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ARTUR RAVIV

Energy Gel:
A New Product Introduction (A)

While taking a break during his usual Sunday bike outing, Harry Wickler, vice president of business development at High Performance Corporation (HPC), bit into a Quickpro energy bar and reflected on the heated discussions of the last week.

Wickler and his business development team in the energy food division had presented a comprehensive new business plan for the product introduction of Energy Gel, a small gel-type nutrition package designed to replenish the body with carbohydrates and electrolytes much more rapidly than traditional energy bars were designed to do. Several quickly growing entrepreneurial companies had already introduced similar products and, according to Wickler, the most recent marketing evidence suggested that gel-type nutrition bars might be the most important development in the carbohydrate energy-food market since the introduction of energy bars. Nonetheless, major food or energy drink companies had yet to enter this expanding and lucrative market. Wickler was convinced that it was time (in October 2000, four years after the first energy gels were introduced) for HPC to react by launching a gel product of its own and thus strengthening its position in the energy foods market.

Unfortunately not all of the parties involved in the decision-making process at HPC agreed with Winkler's line of reasoning. Two issues in particular, both of which impacted significantly on the profitability calculation of the new product, remained unresolved: First, did the potential cannibalization of HPC's highly profitable energy bar products diminish the attractiveness of launching the new energy gel? Second, should the new project bear incremental or even full costs for the use of otherwise-idle capacity?

High Performance Corporation

HPC, a large U.S. food and drink conglomerate with approximately $1.9 billion in annual sales, consisted of three divisions: food, drink, and international operations. Each division controlled several product lines. The food products included baking products, preserves, yogurts, and snacks. Within the snack product line, energy bars represented the fastest growing segment, and by October 2000 amounted to more than 20 percent of divisional revenues. The introduction of energy bars to HPC's product portfolio in 1989 had been HPC's most successful new product expansion in the last eleven years. The drink division had enjoyed a similar success with energy drinks; both energy drink and energy bar products had grown at double-digit rates since their introduction at HPC. Financial statements for HPC are given in **Exhibit 1** and **Exhibit 2**. Stock

price and financial market data are given in **Exhibit 3**. Historical and pro forma performance of the energy bar product line is given in **Exhibit 4**.

The Energy Foods Market

In the beginning there was the Space Food Stick.[1] Created by Pillsbury as a high-energy snack for National Aeronautics and Space Administration (NASA) astronauts, these chewy, fudge-like bars were a success on their very first mission on board Mercury spacecraft in 1962. This small step for nutrition bars evolved into a giant leap for what had become, by the year 2000, a $1 billion industry. Labeled as nutrition bars or energy bars, these food products had crossed over from their traditional health-food market to the fitness realm and beyond, being marketed as a high-quality, alternative meal for people on the go. According to the ACNielsen market research affiliate Spence Information Services (SPINS), supermarket sales of energy bars grew 35 percent in 2000.[2] And despite the sometimes-high costs (bars ranged from $0.99 to $3), sales had grown every year since 1996.[3] HPC expected the energy bar market to continue to grow at 10 percent per year in 2001 and 2002, 9 percent in 2003, and 8 percent thereafter.

As new producers entered the rewarding energy bar market, existing manufacturers were continually searching for differentiation, mostly by varying ingredient composition and flavor. The search for differentiation led to the development, in the mid-1990s, of the first energy gels, a completely new category within the energy foods segment. In 2000 the energy gel market was still quite fragmented, primarily featuring small players such as PowerBar or Clif Bar (see **Table 1**). With the exception of Carb-Boom and Kitsune Foods, which produced energy gels exclusively, these companies had originated in the general sports nutrition area, particularly in the energy bar arena, before entering the energy gel market. Despite their rapid growth, most companies remained in private ownership.

