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## Konys, Inc.

In April 2012, Judy Taso, vice-president of supply chain management at Konys, Inc., reflected back on a stressful year. Konys was an original equipment manufacturer that produced mobile communication devices that had very short product life cycles. After developing capabilities as a contract manufacturer for several years, Konys started designing its own devices for the lower end of the mobile market. The demand characteristics of its products were similar to that of a fashion item, making demand forecasting very difficult. Forecasting inaccuracies then made sourcing raw material very challenging. Konys sold its products to retailers who could choose whether to brand the devices.

The sales of a Konys product followed a typical product cycle - an initial ramp up, followed by a steep increase in sales, then sales tapered off as the product approached the end of its life cycle. The MC mobile phone was one of Konys' most popular and enduring products. However, every 12 months, a new version of the MC was released. **Exhibit 1** shows the typical quarterly sales pattern reflected in sales of MC versions 15-18 and **Exhibit 2** shows quarterly sales for the previous 19 versions of the MC. Konys typically timed its product releases for the third quarter of the calendar year, allowing it to capitalize on the holiday season.

Although the general trajectory of demand for a new product was consistent, it was still difficult to predict demand for a given quarter. This made it very challenging to source the right quantity of parts. In particular, parts that were expensive and uncommon were difficult to procure. An example of this kind of part was the liquid crystal display (LCD) module. This module was supplied by Paravan Systems, who had supplied Konys with this part for the last 10 versions of the MC mobile phone.

Last year, an unanticipated surge in demand for the MC19 sent Taso's team scrambling to procure parts. Taso's team ended up paying spot prices for the LCD module, which had historically been highly volatile (see **Exhibit 3** for historical spot prices for the LCD module). This dramatically increased the material cost of the MC19. Then, just as suddenly, demand tapered off, leaving Konys with a stockpile of LCD's. Luckily, because Konys used one-time purchase contracts to procure material, Taso's team simply did not place orders with its suppliers for the next few months during the demand lull, but Konys still ended up with a large surplus of LCD's and ran into a temporary cash flow problem. As a result of this experience, the company set a conservative policy to not allow forward buying of parts.

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A purchase contract specified the quantity, per unit price, and delivery date for each order. A long-term contract was a series of purchase contracts that extended into the future. Although Konys did not have long-term contracts with its suppliers, they had worked with many of their suppliers for several years. Informal information sharing and historical orders worked fairly well for production planning of each new product. The sudden stoppage of orders for the MC19 did not sit well with its suppliers and Taso knew her team would have to work hard to repair relationships.

Konys' suppliers would prefer long-term contracts that would assure them consistent sales revenue. In some ways, long-term contracts would be mutually beneficial – suppliers were guaranteed orders and Konys would be able to negotiate a lower per unit price in addition to ensuring supply. However, it was very difficult to predict demand for any given quarter. If demand turned out to be low, then Konys would be stuck holding or possibly even writing off inventory of potentially very expensive parts. In some cases, if the product did not sell well, purchasing at spot prices would actually be cheaper than using long-term contracts. However, it was not always possible to source from the spot for every part.

Long-term contracts and spot purchases were two extreme forms of contracts. Another type of contract that was becoming more commonplace in the electronics industry was an option contract. For a given reservation fee, a buyer could reserve the right to purchase up to a specified quantity for a predetermined unit exercise price. The flexibility from this kind of contract came from the buyer's *right*, but not *obligation*, to buy parts at a future date. The information revealed between the payment of the reservation fee and the purchase of the parts gave the buyer a better estimate of demand, allowing the buyer to adjust the quantity accordingly.

Taso realized that having a good working relationship with suppliers was also crucial. As production ramped up for the MC19, Taso wondered whether a combination of different types of contracts could improve Konys' procurement performance and help repair relationships with their suppliers. In particular, Taso was considering how to source the LCD module, the part that had been so problematic during production of the MC19.

For a long-term purchase contract, Konys could negotiate a price of \$17 per LCD module. However, Konys would commit in Q2 to the price, quantities, and delivery dates for the next four quarters. If demand were higher or lower than the negotiated quantity, Konys would either lose sales if it could not supplement from the spot market or incur overage costs (Konys could salvage excess LCD modules in a secondary market for \$5.30 per unit). Paravan was also open to option contracts. Konys could buy the right to purchase LCD modules at a later date, when it had customer orders in hand, two weeks before the start of each quarter. For the LCD module, the reservation price would be \$0.50 per unit and the exercise price would be \$16.75 per unit. See **Exhibit 4** for specifications for the two contract types. To build an MC20, the production cost for all other inputs, including labor, was \$102.50 per unit. Konys' sales price was \$150 per unit.

