying their needs. Yet, both firms and customers resist innovations, due to inherent structural barriers. There are five structural barriers that create corporate resistance to innovations, and, five structural barriers that create customer resistance to innovations. We have identified these barriers and suggested strategies to overcome the corporate and customer resistance faced by an innovation.

### Corporate Resistance

The corporate resistance to an innovation can be caused by any one of the following five barriers:

- \* Expertise Barrier: The reluctance or inability of highly specialized companies to move from their current technological base to a newer base creates the expertise barrier.

e.g. Xerox's difficulty in entering the computer industry.

- \* Operations Barrier: The reluctance or inability of companies to make changes or additions to their current production and assembly facilities creates the operations barrier.

e.g. Kodak's difficulties in switching from movie cameras to video cameras.

- \* Resource Barrier: Insufficient financial resources to develop and market the innovation create this barrier.

e.g. The problems faced by a number of telecommunication suppliers as they try to switch from the analog to the digital technology for the PBX (Private Branch Exchange) markets.

- \* Regulation Barrier: Government rules and regulations, or patent restrictions create this barrier.

e.g. The introduction of new drugs is subject to the strictest requirements of the Food and Drug Administration (FDA).

- \* Market Access Barrier: Market access bottlenecks, such

as lack of shelf space or lack of a physical distribution system, create this barrier.

e.g. The dominant shelf space occupied by Pepsi and Coke has made it difficult for other innovative beverages to enter the market.

An innovation may encounter high corporate resistance if confronted with any of the above barriers.

#### Customer Resistance

Customer resistance to an innovation can be caused by any one of the five barriers:

- \* Usage Barrier: Incompatibility of an innovation with a customer's existing work flows, practices, or habits, creates the usage barrier.

e.g. the reluctance of business firms to use video teleconferencing, which is perceived to be substantially different from face-to-face meetings.

- \* Value Barrier: If the innovation does not have a superior performance-price ratio, as compared to existing alternatives, it faces the value barrier.

e.g. the commercial failure of the electric toothbrush, which did not offer customers a significantly higher value corresponding to the higher price.

- \* Risk Barrier: If customers perceive physical risk, functional risk (performance uncertainty), social risk, or psychological risk in using an innovation, the risk barrier

is in effect.

e.g. New drugs are not adopted by doctors unless they are fully tested and certified, for fear of malpractice suits.

- \* Tradition Barrier: If an innovation requires the customer to make changes in existing tradition or cultural norms, it is likely to encounter tradition barriers.

e.g. Computerized dating services are contrary to social culture and are hence facing resistance.

- \* Image Barrier: If an innovation has a negative image due to unfavorable association with its product class, industry, country of origin, or just stereotyped thinking, it faces an image barrier.

e.g. Products from developing nations such as Taiwan and Brazil have a poor quality image.

An innovation may encounter high customer resistance if it encounters any or all of the above five barriers.

#### STRATEGIES TO COPE WITH RESISTANCE

Firms are thus confronted with a paradox: innovations are indispensable for survival, but the structural barriers that confront the innovation may create corporate and/or customer resistance. Successful innovation requires understanding and coping with the barriers. Four different strategies can be used by firms, depending on the levels of corporate and customer resistance (See Figure 1).

Figure 1

		CORPORATE RESISTANCE	
		HIGH	LOW
CUSTOMER RESISTANCE	HIGH	SLOW & STEADY (S&S)	PICK & PROTECT (P&P)
	LOW	MIGRATE & MAINTAIN (M&M)	GRAB & GROW (G&G)

SLOW & STEADY STRATEGY (S&S)

When a firm is not structurally ready to offer an innovative product or service, and the customer faces structural barriers in adopting it, the slow & steady strategy (S&S) is the right one to use.

The S&S strategy consists of introducing the innovation to the market on a very selective basis. The innovation is initially targeted towards customers for whom it provides the highest value. The market development is thereafter conducted incrementally by moving to other customers for whom the product offers a significant but lesser value. The strategy thus facilitates accessing several layers of the market in slow but steady succession. The pricing strategy used for the innovation reflects this value progression: the highest price to those customers who most value the innovation, and thereafter adjusting prices to correspond to decreasing customer value.

We will illustrate the success of this strategy using an example from industrial goods: Kevlar. Kevlar, developed by Du Pont, has proven to be a viable substitute for steel. Du Pont successfully marketed Kevlar adopting the S&S strategy, since all the necessary conditions were met.