Table 1: Selected Companies in the Energy Gel Market

Company	Energy Gel (Brand Name)
Carb-BOOM	Carb-BOOM Gel
Clif Bar	Clif Shot
GU	GU Carbohydrate Gel
Kitsune Food	Fireball Energy Gel
PowerBar	PowerGel

Energy Gels—Uses and Advantages

Energy gels had been positioned in the marketplace as a fuel for high athletic performance. With a texture similar to cake icing, they contained concentrated simple and complex carbohydrates, electrolytes, and, for the most part, real fruit. In contrast to energy bars, energy gels were formulated to be metabolized more quickly, to be easier to handle during exercise, and

[1] "Food Day / Wednesday / Bar Exam / In which we take a critical look at the leading energy snacks," *Newsday*, October 10, 2001.

[2] In the twelve months preceding October 2000, supermarket growth rates were much higher than the overall market growth as this distribution channel just started to pick up speed. Typically, energy bars were sold at convenience stores, sports stores, and cafeterias.

[3] "Food Day / Wednesday / Bar Exam."

to require less energy to consume. Providing nutrition as a gel reduced the amount of energy that the body needed to absorb and digest it, and also prevented the product from breaking even under extreme conditions, such as mountain biking and free-climbing. Athletes used gels as supplements for stabilizing energy levels shortly before exercise and, in particular, during demanding exercise. The gels' carbohydrates and electrolytes, usually assimilated into the consumer's body within five to ten minutes, worked to sustain overall endurance and performance. During times of extreme physical challenges, such as marathons and mountain bike races, the quick absorption and easy handling proved to be a special advantage. Since an athlete might typically consume energy gel before, during, and after exercising, demand for the product was multiplied by several units per workout.

Through sponsorship of athletic events and individual athletes, particularly in the area of extreme endurance sports, manufacturers promoted energy gels as an entirely new kind of sports nutrition. Mike Pieroni, head coach of the Boston Athletic Association running club, stated that energy gels did seem to aid runners whose energy was flagging: "Ninety percent of the people who have used (an energy gel) say it really helped. It gives them a boost. They were starting to crash, and it made them feel great. Few have had stomach problems with it."[4]

The Energy Gel Project

Wickler's business plan for Energy Gel predicted an extremely promising performance. Due to the continuing cultural enthusiasm for health and fitness, he expected overall future growth rates in the U.S. carbohydrate energy food market to remain at more than 12 percent annually for at least five more years.[5] The growth rate of an innovative new product such as energy gel could be expected to expand even faster. HPC's state-of-the-art R&D (research and development) department had already signaled that it could complete the development of a competitive gel composition in a matter of weeks. They estimated expenditures for the remaining product tests at approximately $250,000 over and above the $2.25 million already invested. From a marketing perspective, a new energy gel line would help to supplement the existing offerings and would lead to a comprehensive product portfolio of carbohydrate energy food products. Wickler was convinced that the energy gel would assure HPC's future growth in the increasingly competitive energy bar market.

From the standpoint of production, Wickler's business plan built upon the fact that HPC's carbohydrate energy food unit encompassed all of the necessary know-how, equipment, and material for successful creation of a new energy gel product line. Because of similarities in the products' manufacturing processes, even the same mixing devices could be used. As these were running only at approximately 60 percent of their capacity of 66 million energy bar units of average size per year, the Energy Gel project could significantly reduce its upfront investments.[6] One unit of the smaller-sized energy gels could be produced on the existing machinery in approximately half the time of an average energy bar.[7] In contrast, an investment in the smallest

[4] Quoted in "Eat and Run; Marathoners Experiment to Find a Winning Diet," *Boston Herald*, April 10, 2002.

[5] HPC estimate.

[6] In 1998 HPC invested $7.5 million in new mixing equipment for its energy bar product line, expected to have a useful life of ten years with no salvage value.

