

# A Review of Innovation Strategy Types

NEW PRODUCT INNOVATION  
No. 9 in a Series of Papers

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## STRATEGY TYPES REVIEW

In this paper, we present four idealized case studies, representing one view of innovation strategy types. These were first described by Raymond Miles and Charles Snow in 1978 <sup>(1)</sup>. Despite the intervening thirty or so years, Miles & Snow's characterization of management structures, and in particular management's response to changes in technology or markets, remains as a dominant theory for [Innovation Strategy](#).

Many other papers have evaluated Miles & Snow strategy typologies <sup>(2) (3) (4)</sup>, yet few authors have specifically address how each would approach and implement the [New Product Development \(NPD\) Process](#). After a brief introduction of each of the four Miles & Snow strategy types, we will describe how each firm would approach an NPD effort by utilizing its inherent management view.

## THE BUSINESS PROBLEM

Note that Miles & Snow's original research argued that the *different strategy typologies arose from how each company addressed three basic business problems*. In this paper, we extend the argument to NPD Processes, as well as these fundamental responses to

changes in the market or technology environments.

## THE ENTREPRENEURIAL PROBLEM

As with any strategy assessment, a choice must be made regarding the market arena, the technology, and the products or services to be offered. Miles & Snow identify this as "*The Entrepreneurial Problem*." In short, how should the company manage its market share?



In NPD terms, we would say that *The Entrepreneurial Problem* should be addressed in Stages 1 and 2, or the [Fuzzy Front End](#), such that we have identified a clear and present market need for our new product, service, or program.

## THE ENGINEERING PROBLEM

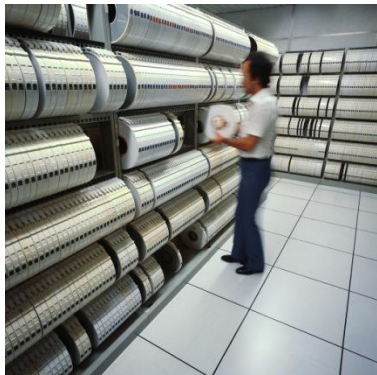
It's often said that **invention is the realization of a new idea, but innovation is the successful commercialization of an invention in the marketplace**. Miles & Snow use "*The Engineering Problem*" to define how an invention can become an innovation. In particular, they consider *The Engineering Problem* to be addressed with a choice of technology for production and distribution.

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In essence, then, *The Engineering Problem* involves how the organization will implement a preferred solution to *The Entrepreneurial Problem*.

### THE ADMINISTRATIVE PROBLEM

Finally, *The Administrative Problem* deals with how a company might structure itself in order



to best manage the solutions to the previous two problems. How a firm will implement

administrative processes, **how it deals with uncertainty**, how the company rationalizes decision-making processes, and how the firm monitors and controls its resources are the keystones of *The Administrative Problem*.

Though each organization addresses these business problems differently, Miles & Snow proposed **general categorizations** for firms that **respond to environmental pressures** in the marketplace. In fact, research has shown that these typologies exist within nearly every industry, allowing competition and the business development cycles to exist for many

types of companies. These four *Innovation Strategy Typologies* are:

- [Defender](#),
- [Prospector](#),
- [Analyzer](#), and
- [Reactor](#).

### INNOVATION STRATEGY TYPOLOGIES

#### DEFENDER

A [Defender](#) organization faces *The Entrepreneurial Problem* of how to **maintain a consistent market share**. These types of firms function best in **stable environments**, where markets and technologies change very little and in predictable ways. Using Cost Leadership as a common solution to this business problem, the *Defender* firm will tend to specialize in a particular *single core technology*, standardize the technical process, and achieve **cost efficiency** through vertical integration.

Facing *The Administrative Problem* to ensure cost efficiency with this strategy, the *Defender* organization will require a high degree of centralization, rigid and formal procedures,

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discrete functions, and **lengthy, long-term planning processes**.