\* The innovation must encounter high corporate resistance.

First, Kevlar was based on a totally new technology. In developing a chemical substitute for steel, Du Pont could not borrow from its prior expertise with other synthetic materials such as nylon, dacron, and polyester. Instead, Du Pont had to divert a part of their talented R&D personnel into the development of a product whose payoff was not guaranteed. Thus, the expertise barrier had to be overcome. Second, Du Pont could not use any of its existing production facilities for Kevlar. An investment of nearly \$250 million had to be made in a separate manufacturing facility, in order to overcome the operations barrier. Third, since Kevlar was a new chemical, some regulatory uncertainties had to be overcome. The product had to be properly tested and certified to ensure that there were no adverse side effects. Thus, Kevlar created high corporate resistance for Du Pont.

\* The innovation must encounter high customer resistance.

From the customer's perspective, Kevlar was radically new. For example, manufacturers who had relied on steel and aluminum

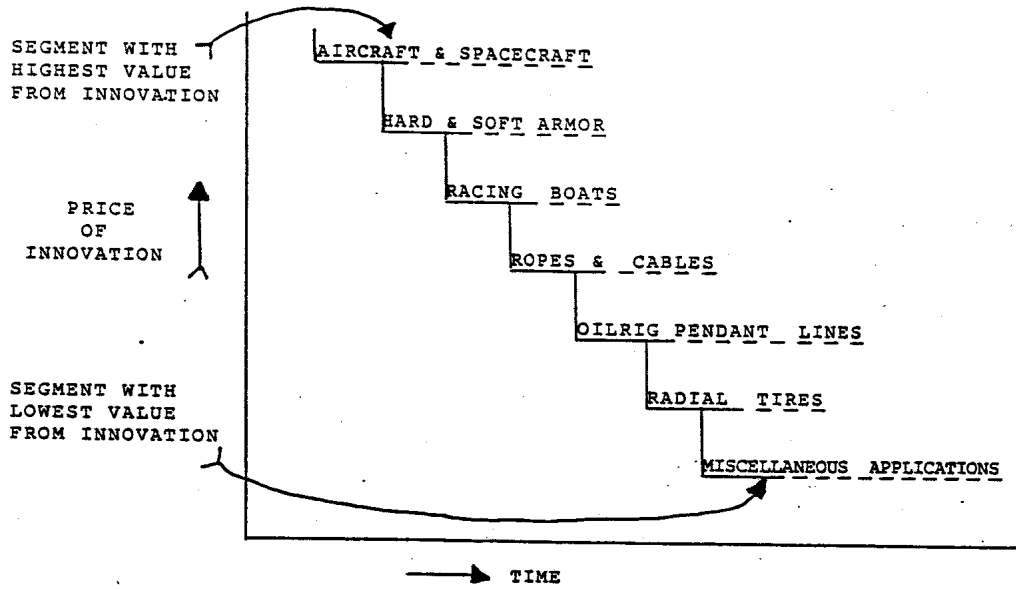


were now faced with using a chemical fiber as a substitute. The product had no prior record in similar applications. There was thus the barrier due to performance uncertainty. Customers were also unable to estimate the value of Kevlar vis-a-vis existing substitutes. Further, customers, who were used to steel, were unsure whether Kevlar could completely replace steel. Thus, there was a usage barrier.

\* A company must seek, in order of priority, the customers with a need for its innovation and pursue them.

The first market segment that found Kevlar most attractive was the aircraft industry. Kevlar had superior durability and could withstand impact better than steel. It had good electrical and chemical resistance as well, could reduce vibrations, and even improve the aesthetics of the airplane. Above all, Kevlar was considerably lighter than steel - a key consideration in aircraft, since it takes three pounds of fuel to raise one pound of payload off the ground. In spacecraft, this ratio increases tremendously to 20:1. Thus, every pound of Kevlar, in place of heavier material, can save the carrier as much as \$300 in fuel over the life of the plane. The first step of Du Pont's S&S strategy was to develop the product for the airplane industry (see Figure 2). Lockheed was the first commercial aircraft user of Kevlar when it used 1300 pounds of the fiber in its L-1011. Soon, other aircraft such as the DC-10 and the Sikorsky-76 helicopter incorporated Kevlar into their bodies.

