The relationship between industrial engineering and strategic planning

Vision, values, goals and tactics all part of a company's mission

By Eli Konorti

There is much confusion among business managers and industrial engineering professionals about the relationship between effective IE solutions and strategic planning. More often than not, IE professionals are not involved in the development of organizational strategic plans unless they occupy senior leadership positions or are members of the strategic planning team.

As a consultant, I have assisted numerous manufacturing and distribution companies in a variety of industries to develop and implement strategic plans. I have always insisted that people from operations, whether IEs or not and regardless of titles, participate in the strategic planning process. Interestingly, it is this group of people that make a major contribution to the development and implementation of the strategic plan. Having said that, there is much ambiguity about the role this group plays as well as the relationship between strategic planning and the IE field. Unless IEs participate in the development and implementation of the strategic plan, the solutions and results will be partial and likely ineffective.

Strategic planning arrived in corporate America in the 1950s built on the concepts of Fredrick Taylor's scientific management, which is familiar to many of us. For IEs, the concept was simple: Let specialists plan, develop and implement strategic initiatives to steer the company to an envisioned future. Since then, strategic planning has evolved and new approaches to strategic planning have been developed, from the classic approach to David P. Norton and Robert S. Kaplan's balanced scorecard and Google's objectives and key results (OKR) approach.

Strategy as a business practice dates back to the mid-1950s (although first brought to the forefront in 1911) when research focused on strategic initiatives to gain a competitive advantage, namely product differentiation and cost leadership. These studies were later expanded by Michael Porter of the Harvard School of Business to include cost leadership, differentiation and market focus.

However, how does a company select a competitive strategy? This article will address the relationship between industrial engineering and strategic planning and demonstrate that companies can achieve a competitive advantage using IE principles.

A key element of strategic planning is selecting strategic initiatives and developing tactical plans. More specifically, these include generic as well as grand strategies. Porter suggested that to achieve a competitive advantage, companies have three options: cost leadership, differentiation or a market focus.

FIGURE 1

The strategy pyramid

The classic strategic planning process framework.

The cost leadership strategy, as the name implies, suggests that to gain a competitive advantage, companies need to excel in managing their costs to achieve effectiveness and efficiency in the organization. For example, McDonald's restaurants and Dell Computers are best known for adopting a cost leadership approach to gain a competitive advantage. Many of the cost leadership strategy and tactical plans are drawn from the field of industrial engineering.

Four interconnected pillars form the building blocks of each company include the company's finances; marketing and sales; human resources and organizational structure; and, last but not least, operations, including logistics. A company that is not operationally excellent will be less productive and unable to produce quality products or services. Furthermore, the company might lose its competitive position and risk long-term viability. As such, for a company to achieve operational excellence it should employ throughout the strategic planning process industrial engineering tools and techniques including Lean, reengineering, ergonomics and production planning and control, to name a few.

The classic strategic planning framework (see Figure 1) includes a number of elements that, if followed, will result in operational strategic initiatives that are closely aligned with the IE field. A discussion of each element and the relationship to IE follows.

VISION

Simply put, a vision is a unique picture of the future business. If a company were to take a photo of its future business now, what would it look like? The vision provides the direction and describes what the founder(s) envisioned the organization will achieve in the future.

When organizations make strategic decisions, the vision statement will give them the inspiration and direction they need. The vision must appeal to all company employees and span over many years. While most companies will never reach this summit, the vision nevertheless sets the agenda for the business as well as gives the business purpose. I believe that two of the best-articulated visions are those by the Alzheimer's Association, "A world without Alzheimer's disease," and Microsoft's original vision, "A computer on every desk, and in every home, running on Microsoft software."

Manufacturing companies choose vision statements that exploit their manufacturing strengths, when benchmarked against their competitors, to provide the least expensive products, including high quality and after-sales service and support. As indicated previously, the thrust of a cost leadership strategy is to offer least expensive products with the best possible quality and service.

