

Where in the World Is Timbuk2? Outsourcing, Offshoring, and Mass Customization¹

Brennan Mulligan paused to admire the San Francisco skyline before entering the leased building that housed all of Timbuk2's activities, from management to manufacturing (Figure 1). Who would imagine that anyone could profitably manufacture a textile product in San Francisco in 2002? With competition not only from lower-cost centers in the United States but also from China and other places in the Far East, a converted warehouse building in San Francisco was an unlikely location for this manufacturing business. Yet Brennan was not sure Timbuk2 could continue indefinitely to produce everything in San Francisco. While the pride and satisfaction of producing in San Francisco was ingrained in Timbuk2's culture, and moving production elsewhere would be a huge change for a small company with local roots, Timbuk2 needed to remain profitable. Hence, Brennan knew there was no easy answer to the question on the table: Should Timbuk2 outsource some (or all) of its production to a Chinese firm?



Figure 1: Timbuk2's neighborhood in San Francisco

¹ This case was written by Professors Gérard Cachon (The Wharton School, University of Pennsylvania), Kyle Cattani (Kelley School of Business, Indiana University), and Serguei Netessine (The Wharton School, University of Pennsylvania) as the basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation. Some numbers in this case were adjusted to simplify the case analysis and to protect confidential business information. The authors are grateful to Brennan Mulligan for his assistance in writing this case. Copyright © 2007 by Cachon, Cattani, and Netessine.

History and processes

Timbuk2 was founded in 1989 by Rob Honeycutt, a San Francisco bicycle messenger with an old sewing machine. The Timbuk2 Web site (www.timbuk2.com) describes Rob's goal, "to make a messenger bag rugged enough for real bicycle messengers, yet stylish enough to appeal to a broader market of young, hip urbanites as an alternative to the traditional two-strap day pack. Our catchy name, three-panel design, distinctive 'swirl' logo, and the fact that we're 'Made in San Francisco' added to our cachet."² At one time Timbuk2's Web site claimed that its bags were "messenger-designed, civilian-approved, and guaranteed to wear like hell."

Early on, Rob became interested in lean manufacturing and mass customization and hired Brennan Mulligan, then a young graduate from the University of California at Berkeley, to take up the cause. Brennan joined the firm in 1993 to help Rob implement his vision. Rob and Brennan managed the company for its first seven years. By 2002 the management team included four other guys, who, together with Rob and Brennan, ran the show at Timbuk2. Collegiality and informality characterized the work environment, where shaving and closed-toe shoes were generally optional for the management team. The name of one of their early successful products, "El Ocho," was born one night in Mexico when the VP of marketing woke up to find himself in jail "Number Eight." (The circumstances shall remain undisclosed.)

By 1996, Timbuk2 was a smooth-running operation selling a variety of bicycle messenger bags and similar products whose manufacturing process was first characterized by lean manufacturing and then, once leanness was achieved, by mass customization. Brennan reflected on the many changes they had implemented on their path through lean manufacturing and on to mass customization, and the many decisions the team members had to consider. If the company had not pursued lean manufacturing, Brennan believed that it would not have been able to deliver a product customized to a mass market. Lean manufacturing's emphasis on eliminating waste and improving quality through smaller batch sizes and streamlined product and information flows had been particularly critical. Brennan recalled that the efforts to reduce batch sizes were much more difficult than they had made it sound in business school. After much analysis and experimentation, the team purchased many additional sewing machines, greatly reduced setups at nearly every step of the manufacturing process, and altered the layout and organization of the factory floor in order to handle batch sizes as small as one item. In addition, they altered the process so that the information associated with a specific order, such as colors and add-on options, was available to workers as they worked on individual bags. A customer order was printed for each bag to accompany it through the manufacturing process.