FIGURE 2  
SLOW & STEADY STRATEGY  
INNOVATION: KEVLAR



Du Pont then went after the soft and hard armor market. The bulletproof vests, worn by police forces throughout the United States, offer protection depending on the amount of tough material in them. A vest made with Kevlar weighs no more than three pounds, and can protect the wearer from most handgun threats including 0-38 specials and 0-45 automatics. As an added incentive, a Kevlar vest can be outfitted with an impact-resistant plastic to dissipate a bullet's tendency to leave severe bruises.

The U.S. army also approved Kevlar helmets to replace steel helmets, due to the increased fragment protection. Armored protection offered by Kevlar extended to non-military areas as well: bullet-proof vests, jackets, camera cases and briefcases gained customer acceptance. The S&S strategy for Kevlar was on its way.

Du Pont next pursued the watercraft market. Fishing and performance boats with Kevlar-reinforced hulls weighed at least 20 per cent less than fiberglass and could go much faster with the same power. Luxury racing boats, which had their masts reinforced with Kevlar, suffered lesser drag than those with conventional masts. The added advantages of higher speed and lesser fuel expenditure made this segment the next logical choice for the S&S strategy.

Du Pont next pursued the market for ropes and cables. Kevlar ropes had the same strength as those of steel at just one fourth

the weight. This excellent strength-to-weight ratio proved to be of great value in the installation of power transmission lines. The copper-aluminum wires used for carrying electricity are usually shielded by steel. Wooden poles are normally provided as supports for these transmission wires. Steel, being quite heavy, has an innate tendency to sag; hence, fewer poles are required to support wires shielded by Kevlar than those shielded by steel. This has proved to be a tremendous advantage in mountainous terrain, such as the Rockies, where transportation of both the wooden poles and the installation crew is very expensive. Helicopters are typically used for the operation, and every installation avoided saves tremendous amount of effort and money - an advantage offered by Kevlar. Du Pont thus entered another lucrative segment using the S&S strategy.

Kevlar next replaced steel in the manufacture of pendant lines to anchor offshore oil drilling rigs. Pendant lines are used to support a 30,000 pound anchor as it is being positioned into place by a work boat. They must also withstand extreme lifting forces required to dislodge the anchor upon retrieval. A typical drilling rig is moved four times a year, requiring the retrieval and deployment of eight anchors. Field tests showed that using Kevlar ropes could reduce retrieval and deployment time by 25 percent. Further, pendant lines made of Kevlar required a lighter, smaller and less expensive buoy for support. Du Pont had discovered another valuable application for Kevlar.

The next market that Du Pont went after was, ironically, the one

for which Kevlar had been groomed. Automobile tires, in which Kevlar had replaced steel, were considerably lighter and thus increased the fuel efficiency. Since Kevlar was also more flexible than steel, it improved the riding comfort and reduced the noise level. Due to its better energy absorption properties, Kevlar also generated less heat build-up. With all these advantages, Goodyear decided in the early 1980's to play a pioneering role (as an OEM manufacturer) in using Kevlar for its radial tires.

Finally, Kevlar was targeted towards other miscellaneous applications for which it had some value. Gloves made of Kevlar offered twice the cut resistance and better wear than those made of cotton, and were used in the glass-handling and metal-handling industries in place of cotton. Leggings made of Kevlar offered lumbermen protection from chainsaw injuries.

Once Du Pont had developed applications for Kevlar based on customer priority, it could successfully enter the market using the S&S strategy.

\* For the Slow & Steady Strategy to work, a company must be certain that it is protected by high entry barriers.

Du Pont used a research team of experts, who specialized in the development of synthetic fibers, to develop Kevlar. The earlier success of nylon, and then Kevlar, bear testimony to the technical expertise that shielded Du Pont. Further, Du Pont took

care to guard its invention through patent protection. The company took five years of testing and modification to arrive at a product that could be commercialized. It took nearly \$250 million of capital investment to develop the product, and almost an equal amount to set up production facilities. Du Pont was thus armed with major entry barriers: resources, expertise, operations, and patent protection.

\* The firm that uses the S&S strategy should commence with the "leading edge" of the market.