This can be a profitable and successful Innovation Strategy, as long as the markets and technologies of **competitors are also not advancing** rapidly. For example, in the airline industry in the 1960s and 1970s, *Defender* firms were more successful than those airlines following a *Prospector* strategy due to slow changes and heavy government regulation of the industry <sup>(2)</sup>.

Our case study of [Queen Royal Plastics](#) in [Appendix A](#) describes one, ideal *Defender* company.

### PROSPECTOR

On the opposite end of the spectrum, the [Prospector](#) organization faces *The Entrepreneurial Problem* of locating and exploiting new product or market opportunities. A *Prospector* firm **values being "first"** more than anything else. It is an organization that thrives in changing business environments or those with a high degree of unpredictability. Organizations with *Prospector* strategies will have broad, multi-platform product and service lines, and will *promote creativity over efficiency*.

Thus, *The Engineering Problem*, for a *Prospector* organization requires many technical processes and multiple lines of technology, leading to an *Administrative Problem* in how to **coordinate so many diverse business activities** while still **promoting innovation**. These behaviors generally lead to organizational structures that are significantly decentralized with very flat management hierarchy while encouraging extensive collaboration between any departments with varied resources.

*Prospector* strategies can be profitable for a business, as long as the firm is exceptional at **constantly probing the marketplace** to stay ahead of all competitors in technology and speed-to-market.



For example, a *Prospector* strategy was the most rewarding strategy type during the 1980s and 1990s for semi-conductor firms, due to the rapidly changing, volatile environments <sup>(3)</sup> in that industry.

Our case study of [Cat's Audio Equipment](#) in [Appendix B](#), gives a brief description of how one *Prospector* company might operate.

### ANALYZER

Marking the space between a Defender and a Prospector organization is the [Analyzer](#). Perhaps the most challenging *Entrepreneurial Problem* of all is faced by a firm with an *Analyzer* strategy since they must **maintain share in the existing markets and simultaneously find and exploit new markets with new technologies and products**. Equally challenging is *The Engineering Problem* where the operations department must constrain and reduce costs for efficiency on existing product lines while retaining enough **flexibility** to manufacture new products to pursue new business opportunities.

**Balance is the name of the game** for an



*Analyzer* firm to solve its *Administrative Problem*, where individuals are **valued for**

**collaborating** to develop new products or services but **seniority and stability are also valued** to maintain cost efficiency for the base technology offerings.

We describe an ideally successful *Analyzer* firm in the case study of [New US for Women](#) in [Appendix C](#).

If a firm can overcome the challenges to **maintain balance** between cost effectiveness and innovativeness, the *Analyzer* strategy is perhaps the **most successful** of all of Miles & Snow typologies. However, such a balance between Defender and Prospector strategies is very delicate indeed. In a study covering a group of four broad industrial groups, Pleshko and Nickerson <sup>(5)</sup> report that an *Analyzer* strategy shows highest performance in market share and profit versus management expectations, for example. As expected, the *Analyzer* organizations were also the **most adaptable** to new market conditions.

### REACTOR

Finally, the [Reactor](#) organization, as the name implies, is a firm with **no particular planned response to market or technological changes**. In fact, a *Reactor* company generally is caught by surprise when a sea change occurs in the marketplace or with great leaps in technology advancement. If the *Reactor* organization has an established strategy, mission, or vision, it cannot stand up with any

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rigor to changes in the business environment. *New product developments are offered chaotically*, depending on the response to how particular managers in charge **perceive the market changes**.

Long-term planning, which we saw was valued in the Defender organization, is nearly absent in most *Reactor* firms since they view changes in the business environment as occurring too fast to be influenced.

There are many reasons that companies are thrown into a *Reactor* strategy. Sometimes, a planned migration from Defender to Analyzer or Prospector strategy is implemented without staffing properly for *the Administrative challenges* or without communicating the new vision for the company. A company whose **senior management is disconnected** from the workforce may view itself as a Prospector organization but yield so many policies and procedures that the ultimate outcome produces mixed responses to business pressures, resulting in implementation of the default *Reactor* strategy.

