

## HARSH ELECTRICALS: ANALYZING COST IN SEARCH OF PROFIT

*Rahul Pramani and Ashutosh Dash wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.*

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On the chilly evening of November 6, 2013, Madhusudhan Gupta, founder of Harsh Electricals, studied the financial statements of his new venture, as he conducted his due diligence. Harsh Electricals, which up until this date had been a specialist supplier of home appliances to various retailers in the Indian states of Andhra Pradesh, Maharashtra, and Karnataka, was struggling to stay afloat due to a surge in costs and increasing competition. Gupta realized how, out of sheer complacency, he had completely overlooked these factors, which were now adversely affecting the firm's profitability. The plunge in profits and cash flow convinced Gupta that, if the firm was to remain competitive, his business needed a paradigm shift. Based on his business acumen and market research conducted over the years, he considered whether he should shift the focus of his business to manufacturing quality appliances, rather than from acting as a distributor of lower-quality, over-supplied products. However, before taking the plunge, Gupta needed to collect all relevant information and create a business case to check the viability of his project. The next day, he discussed the business case with N. Nagesh, his new associate who had the necessary knowledge and skills in air-cooler manufacturing, and who had agreed to work for Harsh Electricals as Gupta's primary assistant.

### HARSH ELECTRICALS: THE BEGINNING

Gupta hailed from Nanded, a small town in Maharashtra, the second-most populous state of India, where his family owned a retail and wholesale supplies agency dealing with electrical goods and home appliances. During his initial years as a supply chain manager, he had single-handedly managed the procurement process of his family business. However, the small town of Nanded was not enough to fulfill his ambitions. He wanted to expand his business beyond the town and take it to new heights.

His entrepreneurial journey took a new turn in 2008 when he decided to move to Hyderabad, the then-capital of Andhra Pradesh, a state in southern India. Hyderabad was witnessing great transformation to a powerful information technology (IT) hub. This transformation had led to an increase in the city's population, opening up markets for a whole range of products and services. Another favourable factor of Hyderabad was that, given its connectivity, infrastructure, and geography, the city had become one of southern India's most well-established markets for electrical and electronic goods. With these factors in mind, Gupta decided to shift his home base from Nanded to Hyderabad and give wings to his entrepreneurial dreams.

After moving to Hyderabad, Gupta's first step was to conduct thorough, door-to-door market research. During his stint as the supply chain manager, he had observed that, despite a plethora of private-label brands in the electrical goods and home appliances industry, many of these brands remained anonymous to end-users. He also noticed a parallel state of affairs in the regional air-cooler market, primarily because of the vast geographical distance between the manufacturer and retailers; while the manufacturers were largely concentrated in and around Hyderabad, the retailers were spread out across the state. Gupta learned that many products and brands were not reaching retailers due to the huge bargaining power of distributors in the value chain.

Gupta decided to take up the role of an intermediary to bridge the gap between manufacturers and retailers. To establish a client base for his business, he travelled across 23 districts of Andhra Pradesh. His business model required him to buy home appliances from manufacturers and sell them to the retailers spread across Andhra Pradesh. His business acumen, honesty, and unusual negotiation skills aided him in securing at least one large retailer from each of these districts. He was always upfront with his clients and believed that a long-term, healthy relationship with suppliers was the key to making it big in the world of business.

On the assurance of the retailers, Gupta invested ₹800,000<sup>1</sup> in the form of equity to begin his business-to-business trading concern, which he registered under the name Harsh Electricals on April 1, 2008. Initially, the entity dealt with supplying retailers with electrical goods and home appliances, such as air coolers, fans, and hand grinders. Subsequently, the product portfolio was expanded to include a range of quality-approved electric home appliances, ceiling fans, table fans, wall fans, electric geysers, room coolers, and exhaust fans.

## THE RISE AND FALL OF TRADE

Harsh Electricals' performance for the financial year (FY) 2008–09 was exceptional. Its sales reached almost ₹4 million and post-tax profit touched ₹650,000. The return was overwhelming on an equity investment of ₹800,000. The splendid financials prompted Gupta to start expanding his business to the neighbouring states of Maharashtra and Karnataka in FY 2009–10. The hard work paid off, and Harsh Electricals became one of the major suppliers of electrical goods to many retailers of Andhra Pradesh, Maharashtra, and Karnataka. The growth story continued in FY 2010–11 as the firm exhibited overwhelming financial performance. However, the celebratory period was short-lived as the financial performance declined in FY 2011–12 and FY 2012–13 (see Exhibit 1).