In the corporate world, the "leading edge" customers are the firms with sophisticated technology, generally the Fortune 500 companies. For example, Du Pont went after the leading aircraft manufacturers such as Boeing Corporation in its attempt to develop the market for Kevlar. For consumer products and services, the leading edge customers are the opinion leaders - the young, affluent, educated individuals who have both the willingness to try something new and the ability to pay for it. The S&S Strategy has been used successfully for other innovations. For example, IBM introduced its first mainframe computer using this strategy. IBM faced high corporate resistance in developing the computer, since it had to overcome expertise barriers, operations barriers and resource barriers. The product was also totally new to the customers. They had to learn how to use the innovation - in other words, there was a usage barrier. There was also a risk barrier due to the economic risk and performance uncertainty associated with the product.

IBM, therefore, rightly chose to proceed with a S&S strategy. IBM first went after the Fortune 500 companies and government agencies, which stood to gain the most from cost efficiencies in data handling. This customer group could also justify the higher introductory price due to the tremendous value gained from the innovation. Once this group of customers had accepted the product, IBM went after the secondary market.

In the consumer durables industry, the microwave ovens had to overcome corporate and customer barriers. Manufacturers of conventional ovens had to learn about the microwave technology, and design totally new production facilities. For customers, the microwave technology was totally new, and was based on irradiation. Irradiation, however, had a negative connotation - how could it be safe after what happened at Hiroshima? There was, thus, an image barrier as well as a performance uncertainty (risk) barrier for customers. Manufacturers of microwave ovens broke these barriers slowly and steadily. First, they aligned themselves with institutional customers, such as prepared food companies and fast food restaurants, who benefited the most from the time savings provided by the innovation. Once this market was developed, they commenced educational programs for the home users and simultaneously were able to reduce prices to affordable levels.

### CAVEATS

Before a firm adopts the S&S strategy, it must be sure that:

- \* There are a sufficient number of customers with high usage potential for the innovation; and,
- \* At least some customers are willing to pay a premium price for earlier use of the product.

The story of lead-free gasoline illustrates the danger of misusing the strategy. Standard Oil Company of Indiana invested millions of dollars to develop a gasoline with anti-knocking properties. The company decided that at least some of the automobile owners, who were potential customers for the product, would go for this innovation in a big way. Accordingly, Standard Oil Co. developed an excellent distribution network, and acquired trucks to transport the lead-free gas. Unfortunately, the customers saw no additional value in the product, and were not willing to pay a higher price for it. Only after the Environmental Protection Agency mandated the use of lead-free gas, and the subsequent manufacture of automobiles designed specially for it, were customers ready for the innovation. For the S&S strategy to work, all conditions identified earlier must, therefore, be present.

### GRAB & GROW STRATEGY (G&G)

The Grab & Grow Strategy is the right one to use, when an



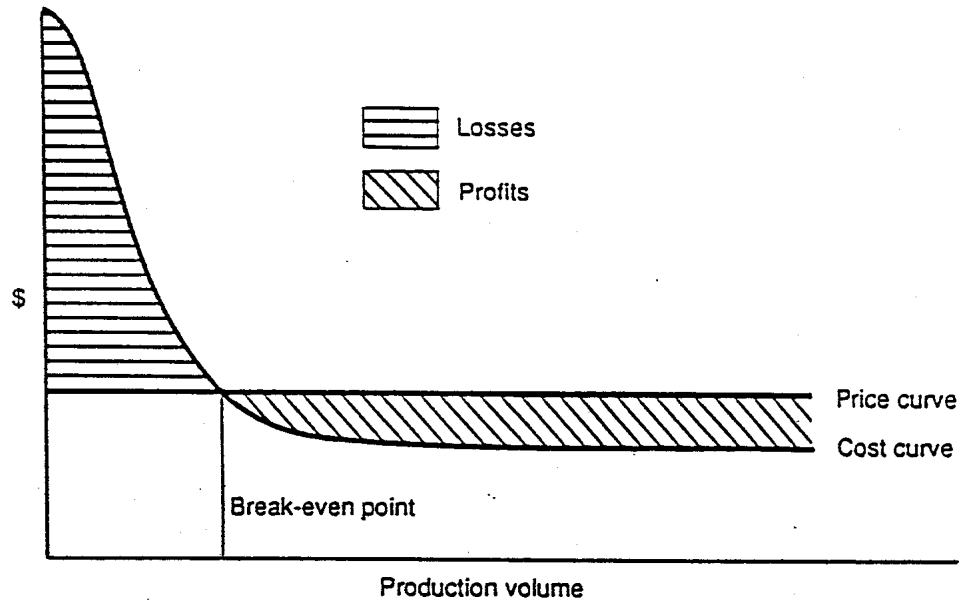
innovation faces the enviable situation of low corporate resistance and low customer resistance. The G&G Strategy works well when the firm has no structural barriers to overcome in producing the innovation, and the customers are ready to use it.