We demonstrate one idealized view of a *Reactor* organization in our case study of [mighty grEAT food company](#) shown in [Appendix D](#).

*Reactor* companies tend to *struggle with typical business performance metrics* as demonstrated by one business unit (BU) in a building materials conglomerate reported in 2008 <sup>(6)</sup>. This BU was under long-term contractual requirements to provide many, **diverse product lines** but was faced with **capacity constraints**, severely limiting their potential new product innovations and leaving the BU facing *high costs* to carry inventory and to warehouse spare components <sup>(6)</sup>. This BU **struggled to keep up with competitors**.

### APPLICATION TO NPD

Not surprisingly, each idealized strategy type approaches [New Product Development](#) differently in its response to environmental, market, or technological changes. Here we consider how each of these Miles & Snow strategy typology companies *might respond to several of the key aspects of an effective NPD program*:

- Rigor of [NPD Process](#) (utilization of and flexibility of the process),
- [Portfolio Management](#) tools utilized for decision making,
- Extent of front-end [Market Research](#),
- [Cross-Functional Teams](#) (used throughout the NPD project),

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- Speed to Market,
- Product and Process Quality (emphasis on quality over other product or process attributes).

As described above, a *Defender* firm values stability, cost efficiency, and centralized control. Therefore, it is not surprising that they would implement and enforce very strict NPD Processes through **checklists, reviews, and extensive project evaluations**. Because the *Defender* is working in a niche market and competing primarily on price, the company cannot afford to let quality slip in either the product or the manufacturing process. Other aspects of New Product Innovation, such as use of Portfolio Management tools, are not so important to a *Defender* firm, since **decisions are made by a centralized, authoritarian group** and since most projects will involve only incremental improvements as *derivatives or enhancements* to the company's very strong *core technology*.

On the opposite end of the continuum, the *Prospector* firm will be most interested in **speed to market** variables since this type of strategy **values being "first"**. The *Prospector* will engage with their customers in *early market research* to a high degree so that they

can deliver new ideas to the marketplace rapidly. Because a high degree of coordination across many technology platforms is required, the *Prospector* firm is more likely to use Portfolio Management tools; however, elements of Portfolio Management, such as *mix and balance may be missing from their analyses*. Finally, since the *Prospector* strategy



addresses *the Engineering and Administrative Problems* by employing generalists rather than specialists, **cross-functional teams are nearly always active** in their NPD efforts.

Next, straddling their dual role as *Defender* and *Prospector*, the *Analyzer* firm may also show dualities in implementation of some key NPD elements. For example, they may use a good deal of *rigor to have a new idea enter into the NPD process* for development and prototyping, yet process improvements in the base technologies may be *implemented without much senior management review* in order to **achieve product cost efficiencies**. Again, since *planning is very important* to successful implementation of an *Analyzer* strategy, these firms **will use Portfolio**

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**Management tools both effectively and extensively.** Market Research will be thorough, and cross-functional teams, especially involving operations and manufacturing teams, will be used on most NPD projects. Speed to market is important because the *Analyzer* wants to gain market share versus their competitors; however, because quality of the product and process is important, they **will not rush to commercialization** until satisfied with all elements of production. Often, the *Analyzer* organization will be a **Fast Follower** to the market, rapidly launching a new product just behind a competing Prospector firm.