The decline in the net profit margin was attributed to increases in marketing and servicing costs during those years. In fact, consumers who had purchased Gupta's air coolers and other home appliances had voiced many grievances to the retailers regarding the products. Harsh Electricals had experienced a surge in post-sales repairs and replacement costs due to the inferior quality of products supplied by some of the manufacturers. The inadvertent inclusion of substandard products in the product mix had shaken Harsh Electricals' reputation and posed a serious challenge to the firm's current core competencies. Further, owing to the tremendous competitive pressures in the market, after expanding into the neighbouring states, Harsh Electricals needed to increase its marketing and promotional expenses to sustain its competitive advantage amid the rising number of competitors (see Exhibit 1).

The plunge in profits and cash flow compelled Gupta to review the market in an effort to identify aspects of market priority and product structure so that he could revive the firm's required core competencies. Based on market mapping, Gupta found that the quality of products demanded and expected by retailers was far from the quality supplied by manufacturers in the air-cooler market. The divergence of product excellence created much discontent toward a few manufacturers. Many customers even questioned the cost-

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<sup>1</sup> ₹ = INR = Indian rupee; all currency amounts are in ₹ unless otherwise specified; US\$1 = ₹39.94 on April 1, 2008.

effectiveness of several products Harsh Electricals sold. Gupta identified a few air-cooler manufacturers in Hyderabad who were providing quality products; however, their products could fulfill the demand of only 30–40 per cent of the state populace that was interested in buying superior products. This insight helped Gupta discover the potential in the market. He visualized a large market opportunity for manufacturers, provided the products were appealing to customers, were sold with an assurance of good quality, and promised a longer life than that offered by the competition. He believed that air coolers manufactured with superior manufacturing performance, continuous improvement, and change could revive the firm's competitiveness, thus leading to greater productivity and profitability.

## THE MANUFACTURING DECISION

Gupta was certain that he could leverage his reputation to make an impact in the market, as he recognized the potential to increase the sale of air coolers. Primary research revealed that the sale of a standard air cooler priced at ₹2,300 would yield a profit of approximately 15 per cent. With his large network of retailers, Gupta saw the potential of selling 4,000 to 4,500 coolers a year, though the number could climb to 5,000 units. In fact, the air-cooler business was seasonal in nature; hence, Harsh Electricals would need to operate for a maximum period of only six months in a year, which implied that the firms' production cycle would also last for only six months.

Harsh Electricals wanted to position the product differently for a higher price. The differentiation was to be made in terms of fragility and cooling capacity. Air coolers came in three different variants: plastic, fibre, and iron. Plastic air coolers were very fragile and did not have a favourable image among customers. Iron coolers, although they had a longer life, were not favoured by people living in the subtemperate zone around Hyderabad. Hence, Gupta wanted to exclusively manufacture fibre air coolers. Sales in the residential air-cooler market were tied to three factors: cost, life, and cooling capacity. Only the manufacturers knew that high air-cooling capacity was possible without compromising on the cost, and that competitive priorities, such as cost and quality, had a positive relationship. The competitive strategy of Harsh Electricals was to manufacture fibre air coolers with high cooling capacity at a competitive price. Gupta was confident that his product would generate high economic value for its customers.

Gupta had no doubt that to run his show resourcefully and compete in the market, he needed the help of bright, experienced, and ingenious talent to organize and manage the work processes in innovative and efficient ways. In addition to having the requisite skills and experience, the ideal employee required a high level of spirit, commitment, and potential to help guide Gupta's business without compromising the value system of Harsh Electricals. On October 13, 2013, at a party organized by an air-cooler manufacturer on the eve of Dussehra,<sup>2</sup> Gupta had the opportunity to meet Nagesh, an industrial engineer and a skilled mechanical expert. Nagesh, who had more than 10 years of experience in the cooler-manufacturing sector, was managing two manufacturing assembly lines<sup>3</sup> simultaneously, while ensuring that the models' assembly synchronized seamlessly. Since Gupta was desperately seeking to hire an individual with such skills and qualities to help set up his own manufacturing facility, he seized the opportunity and raised the subject of his business venture with Nagesh. Both agreed to meet over dinner on October 18, 2013, at the Hotel Paradise in Hyderabad.

After two hours of conversation at the dinner table, both men came to a consensus for manufacturing two different models of fibre air coolers—a Standard model and a Baleno model. The Standard model was designed by Nagesh. Although it appeared to be an ordinary air cooler, its features, as emphasized by Nagesh, would make it a league apart from the ordinary air coolers. The Standard model would look sturdy and have a water capacity of 60 litres. The cooler was intended to have a powerful air flow with air delivery

<sup>2</sup> Dussehra was a popular festival in India that symbolized the triumph of good over evil.

