Kellogg School of Management

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HARLEY-DAVIDSON MOTOR COMPANY

Teaching Note

Case Synopsis

Harley-Davidson Motor Company describes how Harley-Davidson, the well-known leading manufacturer of custom heavy-weight motorcycles, plans and manages its manufacturing process in light of excess customer demand. The case focuses on the options Harley has to expand manufacturing capacity. The case asks students to make their recommendation by evaluating their decision against "four primary success criteria" (page 5 in the case). This leads to a two-thronged analysis: (1) analyze strategic fit of the various options (mainly qualitative), and (2) analyze costs and risks of the options (mainly financial).

The setting of the case is June 3, 1996. Harley Harley-Davidson had successfully executed its latest expansion to 100,000 motorcycles per year well ahead of schedule. Ten years ago, no one within the organization would have imagined that so many people would want to buy Harley-Davidson motorcycles. They had, however, underestimated the demand for their product and the heavyweight motorcycle category as a whole. With demand growing rapidly, Harley-Davidson's constrained production capacity was insufficient to meet all demand. Excess demand, estimated to be more than 10% above capacity, resulted in waiting lists of up to 2 years depending on the model. Harley-Davidson was practically inviting potential customers to buy from their competitors!

On June 3, 1996, the management team would present their recommendations to the Board of Directors on the best way to deal with their constrained production capacity in a rapidly growing market. The management team had devised several alternative strategies to counter their gradually sliding market share and to continue the phenomenal growth that the company had been enjoying recently:

1. Increase prices,
2. Change product mix,
3. Outsource,
4. "Brownfields" expansion,
5. "Greenfields" expansion.

Case Purpose and Use

The case provides a rich context within which to examine:

1. Product & Manufacturing strategy of a premium-niche manufacturer in a highly volatile consumer goods industry. [mainly qualitative discussion]
2. Increasing capacity through improvement of operational effectiveness and tailored outsourcing (The 1992 Capacity Decision). Notice that Harley, which is actually a rather conservative company and icon of `American' manufacturing, was one of the first U.S. companies to implement lean operations (JIT) techniques. [mainly qualitative]
3. Financial performance estimation based on "operational thinking." The specific topic here is *capacity investment under uncertainty in a multi-product firm*: The heart of the case is to combining a qualitative strategic fit analysis with a

Professor Jan A. Van Mieghem prepared this teaching note for the sole purpose of aiding classroom instructors in the use of his case Harley-Davidson Motor Company. *It provides analysis and questions that are intended to present alternative approaches and to energize classroom discussion.*

financial cost and risk analysis. As such, the case integrates concepts of marketing (demand & product planning), manufacturing (capacity) and finance (NPV and risk evaluation). [qualitative & quantitative]
4. Can be used to discuss how to choose a new plant location + how to load the new plant [qualitative]
5. The impact of capacity and time on competition. [qualitative & quantitative]

Assignment Questions

The following assignment questions can be distributed to students prior to their preparation for class discussion:

1. What is Harley-Davidson's (HD) corporate strategy? That is, on what basis do they strive to deliver superior corporate performance?
2. Demand uncertainty is a major factor in strategic capacity decisions. How does Harley-Davidson take uncertainty into account in their planning processes? How does HD's history affect its decision making process, if at all?
3. What are the factors that HD should consider when analyzing the alternatives?
4. What is your recommendation to Harley-Davidson? Assess fit with HD's strategy and assess financial attractiveness of your plan: develop pro-forma income statement and NPV analysis. (Use a discount factor of 12% and a marginal tax rate of 37%.)
5. Why are new competitors (Polaris, Excelsior-Henderson, etc.) entering the heavy-weight cruiser market? Should this impact Harley-Davidson's strategy, that is, how much of a threat do these new entrants pose to HD? (You may do some web and literature research.)

(The grading sheet that I use is shown on the next page.)

Teaching Plan

The following pages outline my detailed preparation of teaching the case.