The G&G Strategy consists of introducing the innovation on a mass market basis. The firm intends producing the innovation for the large number of customers who are ready for it, and capitalize on the product/service's early entry into the market. The innovating firm builds its experience faster than its competitors, thus gaining higher cost efficiency. The objective is to grab as much of the market as possible and grow rapidly into a formidable competitive position.

The pricing mechanism used by the G&G Strategy is not geared to an intuitive cost-plus-margin system. Instead, it is based on anticipated increases in production volume and the consequent decline in production costs (see Figure 3). The innovating firm maintains a constant price from the start. Initially, the price is well below the cost of the product, but the company is willing to absorb the initial loss to build a strong customer base and entrench itself in the market. The low price also makes it risky and unprofitable for competitors to contemplate entry into the market. Once the firm reaches its break-even volume, it begins to enjoy the fruits of its foresight. Sacrificing short-term profits in the interest of long-term gains in market share and profitability is one of the key principles underlying the G&G Strategy.

FIGURE 3

PRICING CURVE FOR THE GRAB & GROW STRATEGY



The success of the Japanese firms Matsushita Electric Industrial Co., and Victor Company of Japan (JVC) is an example of the G&G strategy at work. On the same note, Sony's failure in this market, is a consequence of not adopting this strategy. For the G&G strategy to work, certain conditions must be met:

\* The innovation must face low corporate barriers.

Matsushita and JVC did not have sufficient knowledge to develop the half-inch VCR tape on their own. But, in 1974, seven months prior to introducing its machine, Sony Corporation showed the machine to executives from JVC and Matsushita. The key, however, was that while Sony developed the Betamax format, both JVC and Matsushita "borrowed" from Sony's expertise and developed an alternative format -- the Video Home System (VHS). The competitors thus broke through the expertise barrier and had no financial or regulatory barriers. The VCR's were thus an easy innovation from the corporate side.

\* The innovation must face low customer barriers.

The customers were certainly ready for the product. While it has taken 25 years for home appliances such as color televisions to diffuse through the market, it has taken just seven years for VCR's to do the same. The VHS format provided a significant value advantage to the customer over the Betamax format: it could record and play for a longer period of time. Further, several manufacturers chose to join the VHS mode of production, rather

than Sony's Betamax. More and more customers were exposed to the VHS, and were happy to adopt it. They also perceived the decline in the number of manufacturers who were producing the Betamax.

\* To be successful with the G&G strategy, a firm must have access to experience curve benefits and focus on over-all cost advantage.

With JVC, Matsushita and Hitachi taking the dominant role in producing the VHS format tapes, the production of Betamax tapes dwindled. The ratio of VHS to Beta steadily increased -- from 70:30 in 1983, to 80:20 in late 1984 and 85:15 in mid-1985. The gap has widened even more from then on. With more and more VHS tapes being produced and marketed, JVC and Matsushita, which today control nearly 70% of the world market, gained tremendous benefits from the experience effect. When Sony tried to retaliate with a price war, it suffered badly. Sony was carrying three to four months of production as inventories. Its low production volume led to higher cost structure, thus resulting in overall losses for the Betamax product. JVC and Matsushita, on the other hand, were cushioned by the cost reduction associated with higher production volume, and survived the price war.

\* For the G&G strategy to succeed, a firm must have a strong distribution system at its disposal.

Matsushita Industrial Electric Co., which had developed a strong international distribution system for its leading brands such as Panasonic, Quasar, and National, had no problem in using the same

network to promote the innovation.

\* For the G&G strategy to succeed, management must be willing to take high risks for long-term payoffs.

At the risk of not being able to recover its investment, Matsushita aggressively marketed its VCRs. By rapidly driving down the price at a low, constant level, Matsushita rapidly acquired market share. The management was thus willing to play a risky game to realize high returns over time.

\* For the G&G strategy to succeed, a firm must be capable of upgrading its products in the long run.