<sup>3</sup> These assembly lines included body assembly and motor-blade panel assembly.

of 1,100 cubic metres per hour, whereas the ordinary air coolers available in the market had a water capacity of only 50 litres, and an air delivery of 850–900 cubic metres per hour. On the other hand, the Baleno model would be the first of its kind in the fibre air-cooler segment; it was designed by Gupta to compete with heavy, iron-made desert coolers and for consumers living closer to the tropics. The Baleno model was to be designed even more powerfully, with an air delivery of 1,500 cubic metres per hour and a tank that could store up to 80 litres of water.

During the conversation, Gupta was able to observe Nagesh closely and found that he fit the bill in terms of the qualities he was looking for to take his plans forward. He also sensed that Nagesh was not satisfied with his current job and the remuneration he was receiving. Gupta offered Nagesh an annual salary of ₹600,000 in an effort to convince him to switch employers. Gupta was sure that ₹600,000, a hike of 50 per cent over Nagesh's current salary, would be suitable to both parties. The pay and allowances were to be finalized in the next meeting, which was scheduled over the weekend on November 9, 2013, at Gupta's office, at which time Nagesh would bring his ideas and numbers to the table.

### **MANUFACTURING OF COOLERS—INVESTMENT AND COST INFORMATION**

The coolers were to be manufactured through a process called progressive assembly. The assembly line was a common method for producing complex products such as automobiles, computers, electronic items, and home appliances. Most of the assembly lines for these complex products were progressive lines, designed and organized sequentially to minimize the motion of workers. The progressive line was designed to increase efficiency by maximizing the labour output (productivity) relative to the cost of labour.

Gupta, after proper due diligence, concluded that a firm such as Harsh Electricals would need to be equipped to manufacture 40 coolers per day at full capacity to meet the seasonal need of 4,000–4,500 coolers. To build capacity, Harsh Electricals would need to enter into a three-year lease agreement with a local real estate developer to design the workshop in a 1,200-square-foot (111-square-metre) commercial area. A good negotiator such as Gupta could certainly get the property leased for ₹8 per square foot (₹86.11 per square metre) per month, though the rate could go as high as ₹9 per square foot (₹96.88 per square metre) per month. Gupta planned to allocate 150 square feet (13.9 square metres) of the area for his office and the rest was to be utilized for the workshop. Rent, being a contractual expense, was to be paid even if the production did not take place in a particular month. The rental agreement had an important clause for a security deposit of ₹80,000. Additionally, the firm planned to acquire fixed assets worth ₹500,000, including machinery such as conveyor belts and a tool kits for each worker, to ensure that the assembly line ran efficiently to achieve maximum capacity (see Exhibit 2).

The manufacturing cost of producing an air cooler consisted primarily of raw materials, labour, and other manufacturing expenses. The raw material component cost represented a major component of the manufacturing cost (see Exhibit 3). The raw material components and their costs were to remain stable for the production of each cooler unit; hence, the total cost of raw materials of Harsh Electricals was likely to change with the total volume of production. With a high volume of production, the total raw material cost increased proportionately, and in the low-volume scenario, the total raw material cost was expected to be low. The firm had 15 days of credit from suppliers on 40 per cent of the raw materials, and the remaining raw materials were to be procured using cash. Gupta chose to follow a moderate working capital policy and decided not to park funds unreasonably in illiquid current assets. Inventory management was to be based on a fixed-order quantity system. Under this system, a firm reordered supplies only when the stock reached a previously set minimum limit. This approach freed up workshop space and loosened the cash flow.

To run the assembly line for the production of 40 units, Harsh Electricals required five casual workers on a daily basis. As per the employment regulations of the state, the casual workers were to be paid at least ₹200 per day for eight working hours. The labour time and cost involved in manufacturing the coolers would vary, depending on the model being manufactured. While the standard model was expected to consume 60 minutes of assembly line labour, the Baleno model required 72 minutes. Therefore, the number of casual workers to be employed was directed by the daily production schedule.