Through experimentation, Timbuk2 found that it was most effective to have work cells of five employees manufacture bags from start to finish as they filled individual customer orders. As each cell operated, there would be five bags in process, one for each worker. Each employee was trained to perform all of the tasks to produce a bag, and a "bump-back" process was used to balance the workload. When the worker assigned to the last position finished her bag (sending it off to the shipping area), she would "bump back" to the next-to-last position and take over production of that bag, wherever it was in the process. The person in that position would then

² Source: <http://www.timbuk2.com/tb2/cms/history.htm>. Accessed on August 21, 2007.

“bump back” to the previous person, and so on, until the person at the beginning of the process would go to the order backlog and begin producing the bag associated with the next order in the queue. Brennan was amazed at the dexterity, speed, and accuracy of the cutters and sewers, all of whom were women, mostly of Asian descent. Figures 3-6 in the Appendix show some of the processes and inventory locations at Timbuk2.

After Timbuk2 had successfully implemented a relatively lean manufacturing process with batch sizes as small as one, it was in a position to mass-customize bags. Many new issues had to be worked through to implement mass customization, however, including decisions about product offerings, pricing, delivery, and order processing. The decisions about product offering were especially critical. How many choices should the company provide customers? While every bag had three panels that could be customized according to the customer’s choice of colors, how many colors should be allowed? Each additional color meant more fabric to stock. What other options should the company offer? For example, if Timbuk2 offered a bag with a handle, the management team would need to configure the machines and processes and then train the sewers how to make a bag with this option. If they allowed customers the choice of panel size (in addition to color) the issues would be even more complex, in that equipment able to cut customized pieces of fabric with little setup time was very expensive, among other issues.

Timbuk2’s process for determining which choices to offer customers was based on management intuition. Options were added if they seemed relatively straightforward to offer (in the sense that they would be easy to manufacture with processes currently in place) and perceived to be attractive to the customer. For example, they would typically offer between 12 and 16 color choices for the material—enough to cover most of the color palette, but still manageable for stocking and managing inventory. A nice feature of mass customization was that the company could temporarily delete a color from the product offering if it was out of stock.

By 1997, Timbuk2 was able to produce bags in batches of one with its signature three-panel, tri-color messenger bag design. Bags could be made in multiple sizes, fabrics, and colors, and Timbuk2 was also capable of adding other options to individual bags such as center dividers, reflector tabs and tails, grab straps (handles), and even a variety of logo colors.

In 2000, Timbuk2 launched its “Build Your Own Bag” page on its Web site (Figure 2), allowing customers to configure and order individual bags to their own specifications. Customers could see the bag they were configuring on the computer screen and experiment with different colors and options. The customer was offered different colors for the three panels at no extra cost, but most other options, such as the alternate logo color, came at a price. Spools of different colored thread were mounted on the machine that embroidered the logo on the bag. The worker would specify which color should go on the bag and the machine would use the thread from the appropriate spool. While producing a bag with the customer’s chosen logo colors cost no more than producing one with the standard logo color, Timbuk2 charged an additional \$5 for a non-standard color. “Pure profit,” Brennan remarks, as he noted that many customers chose an alternate color.

By March 2002, Timbuk2 was shipping more than 200 bags per day through multiple channels. Table 1 provides demand and revenue information for Timbuk2 in March 2002. The company

employed about 40 people, with 30 of them in production, including 25 sewers working one eight hour shift, and booked just over \$4 million in revenues in the 12 months between March 2001 and February 2002 (see Tables 2 and 3 for financial statements).

The domestic and international retail channels were the traditional outlets with the highest volume, sold at wholesale prices to stores such as REI. But the relatively new e-commerce channel was by far the most profitable channel for Timbuk2 by 2002, since units were sold directly to customers at retail prices rather than at wholesale prices to retail stores which then added their own markup. A fourth channel, the corporate channel, where bags were sold with specialized logos to corporations, contributed only marginally to profitability. A final “other” channel was reserved for some special deals that were relatively low priority and low margin.