In the VCR market, Matsushita has constantly strived to do this. Improved sound quality, stereophonic capabilities, multiple event programming are some examples of the upgrading that has occurred since the inception of VCR's. These improvements sustain customer interest, and attract more buyers for the innovation. The VHS manufacturers are also pursuing the development of High Band VHS, in response to Sony's attempt to develop the Super Betamax.

The G&G strategy has been used successfully in the case of several other innovative products: diet soft drinks (Pepsi) and electronic calculators (Texas Instruments) are good examples.

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CAVEATS

Before using the Grab and Grow strategy, a firm should worry about three issues:

1. It should not overestimate the size of the market.
2. It should ensure that it has experience curve benefits that cannot be imitated.
3. It should not underestimate the size of its competitors.

Sony's failure in the VCR market is a good illustration of these caveats. Thrilled by sales of 100,000 units in the first two years, Sony went in for the mass market. Unfortunately, Sony's competitors teamed up successfully and created the VHS format as the standard one for the industry. They improved considerably on Sony's innovation, and overtook Sony on the cost advantage from "experience." While Sony's monthly production of Betamaxes dwindled to 10,000 units in 1984, the sales of VHS has skyrocketed to over 2 million units. Ironically, it was Sony which made an initial demonstration of the innovation to Matsushita and JVC. Sony expected these firms to conform to the Betamax standard, which would then become the industry standard. This would have given Sony the benefits of product development and expertise. However, the competitors were wiser. They had the resources to force a lopsided victory over the Beta camp. Sony has been forced to develop a new product --- the 8 mm

recorder -- in an attempt to redefine the market and snatch market leadership. Sony's competitors are watching this development with caution. If indeed the 8 mm recorder becomes the new industry standard, they are getting ready to jump in and take a slice of the pie.

On a similar note, Texas Instruments (TI), which succeeded in the calculator market with the G&G strategy, suffered quite a bit in the personal computer market. TI overestimated the size of the market, and rapidly expanded production capacity. The glut in the market that followed, sparked off a price war. Competitors, who easily jumped on to the experience curve, fought bitterly all the way, and TI was caught in a vicious profit squeeze. Ignoring the caveats of strategy can, therefore, severely backfire on the company.

#### PICK & PROTECT STRATEGY (P&P)

If an innovation meets with low corporate resistance, but encounters high customer barriers, the Pick & Protect strategy is the appropriate one to use. Since customer resistance is high, a firm must pick the right application for which the innovation creates the highest value for the customer. The customer must come to realize the unique benefit provided by the product. Once a firm develops a strong customer base for the product, its primary objective must be to protect itself from competitors who are attracted by the opportunity for profits. Since corporate barriers for the innovation are low, competitive entry is a

distinct possibility.

Let us examine the effectiveness of the P&P strategy, using the example of the computer software industry. For the strategy to be effective, certain conditions have to be met.

\* The innovation must have low corporate barriers.

Computer software development faces low corporate barriers. First, the expertise to write software is almost global today, and the know-how is spreading to even developing countries like India. Second, creating a software package requires no major additions to the current operations of a computer company. Third, software development is relatively inexpensive, and most application programs can be commercialized in about a year. Fourth, there are few regulatory barriers, and ingenious ways to bypass copyright infringement have become common. Finally, market access is not a serious barrier, since major companies like IBM, DEC and Hewlett-Packard actually encourage independent companies or individuals to develop compatible software.

\* The innovation must have high customer barriers.

Software users face several market barriers. First, software packages are not compatible with all computer systems. This can create a usage barrier. Second, each software program is unique. The user must learn how to use it effectively, and the time and effort required for this may cause resistance. Third,



the user may not be able to evaluate the effectiveness of a new package compared to existing ones, and this may create a value barrier. Finally, a new software product may be prone to risk barriers. Users often worry that the new product may destroy or mutilate their data base, or that not all the "bugs" have been removed from it. Thus, the customer resistance to an innovative software may be high.

\* The innovation has to be customized so that it comes as close as possible to satisfying the need of a particular market segment.