Besides the assembly-line labour, Harsh Electricals needed to appoint a staff member to set up the machines before each production run and to handle the materials. This employee would be offered a monthly salary of ₹6,000 for the six-month production season. Harsh Electricals also needed to outsource some services, including the transportation of raw materials and the manufacture of drilling bits for the body of the cooler. To avoid problems, Gupta considered approaching suppliers to deliver the raw materials at an additional cost of 0.5 per cent (on top of the cost of the raw materials). At the time, such delivery services were evolving and gaining popularity because of their convenience and cost-effectiveness. Similarly, drilling bits,<sup>4</sup> which were used to drill the fibre body of the air cooler would cost ₹10 per cooler to drill, irrespective of the variation of models. All the fixed costs (i.e., the costs that needed to be paid regardless of the number of units produced) were to be paid on a monthly basis, and the drilling and assembly line labour were to be paid every two weeks, or according to the credit arrangement.

To establish the total electricity cost of Harsh Electricals, Gupta focused on facility-level usage to determine a facility's energy consumption. At the time, the kilowatt-hour cost of electricity for commercial purposes was fixed by the state government at ₹10 per unit,<sup>5</sup> and Harsh Electricals was to be charged for a minimum of 1,000 units per month, even in months when no production took place (see Exhibit 4). To provide a safety cushion against unforeseen contingencies, Gupta opted for workshop insurance that cost approximately ₹25,000 for the first year and would be renewed annually. The firm would also need to pay for the wires, screws, bushings, nuts and bolts, and oiling of the machinery employed on the production floor. The total cost to be incurred on these items in the manufacturing of 5,000 coolers was estimated to be ₹45,000 per year, although the exact amount would be known only at the time of production. The amount was expected to increase by ₹5,000 with every 1,000 subsequent units produced. Despite the costs appearing to be on the higher side, the industry experience was different. Consumables such as thick rubber bushing, packing materials, and wires that reduced the noise of an air cooler were frequently driving costs higher. As a result, such consumables were rarely found in many of the manufacturing facilities spread across several states of India.

Gupta could find ready money of ₹1.2 million in his account to put up as an equity investment for the upcoming venture. The assets were financed using the equity, and no debt financing was planned. However, if the need arose, Gupta planned to raise the additional amount required for working capital either through a revolving loan<sup>6</sup> or from a private money lender. While revolving credit was available at 14 per cent per annum, private lenders were free to charge any rate, up to 60 per cent. Because of his credibility in the market, Gupta was able to attain a lower rate of 24 per cent from a close source. Although financing through private lenders was expensive, many small entrepreneurs preferred to use private lenders because the money was available on call and no transaction costs were associated with the funding. Firms also found it a more attractive choice to borrow money from the market rather than from banks.

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<sup>4</sup> Peter Latteier, "The Good, Better, and Best Ways to Drill Carbon Fiber," Elevated Materials, January 19, 2018, accessed December 19, 2018, [www.elevatedmaterials.com/drilling-carbon-fiber/](http://www.elevatedmaterials.com/drilling-carbon-fiber/).

<sup>5</sup> One kilowatt-hour was the amount of energy used by a 1,000-watt electric heater for one hour.

<sup>6</sup> A revolver loan was an arrangement with a financial institution for a line of credit that allowed the entity to withdraw, repay, and again redraw the amount sanctioned at any point of time until the arrangement expired.

## HARSH ELECTRICALS' MARKETING STRATEGY

By the end of September 2014, the firm anticipated selling 4,000 air coolers, and the sales mix of the two models, Standard and Baleno, was expected to be in the proportion of four to one (i.e., 3,200 Standard units and 800 Baleno units). Gupta paid special attention to the pricing so that his products could penetrate the air-cooler market. In search for an optimal price for his products, he considered various key factors, such as pinpointing the target customer, competitors' pricing, and the relationship between price and quality.

After a thorough market mapping, Gupta decided that because of the differentiation strategy, the air coolers manufactured by Harsh Electricals should be sold above the prevailing manufacturer's price of ₹2,300. These higher prices, he believed, would help him send a strong message to consumers and assist his firm in positioning the Harsh Electricals brand in the minds of both retailers and customers. Thus, with a premium-pricing strategy to reflect the exclusiveness of his air coolers, he decided to sell the Standard model to retailers for ₹2,500 and the Baleno model for ₹3,000. The manufacturer's price was mapped to make the products available to customers at ₹3,500 and ₹4,000 for the Standard and Baleno models, respectively, allowing a margin of 25–30 per cent for the retailers. Gupta also planned to manufacture 60 Standard air coolers and 10 Baleno models to meet any unforeseen demand during the off-season.