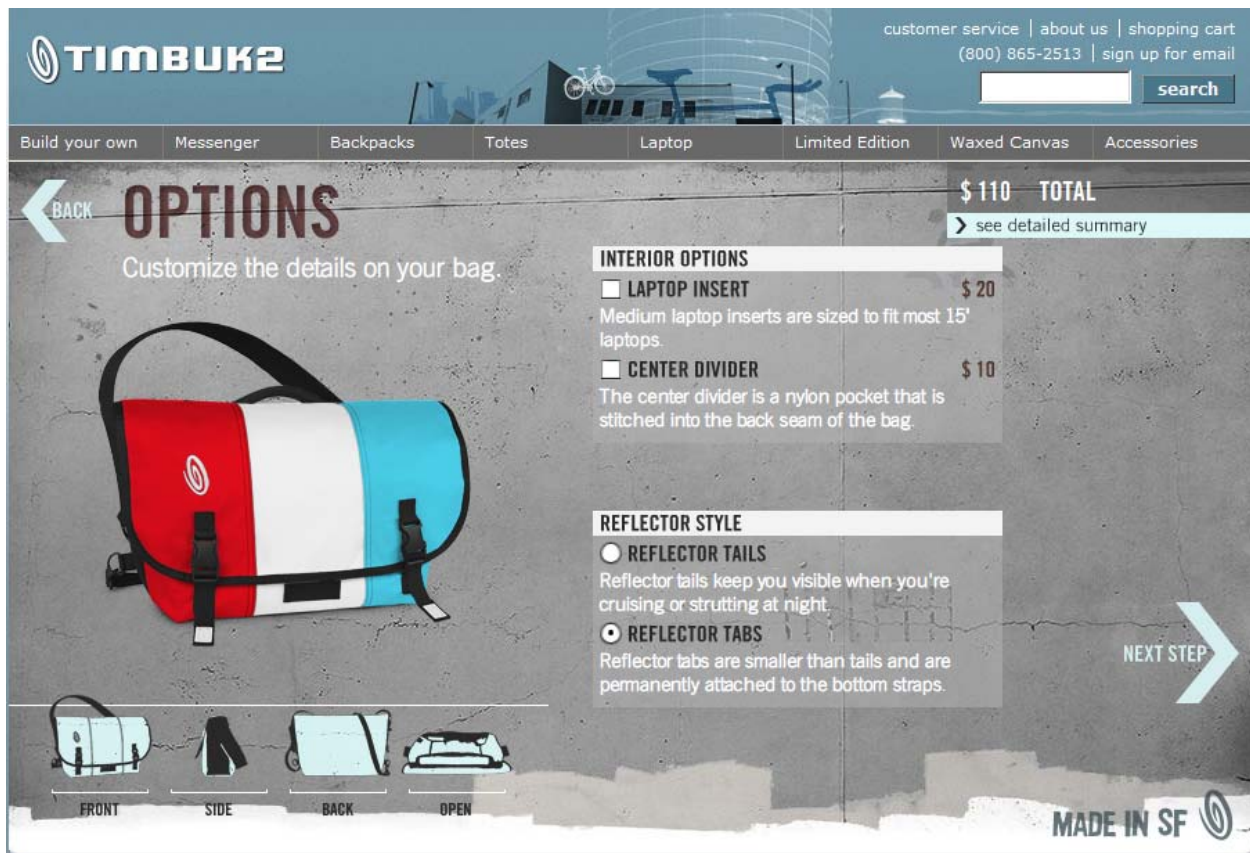


Figure 2 : Timbuk2's “Build Your Own Bag” Web page

The channels differed considerably not only in pricing, but also in how long the customer would have to wait for delivery. E-commerce customers received their bags within two to three days, whereas Timbuk2 delivered to the traditional domestic and international channels in about two to three weeks, and customers in the corporate channel needed to wait four to six weeks for their orders.

All orders were produced on the same line—it made no difference to the worker whether the order was a mass-customized unit for the e-commerce channel or a standard unit for a traditional

channel. Because the e-commerce orders needed to be shipped within a couple of days, those orders were generally given priority on the line. Although the traditional orders had second priority, Brennan noted that they served a critical function by helping to smooth out the production workload – on days with fewer e-commerce orders the line could be kept busy by filling in work from the backlog of traditional channel orders. As a result, Timbuk2 was able to operate with nearly 100% utilization.