With the proliferation of minicomputers, more and more data processing managers refused to accept standardized software. Thus, most software firms had to pick one of three niches in which to operate:

- \* Applications software, designed for tasks such as accounting and payroll e.g. Wordstar of Micropro, Multiplan of Microsoft.
- \* Utility Software, which helped computer programmers write programs e.g. dBase II of Ashton Tate.
- \* Systems Control Software, which handled basic housekeeping operations such as memory and printer control e.g. MS/DOS from Microsoft.

Within each niche, a firm has had to specialize in specific software packages to remain competitive. For example, Via

Computer developed the Microphit package, the personal computer version of powerful corporate planning software. Alternatively, software firms could pick the right computer and develop a successful package for it. The rationale is that choosing a computer that is well accepted by customers will have a positive effect on the sales of compatible software. One problem, though, is that this can backfire. If the personal computer has poor sales (as did the IBM PCjr), so may the software designed for it. Another problem is that the software firm may get too dependent on a computer manufacturer, even if the latter is uncooperative. For example, Commodore provides technical help only to those software companies that allow Commodore to market their programs. This can erode the profit margins of the innovators. Yet, the need for survival forces some firms to play along.

\* Once it picks a niche, the firm must be aggressive, else competitors may decide to grab a piece of the action.

Establishing market presence alone is insufficient for successfully using the P&P strategy. Retaining market presence is very critical.

In the software industry, firms have had to win and retain space on already crowded retail shelves. Directory listings suggest that there are at least 11,000 software firms creating about 20,000 to 40,000 programs. Yet, only six firms have more than one per cent of the market: Visicorp, Microsoft, Micropro, Digital Research, Ashton-Tate, and PeachTree (MSA). No single

firm has more than 10 per cent of the market share. Hence, survival in this industry has meant innovating special application programs for customers, and then customizing them further to retain loyal customers.

The P&P strategy has been used successfully for other innovations which encountered low corporate barriers and high customer barriers. For example, cosmetics for men have been generally frowned upon. Traditionally, cosmetics have been associated with women. So how could a man stoop to do something so effeminate? The cultural and traditional barriers faced by customers were high for this product. On the other hand, manufacturers of cosmetics faced no barriers at all, since producing cosmetics for men required no new know-how or production capabilities. Hence, these manufacturers successfully used a series of repositioning strategies to create new market niches. With the advent of the safety razor, lathers and lotions were sold stressing the functional and medical qualities, such as skin protection and conservation of facial moisture. Scent or fragrance was not mentioned. Next came deodorants. These were to be used by men to prevent them from smelling bad, not necessarily to make them feel good. It was only after the 1960's that masculine appeals and fragrance became a selling point for lotions and colognes: sexy (English leather), athletic (Brut), macho (Jaguar), fashionable (Cardin) and so on. The cosmetic manufacturers developed niches to suit several masculine images, and developed promotional messages to reinforce and retain customers in each niche.

### CAVEATS

If a firm should decide to use the Pick & Protect strategy, it should be aware of two dangers:

- \* Unless it is the first entrant into a niche, the firm may have already lost out to those firms that made the first move.
- \* A firm should not underestimate the ability of competition to attack and move into the niche.

Software giants such as Visicorp and Ashton-Tate have been successful, since they capitalized on early entry. The early entrant gets a chance to develop and protect the niche. However, complacency could be dangerous, and a firm must be constantly on the lookout for newer niches. While early leaders such as Ashton-Tate and Lotus were perceived to be unstoppable, Microsoft emerged as a major software company in less than five years.

### MIGRATE AND MAINTAIN STRATEGY (M&M)

If an innovation faces significant corporate resistance, but hardly any customer resistance, the firm should adopt the Migrate and Maintain (M&M) strategy. In this strategy, a firm maintains its customer base by migrating them to an improved version of its product or service. Since customers are already satisfied with the original offering and its value, they will be

even more pleased to have a better variation at their disposal. The M&M strategy allows a firm to protect its market hold from competitive threats. By being one up in terms of product development, a firm can keep competitors at bay and preserve customer loyalty.

We will illustrate the effectiveness of the M&M strategy using the example of the Boeing Corporation. For the M&M strategy to work, certain conditions have to be met.

\* The innovation must encounter high corporate barriers.