[7] The existing machine could easily absorb the necessary production volume for energy gels in 2001: production capacity of bar units (66 million) minus projected production of bars (43.3 million) equals 22.7 million bar units. This amount is a lot larger than the planned energy gel production in bar equivalents (= 0.5 × 4.3 million).

available new mixing equipment with the necessary functions and configurations would cost about $3 million[8] and would be utilized at only 25 percent of capacity in 2002, the first year of full-time production. Despite saving in mixing equipment, a $1.5 million investment was required to modify the existing buildings to accommodate the new line, and a $2 million investment was required to purchase necessary packaging machinery. HPC used a ten-year straight-line depreciation for the mixing and packaging machinery, and a fifteen-year straight-line depreciation for the building modifications. Both expenditures could be financed with a long-term bank loan at 8.25 percent interest.

Estimated market growth for energy gels was favorable and Wickler was confident that the demand for HPC's energy gel brand would rise at least at this general market rate. **Exhibit 5** shows the expected sales and costs of goods sold for HPC's energy gel brand for the next ten years. (These figures reflect cost of goods sold of 60 percent of sales, excluding depreciation.) However, some of this growth was expected to come from the substitution of energy gels for energy bars.

Wickler and his team eagerly anticipated starting the Energy Gel project as soon as possible. Together with the R&D and marketing departments, the company had already invested $2.25 million (as mentioned above) in researching the most potentially successful flavors and they wanted to recover this expenditure with the launch of the first Energy Gel products. Although variable production costs were slightly higher than those for energy bars, the lower fixed production costs and the premium price of the new product seemed to guarantee that the Energy Gel project would be one more success story for HPC's energy food division.

Wickler's new business plan provoked heated discussion around two issues concerning the Energy Gel product introduction: a potential cannibalization of HPC's highly profitable energy bar line (Exhibit 4 shows past and projected future performance of the energy bar product line), and the issue of accounting for the usage of existing excess capacity of the mixing devices. Whereas Wickler assumed these costs to be sunk and therefore without relevance for the new project costs, Mark Leiter, the product manager of HPC's energy bar line, argued that the new product introduction had to be valued on a stand-alone basis to see if, independently of these special circumstances, the energy gel introduction was a profitable step for HPC to take.

Capital Budgeting Process at HPC

HPC had a capital budgeting and project evaluation process in place, aimed at evaluating the technical, strategic, and financial viability of proposed commercialization projects. Only when a project was deemed technically implementable and strategically desirable for HPC overall would a financial evaluation be carried out. In this case, the financial evaluation was based on two criteria: the payback period and the return on invested capital (ROIC).

The payback period was the length of time required for the project to repay the initial investment after the starting date. Only capital invested in fixed assets, income, and expenses related to the project were used to calculate the repayment period. HPC required a payback period of less than seven years for its investments.

[8] The annual mixing volume translated into a maximum production capacity of 50 million energy gel units of average size.

The ROIC was calculated by dividing the ten-year average net income by the ten-year average invested capital in the project. The invested capital included investment in net fixed assets plus investment in net working capital. Any profits or losses incurred before the project became operational were included in the first profit and loss period of the financial evaluation. HPC required that the ROIC exceed its hurdle rate of 15 percent. Wickler had completed HPC's financial evaluation form for the Energy Gel project. The ten-year forecast for the project, to start in January 2001, is given in Exhibit 5.

Different Evaluation Approaches to the Energy Gel Project

Despite the existence of a uniform capital budgeting process, there was still a good deal of debate and confusion about the correct way to evaluate HPC's Energy Gel project. In essence, three different proposals were brought forward and heatedly discussed within the management team:

1. *Direct costing basis*, advocated by Harry Wickler, vice president, business development
2. *Full costing basis*, advocated by Mark Leiter, product manager of Quickpro energy bars
3. *Equipment-based costing*, advocated by Frank Nanzen, corporate controller