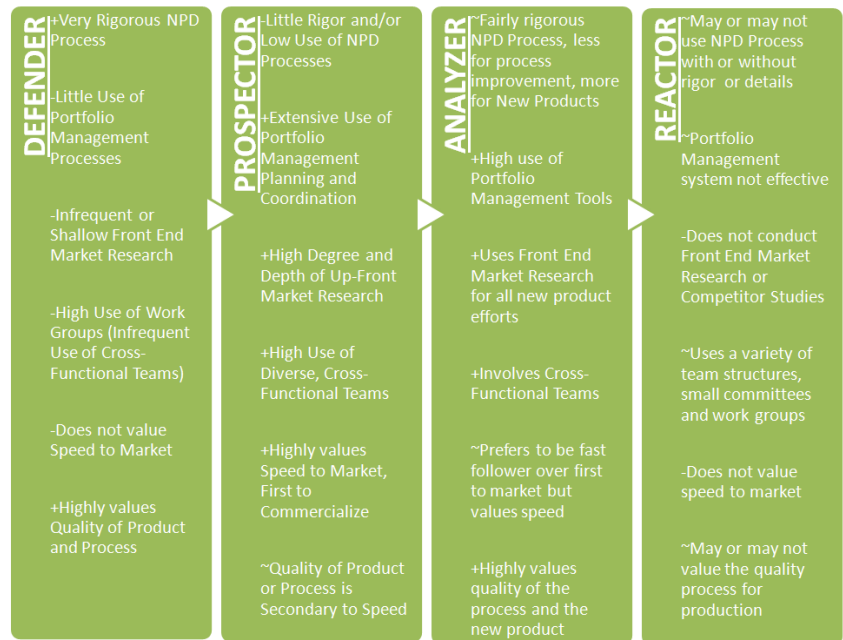
Lastly, *Reactor* organizations will tend to have a **“shot-gun” approach to NPD** depending on the industry, maturity of the firm, and historical past performance. For example, a *Reactor* organization that is forced into innovation by a corporate dictate *may use a rigorous NPD process but fail to implement cross-functional teams.* Or a firm that was formerly a Defender organization but finds

itself in the midst of radical technological change may value quality of the production process very highly but be *unable to implement an NPD Process to ensure future innovations* follow past performance.

We summarize these generalized approaches to NPD efforts in the included table.

### CONCLUSIONS

**Strategy typologies are most useful as general, conceptual categorizations** <sup>(3)</sup> to provide an understanding of how your firm is



measuring up to its formal mission and vision statements. Each of Miles & Snow's strategy types, save the Reactor, can be successful in

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certain markets with the appropriate technologies, and with clear responses to environmental changes. Of course, firms will have commonalities and differences in strategy typology elements <sup>(5)</sup>, but most companies will find their intentional or unintentional innovation strategies will naturally fall into one of Miles & Snow's types.

*Gaining a deeper understanding of your organizations' institutionalized, or automatic in-grained, internal responses to external pressures will help **guide the company to take advantage of markets, technologies, and competition** in ways that the structure of the firm is best suited to do. Identifying which strategic typology best matches your firm's response to change *helps to shape and form the decision-making process*. Finally, implementation of specific elements of the strategy typology or redirection in strategic vision can help to build or refine the organizational structure to *better achieve goals and objectives required to be successful*.*

### QUICK REFERENCE GLOSSARY

Check out our [website](#) for a quick and easy list of terms used in New Product Development. Some terms used in this article are shown here.

**Analyzer:** A firm that follows an imitative innovation strategy, where the goal is to get to market with an equivalent or slightly better product very quickly once someone else opens up the market, rather than to be first to market with new products or technologies. Sometimes called an imitator or a "fast follower."

**Cross-Functional Team:** A team consisting of representatives from the various functions involved in product development, usually including members from all key functions required to deliver a successful product, typically including marketing, engineering, manufacturing/operations, finance, purchasing, customer support, and quality. The team is empowered by the departments to represent each function's perspective in the development process.

**Defender:** A firm that stakes out a product turf and protects it by whatever means, not necessarily through developing new products.

**Fast Follower:** A firm or organization that is adept at improving existing technologies through incremental innovation in both product and process technologies. Often offers a product or pricing advantage over the first-to-market competitor.

**Fuzzy Front End:** The messy "getting started" period of product development, when the product concept is still very fuzzy. Preceding the more formal product development process, it generally consists of three tasks: strategic planning, concept generation, and, especially, pre-technical evaluation. These activities are often chaotic, unpredictable, and unstructured. In comparison, the subsequent new product development process is typically structured, predictable, and formal, with prescribed sets of activities, questions to be answered, and decisions to be made.

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**Innovation Strategy:** The firm's positioning for developing New Technologies and Products.