For example, the vision statement for a manufacturing company engaged in millwork is, "Our customers buy our products because we have the best value for money, quality and service." A second example is the vision statement for RJB Industries, a manufacturer of fabricated structural metal and steel products for structural purposes located in Australia, that aims, "To exceed our customers' expectations in quality, delivery and cost through continuous improvement and customer interaction."

MISSION

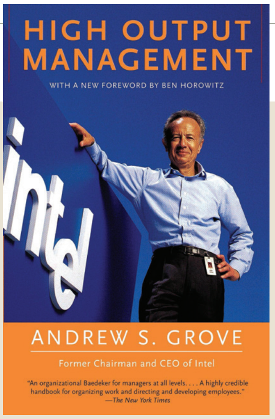
The mission statement, unlike the vision statement, sets apart the fundamental purpose of the company from others of its type and identifies the scope of the operations in product and market terms. Stated differently, the mission statement describes the company's product, market and technological capabilities and highlights the values and priorities of the decision-makers. A mission statement may shift over time with the internal and external environments.

The mission statement should answer the question "What do we do?" and "For whom do we do it?" The best mission statements address the company's operating philosophy including quality, operational efficiency, employees, core competencies and responsibilities to its stakeholders, including the community it serves.

Manufacturing companies, like others, never lose sight of their customers, marketing and branding initiatives, people and the strength of their balance sheet. However, a close examination of the choice of words in mission statements will reveal there is direct relationship between the businesses in totality versus their manufacturing operations. World-class manufacturing operations that employ IE methodologies such as Lean, quality management and technology initiatives do so to achieve a competitive advantage via cost leadership and differentiation.

For example, a company that is engaged in the continuous introduction of new products will focus on research and development initiatives where IEs play a key role. Others will use these IE initiatives to improve delivery lead times, reduce errors and improve employee morale, to name a few. For example, the mission statement of a manufacturer of wooden doors and windows stated, "We encourage mutual respect, teamwork and continuous improvement so that we are efficient and effective in everything we do to generate sufficient profits to reinvest in new technologies and in our employees."

Another company engaged in the manufacture of stone countertops stated, "We will work with new and innovative technologies and we will use industry best practices. ... We are committed to continuously improve so that we meet the needs and expectations of our customers and remain responsive to the marketplace."



OKRs: The Google way

John Doerr learned about the idea of objectives and key results (OKRs) while working at Intel with former CEO Andy Grove. In his book, *High Output Management*, Grove said two questions must be answered to set up a system of shared objectives: "Where do I want to go?" the objectives; and "How will I pace myself to see if I am getting there?" the milestones or results.

Doerr said that when he joined Intel, the company was transitioning from a memory to a microprocessor company and the management team was looking for a way to help employees focus on a set of priorities. Adopting the idea of OKRs helped them communicate those priorities, maintain alignment and make that switch.

Doerr joined Google in early 2000 and introduced OKRs to its leadership. Today, the technology giant sets annual and quarterly OKRs and holds companywide meetings quarterly to share and grade the results. Since then, the OKR concept has spread to other top companies as a way to set a course and measure the results.

VALUES

There are a few levels of values that a business considers; however, key to the strategic plan are the core values. Core values are deeply held convictions and underlying assumptions that influence the organization's attitudes and behaviors. Core values are nonnegotiable and operate unconsciously.

For example, creativity and innovation might lead to employee freedom and responsibility. Employees who conform to the organization's culture require less management. Values are enduring and are an essential part of the strategic plan. Core values guide the behaviors, activities and goals of the organization. Simply put, they tell others why you do what you do and what you stand for. Most importantly, values should be aligned with the organization's goals and objectives as well as the mission and vision. For example, the core values, among others, are timeliness, quality and productivity, all IE practices.