As a differentiator, Harsh Electricals planned to follow a liberal credit policy by allowing a credit period of 14 days to its customers, compared with the industry benchmark of 10–12 days. Based on the delicate relationships he maintained with individual retailers, Gupta felt that none of his customers would default in terms of payment days, barring a few exceptions. All the air coolers assembled would be dispatched on the same day so that there would be no work-in-progress inventory for the coming day. The firm also needed to bear an additional cost of ₹100 per cooler for distribution costs, which, according to market practice, was not usually recovered from the retailers. He also expected that the tax rate levied on small and medium enterprises would not change drastically in the foreseen future. He also anticipated that his firm would earn a minimum interest of ₹8,000 on funds parked in the bank after the season was over.

## PREPARATION

With Nagesh on his side and a major gap in the air cooler market identified in southern India, Gupta planned to wind up his trading plans and set up a manufacturing plant in January 2014, provided the product profitability was encouraging enough to support his manufacturing decision. Gupta had finally realized that, for his new venture to thrive, he would need to assess the costs accurately and with due diligence so that he could avoid repeating past mistakes. Before the second round of discussions with Nagesh, Gupta considered the costs as he mused over the profitability of the models if they were sold at ₹2,500 for the Standard model and ₹3,000 for the Baleno model. He pondered the minimum number of coolers he would need to sell to safeguard against losses. Gupta had earned a profit of ₹859,846 at the height of his trading business; he now wondered what volume of sales was needed to achieve the same level of profit in 2014. With his fingers on the keyboard and with all the information available to him, Gupta began to determine the financial viability of his new venture.

**EXHIBIT 1: HARSH ELECTRICALS INCOME STATEMENTS, 2008–09 TO 2012–13 (IN ₹)**

	2008–09	2009–10	2010–11	2011–12	2012–13
Sales	3,960,000	4,560,000	5,052,000	4,335,000	4,050,000
Cost of Goods Sold	2,991,000	3,285,000	3,713,220	3,208,000	3,120,000
Gross Profit	969,000	1,275,000	1,338,780	1,127,000	930,000
Marketing and Promotional Expenses	96,000	156,000	170,000	186,000	175,000
General and Administrative Expenses	66,000	72,000	73,000	75,000	84,000
Repair and Replacement Costs	22,000	56,000	64,000	93,000	151,000
Earnings before Interest, Depreciation, and Amortization	785,000	991,000	1,031,780	773,000	520,000
Depreciation and Amortization	54,000	54,000	54,000	54,000	54,000
Earnings before Interest and Tax	731,000	937,000	977,780	719,000	466,000
Interest	0	0	0	0	0
Profit before Tax	731,000	937,000	977,780	719,000	466,000
Tax	87,720	112,440	117,334	86,280	55,920
Net Income	643,280	824,560	859,846	632,720	410,080

Note: ₹ = INR = Indian rupee; US\$1 = ₹39.94 on April 1, 2008; US\$1 = ₹54.35 on April 1, 2013.

Source: Company records.

**EXHIBIT 2: DETAILS OF FIXED ASSETS FOR HARSH ELECTRICALS**

Asset	Cost (in ₹*)	Life (in years)	Salvage Value (in ₹)
Plant and Machinery	320,000	5	20,000
Workshop Furniture and Fixtures	40,000	10	NIL
Office Furniture and Fixtures	60,000	10	NIL
Computer and Software	80,000	5	NIL

Note: ₹ = INR = Indian rupee; US\$1 = ₹54.35 on April 1, 2013.

Source: Company records.

**EXHIBIT 3: HARSH ELECTRICALS RAW MATERIAL COMPONENTS, COST, AND INVENTORY HOLDING PERIODS**

Raw Material Component	Cost for Standard Model (in ₹)	Cost for Baleno Model (in ₹)	Inventory Holding Period (in Days)	Credit Period (in Days)
Body	650	830	1	0
Motor	500	630	10	14
Pump	90	110	10	14
Blade, Clamp, and Wiring	168	205	10	14
Pipe, Water Distributor, and Panel Set	190	210	10	0
Diverter	110	110	10	0
Packing (Cartons and Labelling)	40	50	10	0
Wheel (Set)	30	40	10	0
Total	1,778	2,185	–	–

Note: ₹ = INR = Indian rupee; US\$1 = ₹54.35 on April 1, 2013.  
Source: Company records.

**EXHIBIT 4: HARSH ELECTRICALS MONTHLY ELECTRICITY CONSUMPTION**

Item	Peak-Load Consumption (in kWh or Units)	Off-Season Consumption (in kWh or Units)
Plant and Machinery	1 unit per Standard model + 1.5 units per Baleno model + 10 units for Maintenance	10 units (for Maintenance)
Factory Lighting	300	100
Personal Computer	50	20
Office Lighting	100	40

Note: kWh = kilowatt hours  
Source: Company records.