**Part A:** Use **Worksheet A** to answer the following questions. **Worksheet A** shows the projected profit and loss statement for Q3 2013 for the MC product line using a purchase contract. Assume that Konys can also source the LCD module from the spot market.

- 1) Using the historical sales data for the MC product line in Exhibit 2, derive the demand forecast distribution for the first quarter (Q3) of MC20 sales.
- 2) Using the historical spot prices in Exhibit 3, derive the spot price distribution.
- 3) Consider only the first quarter of production (Q3) of the MC20. Suppose Konys signs a purchase contract with Paravan Systems for 2,150,000 units at \$17 per LCD module. Assume that other parts necessary for the production of the MC20 are available. What is Konys' expected profit in Q3?

**Part B:** Use **Worksheet B** to answer the following questions. **Worksheet B** shows the projected profit and loss statement for Q3 2013 for the MC product line, incorporating the option contract. Assume that Konys can source the LCD module from the spot market.

- 1) What quantity should Konys contract for using the option contract? Note that the company's policy against forward buying from the spot also applies to quantities exercised in an option contract.
- 2) What is the change in Konys' profit when the option contract is incorporated?
- 3) What factors drive the change in profit?

**Part C (Optional):** Use **Worksheet C** to answer the following questions. **Worksheet C** shows the projected profit and loss statement for FY 2014 for the MC product line, incorporating the option contract. Assume that Konys can source the LCD module from the spot market.

Suppose Konys enters into a long-term contract with Paravan Systems for the following quantities for the four quarters of production of the MC20:

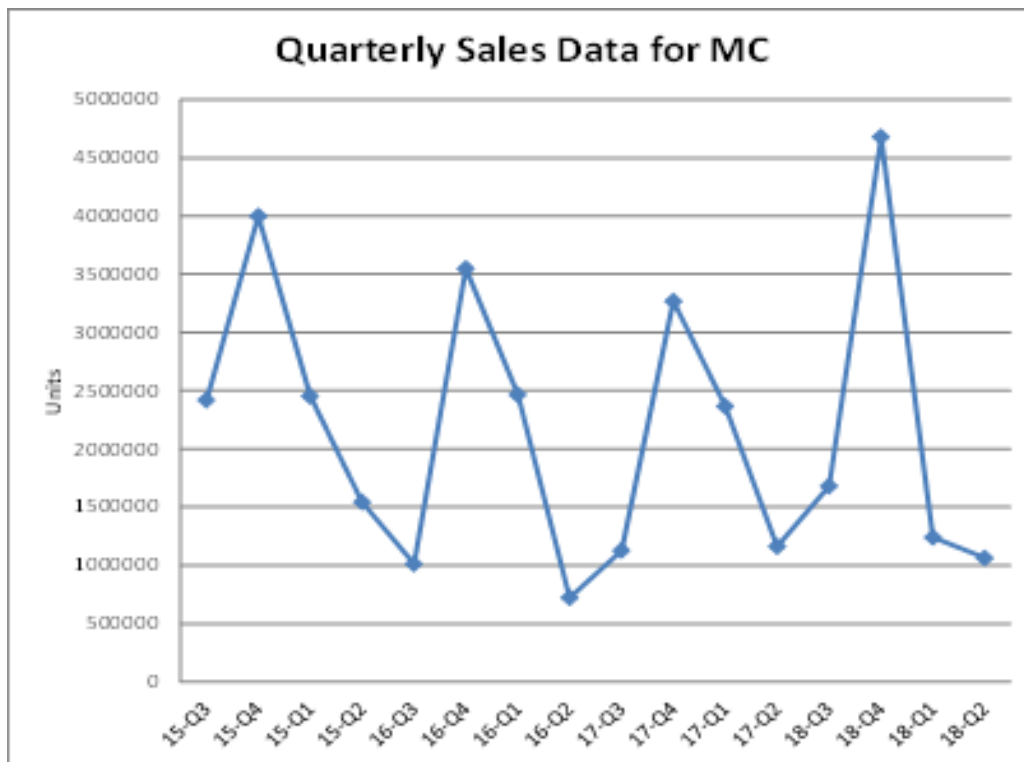
Q3: Quantity = 2,170,000

Q4: Quantity = 3,700,000

Q1: Quantity = 2,100,000

Q2: Quantity = 1,500,000.