Although costs appeared to be identical for similarly configured bags in the e-commerce channel versus the traditional channels, Brennan thought that the labor content would be 10% lower if the manufacturing line were optimally configured to serve just the traditional channels. Finally, bags in the e-commerce channel were typically configured with more options, adding labor—Brennan estimated 15%—and a bit more material.

A new opportunity: The Chinese outsourcing phenomenon

In 2002, Timbuk2 faced an additional challenge, or opportunity, depending on your point of view. Many textile and textile product manufacturers were leaving the United States, especially to the Far East. China, in particular, had captured much of the shift. Starting in 1978, the Chinese government began implementing a variety of successful reforms aimed at liberalizing the previously centralized Chinese economy. First, Chinese companies as well as government bodies were permitted to establish Foreign Trade Corporations (FTCs), thus ending the monopoly of the Ministry of Foreign Trade. By 2000, the number of FTCs had increased to about 16,000 from 900 in 1985.³ Second, direct foreign investment was stimulated through opening Special Economic Zones which offered unprecedented tax breaks and other benefits to foreign investors. Third, the Chinese government stimulated the formation of numerous private companies. Finally, the introduction of China into the World Trade Organization (WTO) in 2001 resulted in tariff reductions on imports of Chinese goods and on exports to China. Inclusion in the WTO also implied that China would have to follow commonly accepted rules and regulations when settling trade disputes, which also helped to increase foreign investment. Due to these changes, China's exports grew enormously; exports were nearly 30% of GDP in 2002, up from 5% in 1979.⁴ About 20% of these exports were to the U.S. In addition, many Chinese products were subject to import quotas in the U.S., but these quotas were set to expire in 2004-2005, and it was widely expected that thereafter there would be a further sharp increase in imports. By 2002, the bilateral trade imbalance stood at about \$120 billion in China's favor. While the trade imbalance was beginning to create some political tensions between the two countries, the trend toward shifting production from the U.S. to China barely slowed if at all.

In many labor-intensive industries it was becoming increasingly difficult to match the low cost of Chinese labor, particularly in the textiles, plastic products, and travel goods (e.g., luggage) industries. Chinese wages were very low compared to those in most other countries, and even countries like Mexico were losing thousands of jobs to China annually. The average monthly wage in China was around \$100 in 2002, about 1/20 of U.S. wages after accounting for social

³ Enright, M. J. 2005. China's exports: An unstoppable competitor? Asia Case Research Center, The University of Hong Kong.

⁴ Ibid.

benefits.⁵ On average, a manufacturing worker in textiles earned about \$0.60-\$1.30 per hour in China versus \$11 to \$20 per hour in the U.S. Moreover, an employee in China had fewer benefits and holidays and worked an average of 2,930 hours per year.⁶ Since U.S. workers tended to focus on high value-added industries, the productivity of manufacturing workers in China was around 6% of U.S. productivity, but for comparable products Chinese workers were often as productive as their American counterparts.⁷

The Outsourcing Decision

Brennan knew that “going to China” was not a simple decision. Timbuk2 would have to visit potential suppliers, as setting up its own shop in China seemed out of reach at the time. Clear expectations would need to be set with the supplier, and Timbuk2 would probably have to make near-monthly (and costly) visits to maintain the relationship and to ensure high quality. Therefore, some preliminary analysis was justified before the company could walk down this path.

Table 4 outlines Brennan’s initial cost comparison between manufacturing a bag in San Francisco and manufacturing the same bag through a potential supplier in China. Manufacturing in China did not offer advantages in terms of material prices, because all materials already came from the Far East. The direct labor rate in San Francisco was much higher than a typical wage in China, but Brennan assumed labor in San Francisco was slightly more productive. Other manufacturing expenses would be slightly lower in China as well. However, the savings here were not expected to be as dramatic.