ENVIROMENTAL SCAN (SWOT)

A key step in the development of a strategic plan is an environmental scan. The outcome of the scan is a listing of the organization's strengths, weaknesses, opportunities and threats commonly referred to as SWOT, typically depicted as a matrix with four quadrants. The scan will identify factors that influence the firm's direction and future choices and will ultimately determine the organizational structure, internal processes and strategic initiatives. Moreover, the scan determines the organizational structure, internal processes and strategic initiatives.

The external environment includes the industry's operating environment (i.e., political, economical, social, technological, environmental and legal, or PESTEL) and forces that drive industry competition (such as Porter's Five Forces model). These are listed under opportunities and threats.

Alternatively, the internal environment includes factors that affect the internal environment, such as physical resources and assets, intangible assets such as brand name and morale, as well as organizational capabilities such as people skills. These are listed under strengths and weaknesses. Manufacturing companies will typically exploit their strengths of manufacturing processes to secure potential opportunities or overcome internal weaknesses.

GOALS, OBJECTIVES

The terms goals and objectives often are used synonymously. However, in the context of strategic planning, one should make a distinction between the two. A goal is a broad statement of what a company wants to accomplish and the general direction the organization should pursue (e.g., "increase productivity"). Generally speaking, goals are qualitative statements.

An objective, on the other hand, quantifies ("by 20%") and is time-bound ("by December 2023") to accomplish the goal. Goals and objectives will often focus on the different pillars of the organization, namely financial, operations, marketing and sales, and human resources.

Objectives that correspond to goals should be specific, measurable, achievable, realistic and time-bound, also known as SMART (i.e., specific, measurable, achievable, relevant, time-bound). Goals are supported by measurable objectives.

STRATEGY

A strategy in the context of strategic planning is the selection of a course of actions the organization should undertake to satisfy its objectives, goals and, subsequently, its mission and vision. The ultimate goal of a strategy or series of strategies is to achieve a desired future state. The selection of specific strategies is highly dependent of the internal and external environment as opposed to a vacuum.

During the strategy selection process, a company should choose from different types of strategies, such as Porter's generic strategies, or grand, corporate-level strategies designed to identify the firm's choice of the direction it follows to accomplish its objectives.

Put differently, it involves the decision of choosing long-term plans from a set of four available alternatives strategy avenues, including stability, such as product or market development; expansion, such as horizontal or vertical integration; retrenchment, such as turnaround or divestiture; or combination strategies, such as joint ventures or strategies alliances. A close examination of these strategies clearly underscores the importance of the IE field.

TACTIC

Tactics are commonly used to designate the ways resources are deployed and directed within a broader strategy to reach a desired outcome. Tactics are specific activities, steps and actions required to meet the organization's objectives and satisfy the strategies – think project management. They are actionable activities with due dates, an implementation plan's costs, with milestones assigned to each action along with the assignment of individuals responsible for executing each tactic.

Sun Tzu wrote in *The Art of War* that "strategy without tactics is the slowest route to victory; tactics without strategy is the noise before defeat." Unlike strategic initiatives, tactics are flexible and can be changed.

In summary, if there is one thing strategic planning practitioners have learned over the years, that is to never underestimate the importance of industrial engineering and its role in the strategic planning process. Decades of experience taught us that the operational pillar (IE) of a business is key to its success. The combination of hands-on experience plus formal education will enhance the strategic initiatives organizations choose and implement.

As Henry Mintzberg wrote, "The story of strategic planning ... has taught us not only about formal technique itself but also about how organizations and how managers do and don't cope with that functioning." ❖

Eli Konorti, Ph.D., PE, is president of Advantage Management Solutions in Vancouver, BC, Canada, and a senior-level consultant experienced in all aspects of planning and implementing solutions in the private and public sectors. He also is an adjunct professor for the Masters of Administrative Sciences Program at Fairleigh Dickinson University. Konorti holds a bachelor's degree in industrial and engineering, as well as an MBA and a doctorate in business.