I have taught the case now for four years in my *Strategy & Operations* MBA elective, for a total of about 12 iterations. General reception was really good and, at least equally important, I really enjoyed teaching this case. It scored equally high as my Seagate case. I believe Harley draws its strength from the inherent popularity of the product and company, and from the realism of the problem and analysis. Over time I have started to stress that this decision problem is very realistic and, as such, also wide open. (Seagate, on the other hand, draws its popularity from a focused question with a clean-cut answer.) This makes this class perhaps a little harder to deliver for the instructor who prefers a clear answer. Nevertheless, over time I have found that the analysis in class can be done very much in line with what the case asks: use the "primary success criteria" on page 5 as the main start. This immediately then flows into a two-pronged analysis:

a. Analysis of *strategic fit* of the options. This typically leads to lively discussions on the "broader" issues, including competition, marketing and demand planning.
b. Controlling for costs and risks requires a *financial* analysis. Here I stress what operational thinking has to add to traditional NPV analysis. Note that the setting of the case is quite a bit more complex than your typical NPV analysis that students are used to. The main factors that come to bear are: (1) demand scenarios to incorporate risk explicitly (rather than implicitly through an inflated discount rate); (2) the "filter" effect of capacity on demand, which yields sales/output; (3) the continuous productivity improvements in a base-line scenario; and (4) product mix effects on capacity.

Typically, the main material can be covered well in a 90 minute class. Time permitting, two additional discussion points are available:

a. Plant location and mission decision of the Greenfield option: what should it make, where should it be?
b. The role of unions. Harley is a prime example of immense union participation in decision making.

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Ops Strat 454

Professor Van Mieghem

Group #:

FEEDBACK ON HARLEY CASE WRITE UP

The elements considered in reviewing the case write-up were (4 most important elements are in bold)

/2 pts

/5 pts

1. Analysis of *Strategic Fit* of options:
   - ❑ Explicit evaluation of the options against the "**four primary success criteria**" in the case?
   - ❑ Extent of qualitative analysis, for example:
     - o Competitive impact of not expanding capacity: assuming a not-unrealistic continuing demand growth (the past has seen +10-15% each of the last 10 years), who will fill the excess demand? [new entry, increased market share loss = retreat]
     - o Impact of price increase on demand: is it completely inelastic?
     - o Change mix: effects of dropping Sportster line?
     - o Outsourcing: impact on brand. Is it really reversible (loss of competencies?)
     - o Brownfields: is it feasible? Increased dependence on two communities…
     - o Greenfields: **recognize some important options** such as: starting a new plant allows newest, optimized processes, relocation to different wage structure, new investment incentives, risk sharing over three regions (earthquake, unions…), option to fight new entry (capacity as barrier to entry). Most importantly, a new facility can easily use some of the other options: rely more on outsourcing, have part of machining done in old facilities (brownfields), if we only do Sportser in new facility we have directly a huge capacity increase in big bikes in 'safe well-proven facilities', etc. It also is quite feasible to have a "flexible" plant design, which allows down or upsizing depending on conditions.

/6 pts

2. Analysis of *Cost & Risk control:* Financial analysis
   - ❑ Most important is a *clear distinction* among: 1. demand D, 2. capacity K and 3. sales = min(D, K)
   - ❑ Explicit demand assumptions and **recognition that the demand forecast** is critical
   - ❑ **Risk analysis**:
     - o Evaluation of different demand scenarios
     - o Evaluation of a disaster scenario
     - o Are all 5 options analyzed using the same scenario in a comparative analysis?
   - ❑ NPV: include depreciation for taxable income, but added back in minus CapEx for cash flows

/4 pts

3. Recommendation:
   - ❑ Do you have a specific recommendation?
   - ❑ How are possible discrepancies between qualitative and quantitative analysis reconciled and explained.

/3 pts

4. Logic and flow of your analysis and exposition.

Overall assessment for your write-up is: /20