**Market Research:** Information about the firm's customers, competitors, or markets. Information may be from secondary sources (already published and publicly available) or primary sources (from customers themselves). Market research may be qualitative in nature, or quantitative.

**New Product Development (NPD)** – The overall process of Strategy, Organization, Concept Generation, Product and Marketing Plan creating and evaluation, and Commercialization of a New Product.

**New Product Development Process (NPD Process)** – A disciplined and defined set of tasks and steps that describe the normal means by which a company repetitively converts embryonic ideas into salable products or services.

**Portfolio Management:** A business process by which a business unit decides on the mix of active projects, staffing and dollar budget allocated to each project currently being undertaken.

**Prospectors:** A firm that leads in technology, product and market development and commercialization, even though an individual product may not lead to profits. Their general goal is to be first to market with any particular innovation.

**Reactors:** A firm that has no coherent innovation strategy. They only develop new products when absolutely forced to by the competitive situation.

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### APPENDIX A

#### QUEEN ROYAL PLASTICS

Queen Royal Plastics, Inc. (QRP) is a wholly-owned subsidiary of AXZ Petroleum Corporation. QRP is a relatively large producer of polyethylene and is integrated vertically with ethylene production in the parent company (AXZ). Polyethylene products are then supplied as resin raw materials to the film industry and are found in bags, food containers, and consumer goods packaging.

QRP was founded in 1968 and has maintained a stable market share of >60% in the U.S.



and Canada over the past 15 years. Robert Jones has served as the CEO of QRP for the past decade and was part of the original engineering team starting up the first polyethylene plant owned by QRP and AXZ. Other senior staff members in key QRP functions have remained in their current positions for long periods of time, also. Sheila Smith, for example, has served at the Financial Controller for seven years, and William Daniels has filled the role of Operations Manager for nearly 10 years and is celebrating his 25<sup>th</sup> anniversary with the company next month.

In a recent interview, Mr. Jones explained, *"I work very closely with my Operations Manager and Controller. We review strict metrics on actual polyethylene volume and cost of distribution on a weekly basis."* The production line is designed to operate with little downtime to

maximize throughput of a single base technology for polyethylene so that the company competes as a resin supplier mainly on price and cost effectiveness.

While the rest of the plastics industry employs technicians that are part of labor unions, QRP pays their technicians a little more than average in order to prevent labor strife and to maintain a stable workforce. Engineers are discouraged from attending general topic conferences and are organized on a purely functional basis: mechanical, electrical, and production. Many engineers in the Operations Department, like Mr. Daniels, are celebrating 20<sup>th</sup> and 25<sup>th</sup> anniversaries with the company.

As other firms have introduced new grades of polyethylene as substitutes for wood/lumber building materials, QRP has maintained a narrow focus to supply resin to the film industry. One VP commented on management's philosophy of diversification, saying, "*We think that any new business areas should directly build off of and complement our present strengths. Therefore, we have a very rigid New Product Development Process and any new ideas must demonstrate >20% Return-on-Investment over 5 years before we will consider sending the idea to the Engineering Department for development.*"

In fact, QRP has introduced only two new grades of plastic in the past eight years, while in the meantime, they have added several technology improvements to increase production line efficiency and to streamline operations. Decreasing the required maintenance intervals has saved QRP nearly \$2M per annum in labor and reduced downtimes. Mr. Jones indicates that he will continue to pursue opportunities for increased efficiency at QRP while maintaining high market penetration in the polyethylene film market.

### APPENDIX B

#### CAT'S AUDIO EQUIPMENT

Cat's Audio is a medium-sized, rapidly growing home stereo and electronics company. It has successfully survived the downturn in the economy during 2000-2001 and is maintaining a lean profit margin during the most recent recession, beginning in 2008. Today, the growth of Cat's Audio continues and the firm has passed through several stages of development.

At its inception, Cat's Audio offered only hi-fi equipment to a narrow market of stereophiles, selling their products through a highly dispersed network of high-end audio shops in major U.S. and European cities. But, Cat's Audio quickly recognized that with the introduction of mobile devices and mp3 formats, their customers would need different equipment than their current offerings of only higher end, home-based hi-fi equipment.