DIRECT COSTING BASIS

Wickler and his development team pushed strongly for an incremental cost and contribution approach (Exhibit 5). With this approach the Energy Gel project considered only variable revenue and investments, line items that could be directly identified with the decision to produce the Energy Gel. Specifically Wickler considered the incremental investment in building modifications ($1.5 million) and new packaging machinery ($2 million), but did not consider any costs for the use of existing facilities. Wickler's argument was that the use of existing facilities should not be included in his evaluation, as the investment in these facilities had already been undertaken in the past. He claimed that HPC as a whole would be better off if the Energy Gel project could make use of the unused capacity of the mixing equipment. The calculations (as shown in Exhibit 5) resulted in a payback and ROIC far better than the required seven years and 15 percent, respectively. Wickler concluded that this clearly indicated that the Energy Gel project should not only be approved but also initiated as soon as possible.

FULL COSTING BASIS

Mark Leiter, product manager of HPC's Quickpro energy bars, was furious when he heard that Wickler planned to use the unused capacity of his Quickpro mixing device without reimbursement, while his own business unit had been required to cover the full costs of the initial investment. He viewed Wickler's approach as an unacceptable "free ride" on the existing assets of the company. In his opinion the Energy Gel project should be evaluated as a stand-alone business which would be fully accountable for all investments and costs related to it. Hence, the Energy Gel project would need to prove its viability after considering an investment for a new $3 million mixing machine. As this was the situation that Leiter had faced when he set up the Quickpro energy bar business, he insisted that the full cost approach would best reflect the true potential of the Energy Gel project.

He further argued that the introduction of Energy Gel would cannibalize the unit sales of his Quickpro energy bar business by roughly 10 percent per year, resulting in a severe distortion of the contribution margins of his business line. Since Leiter and his colleagues received a rather substantial variable performance bonus based on the contribution margin, he demanded that Wickler's Energy Gel project calculation include a transfer payment, which would compensate him for the lost sales due to cannibalization.

Moreover, Leiter maintained that due to the long-run increase of the overall level of business activity, the Energy Gel project would lead inevitably to a higher overhead base across the whole firm, for which Wickler's evaluation did not account. Even though decisions to spend additional overhead dollars were generally determined separately from decisions to increase business activity (i.e., increase in overall volume, additional facilities, etc.), Leiter felt that the Energy Gel project should also account for the increase in overhead costs. Since Leiter's department was highly occupied with the energy bar business, his team did not have much free management capacity and thus would not be able to perform all the activities on behalf of the Energy Gel project. He estimated that Wickler would incur the same selling expenses for the Energy Gel on a per unit basis as the energy bar line had encountered. General and administrative expenses were also expected to equal 12 percent of the energy bar's general and administrative expenses in 2001, and to grow at 8 percent per year thereafter.

EQUIPMENT-BASED COSTING

Frank Nanzen, corporate controller, followed the arguments between Wickler and Leiter closely. Ultimately, he suggested a third approach, which would not only smooth the differences between Wickler's and Leiter's approaches, but which would, in his view, be the accurate and equitable way of evaluating the Energy Gel project. He believed that the direct and the full costing methods both had serious flaws, which his method would help to overcome. Since Nanzen recognized that the Energy Gel project would take advantage of the 40 percent of unused capacity of the mixing machine, he recommended a pro rata approach. He argued that this excess capacity could not be provided for free and that Wickler would need to make a transfer payment, similar to a rental fee, to Leiter's group. This pro rata rental fee would cover costs directly related to the use of the equipment and would also help recover Leiter's investment in the machine. Even in the case of a high ROIC on a pure direct costing basis, the project would be questionable if the ROIC of the project were still unattractive after consideration of the shared use of existing facilities. Under these circumstances, HPC would look for a more profitable product. In general Nanzen maintained that a project that did not require an investment in additional facilities should not be judged as more attractive than a practically identical project which did. Hence the equipment-based approach was a useful way of putting various projects on a common ground for purposes of relative evaluation.