- 1) Using the historical sales figures for the MC product line in Exhibit 2, derive forecasts for the four sales quarters of the MC20.
- 2) What quantity should Konys contract for using the option contract?
- 3) What factors drive the expected 4-quarter profit?

**Exhibit 1** Historical product sales cycle, MC versions 15-18

Source: Casewriters.

**Exhibit 2** Quarterly sales for previous MC versions

Quarterly demand for version of the MC cellphone				
Version	Q3	Q4	Q1	Q2
1	2,723,463	3,911,950	2,258,557	1,487,500
2	2,464,345	4,223,390	2,661,807	1,390,197
3	2,223,094	3,239,262	2,269,364	1,611,672
4	2,738,725	3,907,584	1,882,534	1,964,036
5	3,199,565	4,241,820	1,041,438	1,765,438
6	3,212,175	2,408,890	2,003,061	1,292,325
7	2,356,641	1,898,799	1,967,978	1,675,483
8	1,680,760	4,540,613	1,316,541	1,926,489
9	994,350	3,757,408	1,373,626	1,382,849
10	872,841	3,333,856	2,400,883	721,844
11	2,146,563	2,034,586	2,024,890	1,197,403
12	2,647,838	5,091,078	2,039,626	1,638,323
13	1,511,062	3,548,140	1,784,336	1,401,582
14	1,895,864	4,677,350	1,955,100	1,432,602
15	2,418,814	3,998,852	2,453,802	1,542,571
16	1,011,569	4,429,538	2,466,539	1,063,391
17	1,126,667	3,268,046	2,365,305	1,162,356
18	2,551,808	3,209,706	1,240,559	1,317,488
19	3,246,210	3,820,014	2,860,287	

Source: Casewriters.

**Exhibit 3** Weekly spot price for the LCD module

Week 1	15.38
Week 2	13.84
Week 3	18.17
Week 4	21.02
Week 5	26.43
Week 6	13.09
Week 7	18.00
Week 8	21.75
Week 9	27.03
Week 10	15.05
Week 11	26.89
Week 12	15.89
Week 13	14.06
Week 14	24.38
Week 15	17.27
Week 16	20.62
Week 17	12.61
Week 18	18.89
Week 19	12.95
Week 20	20.84
Week 21	15.39
Week 22	22.38
Week 23	26.43
Week 24	18.46
Week 25	16.20
Week 26	25.08
Week 27	26.72
Week 28	23.32
Week 29	17.31
Week 30	18.67
Week 31	14.55
Week 32	13.42
Week 33	17.87
Week 34	23.31
Week 35	21.70
Week 36	19.49
Week 37	25.51
Week 38	19.27
Week 39	14.33
Week 40	13.76
Week 41	17.84
Week 42	16.43
Week 43	21.80
Week 44	16.29
Week 45	25.24
Week 46	24.18
Week 47	19.98
Week 48	19.51
Week 49	18.22
Week 50	17.36
Week 51	26.40
Week 52	25.52

Average price: \$19.74

52-week high: \$26.97

52-week low: \$12.71

Source: Casewriters.

**Exhibit 4** Sourcing contracts for the LCD module for the MC20**Long-term contract with Paravan Systems:**

- Part number: C2X2098KL (LCD module)
- Price: \$17 per unit
- Delivery schedule:
  - 2,170,000 units July 1, 2013
  - 3,700,000 units October 1, 2013
  - 2,200,000 units January 1, 2014
  - 1,500,000 units April 1, 2014

**Option contract with Paravan Systems:**

- Part number: C2X2098KL (LCD module)
- Reservation price: \$0.50 per unit
- Exercise price: \$16.75 per unit
- Delivery schedule:
  - Up to **TBD** units July 1, 2013
  - Up to **TBD** units October 1, 2013
  - Up to **TBD** units January 1, 2014
  - Up to **TBD** units April 1, 2014

Source: Casewriters.