Thus, Cat's Audio began to expand their product market offerings to add plug and play devices, headsets, etc. to capitalize on the mobile market and new music recording formats. Recognizing that they needed a foothold in the mobile device market, Cat's Audio acquired a small company offering satellite telephone technology and hired a new Marketing Executive from a successful cinematography company in California.



President Richard Star, who was recruited by Cat's Audio two years ago from Orange Well Computers, notes that the company is very flexible and capable at R&D. "We go for the new products first and then organize around them." Currently, Cat's Audio has 17 divisions

and is considering a re-organization around a possible market play into the home theater arena.

Employees are encouraged to develop new technologies and to test prototypes for market acceptance. New products are released about every six months after an 18-24 month development cycle. Holly McAllister, head of the R&D and Marketing in the Mobile Device Division, says "Although we have a fairly efficient idea-to-market NPD Process, we'd really like to increase our speed to market so all of our product offerings are first to the marketplace."

Product ideas are selected for development by the Division Manager and unless the investment is greater than \$10M, the Division Manager can proceed with autonomy. Like Ms. McAllister, most of the Division Managers at Cat's Audio have broad backgrounds in R&D, marketing, engineering, and business.

Human Resources and the Legal Departments are the only centralized functions at Cat's Audio, but they do not routinely participate in the company's planning meetings led by Mr. Star, the Marketing Executive, and the head of R&D. New idea presentations are valued by their innovative approaches to solving market problems with flexible and adaptable solutions, and team members are expected to move fluidly between divisions and teams in order to quickly develop the next new product.

Most recently, Cat's Audio has formed a small team to investigate new distribution systems and is considering whether they should move to a web-only based selling model.

APPENDIX C

NEW US FOR WOMEN

Founded over 50 years ago, New US for Women is a retail facial care company offering skincare products for high income adult women. New US has a large, stable market share of facial creams and lotions in this business sector.



Recently, the CEO of New US, Darren Daro, became convinced that there were fundamental changes occurring in the skincare market and an overhaul of the product offerings was long overdue. Mr. Daro felt that by expanding to make-up and nail care, a substantial growth in profitability could be realized and the stock price would increase further. Darren has been with New US for nearly 20 years and has worked his way up in the company through Engineering and Operations assignments with shorter stints in the R&D and Marketing Departments.

Following Mr. Daro's vision, New US re-organized to four functional groups, primarily responsible for continued efficient manufacturing of the baseline creams and lotions, and to three smaller product groups, responsible for aggressively marketing eye shadow, rouges, and quick-dry nail polish formulations. A large, multinational nail care company, Fingercare, recently pioneered a quick-dry nail polish for nail salons but has not yet ventured into the retail market. Fingercare's experience has

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clearly demonstrated the success of the quick-dry nail polish technology. New US needs to act quickly to capitalize on this new technology in the retail market arena.

According to Mr. Daro, one of the greatest challenges facing New US is to balance the control systems between the stable functional groups (like Engineering and Operations), with the more flexible and adaptable product groups (like Nail Polish). Turnover in the Product Manager roles tends to be high since New US does not like to see new products fail in the marketplace, even in the short run. Even so, the Product Manager in each of the three product groups tends to have more corporate influence than their counterparts in the functional departments.



Budget and product planning is both deep and broad at New US. Product groups are expected to anticipate external challenges and develop adaptive solutions to clear market needs, while the functional groups need to show increased operational effectiveness and cost improvements. Employee reward systems vary depending whether they work in the functional or product groups, and performance awards are negotiated by a committee from Marketing and Applied Research.

Growth in the company has made it a desirable stock holding despite the recent recession.

### APPENDIX D

#### MIGHT GREAT FOOD COMPANY

A medium-sized, partially integrated food co-operative, mighty grEAT food company sells nuts and dried fruits across a broad-based market, including supermarkets and health food stores. Over the past 25 years, the company has experienced moderate growth in an industry dominated by large firms selling brand name snacks.