Nanzen contended that the direct costing approach was an inadequate measure of a project's worth when existing facilities, with a predictable use in the future, would be utilized extensively. Nanzen also called attention to potential pricing distortions when using the direct approach exclusively. Under the direct method, the new Energy Gel would not be charged for the use of the mixing equipment and therefore could be priced substantially lower than under the pro rata method. At the same time, the full burden of the mixing machine would still be borne by Leiter's energy bar business, negatively impacting his contribution margin.

The Decision

Florence Vivar, chief financial officer of HPC, was well aware of the arguments for and against the launch of the Energy Gel project. She now wondered which approach, if any, to select from the three presented. Which would be the fair and correct method to employ in evaluating the project? Could she rely with confidence on a single approach, or were there additional points that were not reflected in any of the three?

After weeks of seemingly endless discussions about the valuation process, she decided that HPC would need to rethink its capital budgeting process in general and establish clear guidelines regarding all future project evaluations. HPC's problem had never been one of capital rationing; indeed, HPC faced the ongoing challenge of finding enough good solid projects that would employ capital at an attractive return on investment. Therefore, crucial analysis of the expansion plans of HPC's various food and drink units, using a capital budgeting process, would ensure that correct investment decisions would be made in the future.

Exhibit 1: Consolidated Balance Sheet of High Performance Corporation

Fiscal Year Ended December 31, 1999 ($ in millions)	
Assets	
Cash and cash equivalents	98
Receivables, less allowances for doubtful accounts	126
Inventories	131
Prepaid expenses and other current assets	77
Total current assets	432
Land, buildings, equipment (at cost, less depreciation)	486
Intangible assets	262
Total assets	1,180
Liabilities and stockholder equity	
Notes payable	142
Accounts payable	125
Current portion of long-term debt	35
Other current liabilities	222
Current liabilities	524
Long-term debt	185
Deferred income taxes	32
Other noncurrent liabilities	190
Total liabilities	931
Stockholders' equity	
Preferred stock issued	7
Common stock issued	337
Retained earnings	495
Less common stock in treasury, at cost	–530
Deferred compensation	–21
Accumulated other comprehensive income (loss)	–39
Total stockholders' equity	249
Total liabilities and stockholders' equity	1,180

Exhibit 2: Consolidated Income Statement of High Performance Corporation

Sales	1,904
Costs and expenses:	
Cost of goods sold	806
SG&A	801
Interest, net	34
Unusual items	2
Total costs and expenses	1,643
Income before taxes	261
Income taxes	83
Net income	178
Average number of common shares	108
Earnings per share of common stock, $	1.65

Exhibit 3: Common Stock Prices of High Performance Corporation and Selected Market Data, October 2000

Month	Low	High	Close
May	27.76	39.59	37.92
June	27.05	39.27	37.46
July	25.93	38.72	36.31
August	25.38	37.61	35.60
September	25.32	37.99	36.67

Short- and Long-Term Bond Rates	
90-day Treasury bills	6.06%
One-year Treasury bonds	6.06%
Five-year Treasury bonds	5.94%
Ten-year Treasury bonds	5.90%
Thirty-year Treasury bonds	5.95%
Ten-year AA corporate bonds	7.71%
Ten-year A corporate bonds	7.80%
ß (HPC)	0.7
Debt rating (HPC)	AA

Exhibit 4: Historical and Pro Forma Performance of the Energy Bar Business, 1996–2005 (as of June 2000)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
					Pro forma	*Pro forma*	*Pro forma*	*Pro forma*	*Pro forma*	*Pro forma*
Units[a] (in millions)	25	28.0	31.4	35.2	39.4	43.3	47.6	51.9	56.1	60.6
Sales ($ in millions)	45.3	52.0	59.8	68.7	78.8	88.8	100.0	111.8	123.8	137.1
Cost of goods sold (incl. depreciation)	23.7	25.0	29.9	36.4	40.4	43.4	49.0	54.4	60.4	66.9
Advertising expense	4.2	4.5	5.3	6	7.1	8.0	9.0	10.1	11.1	12.3
Selling expense	2.7	3.3	3.6	3.6	4.4	4.9	5.5	6.2	6.8	7.6
General and administrative expense	8.0	8.8	9.7	10.7	11.8	12.7	13.7	14.7	15.6	16.5
Earnings before taxes	6.7	10.4	11.3	12.0	15.1	19.8	22.8	26.4	29.9	33.8
Taxes	2.3	3.6	4.0	4.2	5.3	6.9	8.0	9.2	10.5	11.8
Net income	4.4	6.8	7.3	7.8	9.8	12.9	14.8	17.2	19.4	22.0