The Boeing 747 jumbo jet, developed in the 1970's, has been hailed as one of the major technological breakthroughs of the decade. The innovation, however, did create structural problems for Boeing. First, the aerodynamics of such a big aircraft required a nontraditional design, especially in terms of lift, electronics, and fuel utilization. Second, the jumbo jet generated massive changes in operations because the size of the aircraft was not comparable with the Boeing 707 that it replaced. Third, the company had to invest millions of dollars into the product innovation. Finally, the new generation of wide-body aircraft had to be certified by the Federal Aviation Administration, a regulatory requirement. Thus, Boeing faced high corporate barriers in developing the jumbo jet.

\* The innovation must have low customer barriers.

Boeing's customers, the major airlines, were only too happy to migrate to the new model of the Boeing fleet. They were used to receiving increased value (performance to price ratio) with Boeing's innovations. For example, even as early as the 1970's, Boeing aircraft offered the lowest seat-mile operating costs, and the customers loved it. Thus Boeing's innovation encountered little customer resistance.

\* The innovating firm must have access to good R&D facilities.

Boeing has constantly urged its engine suppliers - Pratt & Whitney, and General Electric - to provide improved engines. Newer engines designed by these suppliers could reduce fuel requirements and permit heavier payloads to be carried over long distances. Boeing also designed a larger wing using the new airfoil and structural design technologies. The new wing design allowed gross weights of beyond one million pounds, an increase of 150,000 pounds over the earlier one. A wider wing span and thicker section were also made possible. Boeing also incorporated digital avionics, computer-controlled flight management systems and electronic instrumentation into the aircraft. Boeing's design engineers also succeeded in designing a stretched upper deck, which nearly doubled the first-class passenger capacity. This remarkable product development process was made possible by Boeing's excellent R&D team, and by the R&D

capabilities of its engine suppliers.

\* The innovating firm must have a large market share in place to migrate customers. This not only facilitates easy migration, but spreads the costs of development over a larger customer base.

Even in the mid-1970's, Boeing had about 63 airline customers in 42 countries and eventually all of them migrated to one of the nine different models of the jumbo 747. This large loyal customer base has permitted Boeing to successfully pursue the M&M strategy even today.

\* The innovative firm must adopt a systems selling perspective.

The Boeing Corporation has always attempted to sell its customers systems of air transport, rather than just aircraft. Boeing has taken the initiative to develop all aspects of the aircraft system -- a high quality engine, a superior aerodynamic design, excellent cockpit instrumentation, and after-sales service support. Thus, Boeing has an excellent ongoing relationship with its customers.

The M&M strategy has also been used effectively for cellular mobile phones. The customers have given a good welcome to the unique benefits of the product, and their resistance to the innovation is low. The manufacturers of these phones, however,

had to deal with a totally new technology, and there were thus high corporate barriers. Only firms which developed or bought into the cellular technology have been able to offer the innovation to the marketplace. The success of the mobile phone can be attributed to a complete system made available to the customer. The makers of cellular phones offered their customers the whole package: the phone unit, a power source, an antenna, a cable, antitheft device (authorized code number), and built-in memory for phone numbers.

#### CAVEATS

When using the M&M strategy, you must be aware of two potential dangers.

\* The eagerness to retain a large share of the market may expose your firm to accusations of monopolistic practice, especially by impotent or frustrated competitors.

IBM, which has used the M&M strategy for its mainframe computers, faced this problem. In 1969, IBM was charged with attempting to monopolize the computer industry, based on the one-price rental system it was using at that time. IBM was, then, charging rentals only for the hardware, and providing the service, software, and consultancy free to its customers, effectively deterring competitive entry into any of these areas. On the face of governmental challenge, IBM changed their pricing system and began to charge separately for rentals and services.



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\* For the M&M strategy to succeed, a true "win-win" situation must be created.

Both the customers and the company must profit from the innovation. The innovation must be market-driven, not technology driven. The electronic typewriter is an outstanding example of a product success that benefited both the users and the manufacturers. Boeing's success with the 747, and more recently with its 737-300, is clearly because the innovation provided for the two basic needs of its customers: increased fuel efficiency and payload capacity.

SUMMING UP...

Innovations have fueled the remarkable progress made in this century. And yet, progress from innovations is possible only by accommodating the changes inherent in them. The changes brought about by innovations generate structural barriers for both manufacturing firms and potential customers. These resistance barriers can impede, stifle, or even destroy the innovation. The key, therefore, is to identify the barriers that create this resistance, and devise strategies to cope with the resistance. We have done just that, and hope that more beneficial innovations can be brought to market by paying heed to the barriers.