Early in the company's history, mighty grEAT was a pioneer in production, processing, and marketing of dried fruits and nuts. But a recent spike in production costs, especially labor and distribution costs, has left mighty grEAT struggling to make a profit.



President of mighty grEAT, Ms. Hazel Brazele, has requested each division to prepare a 5-year plan on how they expect to deliver profitability. Recently, the executive board of mighty grEAT discussed a move into fresh fruit sales due to the observed increase in distribution costs, but it was turned down due to the company's prior unsuccessful venture into vending machines.

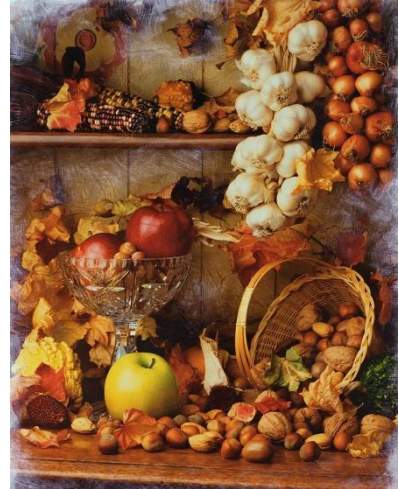
Five years earlier, a niche in the commercial vending machine market had been identified and mighty grEAT has assembled a team to study whether dried nuts and fruits could be sold for profit through this new technology. After 18 months, the team presented their study results to the executive board who then spent another 6 months arguing over a specific market launch plan for vending machines. Finally, the vending machine project was implemented but the timing was off and there is now talk of selling the vending machine division, at a loss, due to the very low profitability of this division.

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Ms. Brazele believes the company is very innovative; however, many individuals within the firm indicate frustration with the slow adoption of new ideas. The co-op has high employee turnover, with a recent across-the-board layoff of 20% of the employees in reaction to the recession which began with the housing crisis in 2008.

In addition to the committee formed to look at fresh fruit sales, other task forces have been appointed, but Ms. Brazele feels like these committee are not delivering cost efficiencies. On top of the lay-offs, key technical staff have begun moving to competitor companies. *"We are still a great company to work for but I feel like there is more stress than when I started working here. There are so many internal and external pressures to cut costs and compete in difficult markets,"* says Ms. Brazele.



### ABOUT THE AUTHOR



Teresa is President of Global NP Solutions, LLC, a strategic innovation provider. She is an accomplished visionary and results-oriented professional with extensive industry experience from creative research to effective portfolio management through stream-lined new product development processes.

Prior to founding Global NP Solutions, Dr. Jurgens-Kowal acquired over 12 years of experience in leadership and management positions with ExxonMobil Chemical Company and a total of 16 years as a practicing Chemical Engineer. Her corporate career encompassed various functions, including New Product Development, Portfolio Management, Licensing, Marketing, Logistics and Supply Chain, Manufacturing, Project Management and Research Technology.

Teresa has extensive experience leading successful teams, managing the product development life cycle, and defining the portfolio strategy. Her deep expertise in intellectual property management, product and process licensing, portfolio planning, customer service and various business processes make her an ideal teacher and trusted advisor who knows both the theory and practices of New Product Development.

Dr. Jurgens-Kowal earned a B.S. degree in Chemical Engineering from the University of Idaho in Moscow, Idaho and a Ph.D. in Chemical Engineering from the University of Washington in Seattle, Washington. She is a licensed Professional Engineer in the State of Louisiana since 1998. Teresa is a certified New Product Development Professional (NPDP) by the Product Development Management Association (PDMA) and Global NP Solutions, LLC, is a Registered Education Provider (REP) with PDMA.

Teresa holds chemical process and catalyst patents, and is published in the Journal of the American Chemical Society and Journal of Physical Chemistry.

Currently, Dr. Jurgens-Kowal is working on founding a Gulf Coast Chapter of the PDMA organization. She has an office in Houston, Texas.