Note: All figures $ in millions except units in millions.

[a] Unit sales do not account for potential 10 percent cannibalization as discussed by Mark Leiter.

Exhibit 5: HPC Financial Evaluation Form—Energy Gel Project ($ in millions)

Project Name: Energy Gel Project Start Date: January 2001 Project Operational Date: June 2001

Project Request Detail ($ in millions)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Land	0										
Buildings	1.5										
Machinery and equipment	2										
Subtotal	*3.5*										
Less: salvage value	0										
Total project cost	3.5										

Profit and Loss Pro Forma	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	10-Yr Avg
Units (in millions)	4.2	10.0	11.8	13.6	15.2	16.8	18.1	19.3	20.2	21.2	15.00
Sales	6.3	15.0	17.7	20.4	22.8	25.2	27.2	29.0	30.3	31.8	22.56
Cost of goods sold (incl. depreciation)	4.1	9.3	10.9	12.5	14.0	15.4	16.6	17.7	18.5	19.4	13.84
Gross profit	**2.2**	**5.7**	**6.8**	**7.9**	**8.8**	**9.8**	**10.6**	**11.3**	**11.8**	**12.4**	**8.72**
Advertising expense	2.2	3.3	2.7	2.5	2.3	2.5	2.7	3.0	3.2	3.4	2.78
Selling expense											
General and administrative expense											
R&D and market research expense	2.5										
Earnings before taxes	**–2.5**	**2.4**	**4.1**	**5.4**	**6.5**	**7.3**	**7.9**	**8.3**	**8.6**	**9.0**	**5.69**
Taxes (35%)	–0.8	0.8	1.4	1.8	2.3	2.5	2.7	2.9	3.0	3.1	1.97
Net income	**–1.6**	**1.6**	**2.7**	**3.6**	**4.3**	**4.8**	**5.2**	**5.4**	**5.7**	**6.0**	**3.77**
Cumulative net income	–1.6	0.0	2.7	6.3	10.6	15.4	20.6	26.0	31.7	37.7	

Invested Capital ($ in millions)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	10-Yr Avg
Project costs	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Less: cumulative depreciation	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	
Invested capital in fixed assets	**3.2**	**2.9**	**2.6**	**2.3**	**2.0**	**1.7**	**1.4**	**1.1**	**0.8**	**0.5**	**1.9**
Cash	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.3
Receivables	0.7	1.8	2.1	2.4	2.7	3.0	3.2	3.4	3.6	3.8	2.7
Inventories	0.4	0.9	1.1	1.3	1.4	1.6	1.7	1.9	1.9	2.0	1.4
Accounts payable	0.3	0.7	0.8	0.9	1.0	1.2	1.3	1.4	1.4	1.5	1.1
Total working capital	**0.9**	**2.2**	**2.6**	**3.1**	**3.4**	**3.8**	**4.0**	**4.3**	**4.5**	**4.8**	**3.4**
Total invested capital	**4.1**	**5.1**	**5.2**	**5.4**	**5.4**	**5.5**	**5.4**	**5.4**	**5.3**	**5.3**	**5.2**

Payback Years from Operational Date	
Total project cost	3.5
Number of full years to payback	4.0

Return on Invested Capital (ROIC)—10-Year Average	
Net income	3.77
Invested capital	5.21
ROIC	72%
Hurdle rate	15%