Finished bags would have to be shipped from China to San Francisco. A quick check of the size and cost of a shipping container yielded an estimate of \$0.10 per bag. Of course, that cost assumed that bags were shipped via an ocean carrier, which required at least a four- to six-week lead time. If bags were air-freighted, they would arrive within two or three days, but then the cost would rise to around \$15 per bag. With either production option, bags would be shipped from San Francisco to customers, with an outbound domestic freight cost of about \$3 per bag.

Brennan knew that this analysis was just a rough sketch and incomplete. As mentioned above, sourcing from China was no simple “turnkey” solution—the supplier relationship would have to be managed closely. The long lead time from China (assuming ocean shipments) would also involve more inventory. Based on information Brennan had heard from other firms, he expected that a Chinese supplier might be willing only to receive monthly orders and deliver with a two- to three-month lead time. (It was possible that these terms would improve over time as Timbuk2 generated larger sales.) This could easily mean holding finished-goods inventory in anticipation of demand, something that Timbuk2 had not done before. Brennan knew this possibility required Timbuk2 to develop some good forecasting skills, but even so, taking gambles with finished-goods inventory could lead to steep markdowns and write-offs as customer preferences changed.

⁵ Ibid.

⁶ Vietor, R. H. K. and A. Veytsman. 2007. American Outsourcing, Harvard Business School 9-705-037.

⁷ Ibid.

By examining Timbuk2's income statement for the first three months of 2002 (Table 3), Brennan could see clearly that demand fluctuated throughout the last year and that the mix of orders across the channels changed as well. A friend working at another firm suggested that annual markdown expenses could account for as much as half their average inventory holdings or more.

Then there was the issue of what to do with operations in San Francisco. Could Timbuk2 continue to use orders from the various channels to ensure a smooth workflow? Furthermore, if the company sourced all of its needs from China, it would be difficult to claim to be a domestic producer, something that was important to Timbuk2.

Brennan pondered the options. Timbuk2 had successfully navigated its startup phase and its entry into e-commerce, but he knew there was no guarantee that the company could continue to make money with its current supply chain structure. Moreover, the management team was considering significant expansion of sales through the wholesale channel, which would involve approaching companies such as CompUSA, Apple, and Dell to offer the possibility of bundling their laptop messenger bags with laptop computers and other computer accessories. Clearly, further expansion of the non-customized sales channel would make manufacturing in Asia more attractive in the future. But Brennan wondered if it was the right time to source from China.

Table 1: Timbuk2 Sales and Revenue, March 2002

March 2002												3/31/2002	
day	Domestic		International		eCommerce		Corporate		Other		Total		
1	8085.50	210	920.64	25	3867.30	39			753.80	15	13626.24	289	
2					2824.75	27					2824.75	27	
3					3947.75	38					3947.75	38	
4	2283.50	64			6070.30	57			927.85	21	9401.05	144	
5	3018.20	62	1628.05	50	4179.40	43			237.25	6	9062.90	161	
6	3395.40	99			4656.60	52			380.15	7	8432.15	158	
7	2487.00	73	805.95	24	5244.10	53	1561.50	36	140.95	3	10239.50	189	
8	2113.50	54	2286.25	59	2816.75	31			204.50	5	7421.00	149	
9			121.50	3	3311.50	34					3433.00	37	
10			310.95	8	4515.50	48					4826.45	56	
11	4217.18	108	255.15	8	4763.25	53		1	228.15	7	9463.73	177	
12	3980.50	113	4232.42	144	3872.75	39			349.55	9	12435.22	305	
13	9462.50	246	210.15	7	5737.75	58			215.50	12	15663.90	324	
14	1637.00	41	8911.23	264	5118.85	52			102.00	2	15769.08	359	
15	5941.50	155	72.90	2	3020.25	31			230.40	5	9265.05	193	
16			170.55	5	2962.85	30					3133.40	35	
17			239.85	6	2832.40	31					3072.25	37	
18	1446.50	42	423.90	10	4881.95	53			1179.05	31	7931.40	136	
19	2373.50	60	43469.17	1568	6029.20	62			77.40	2	51949.27	1692	
20	2436.00	51	315.00	8	3989.50	42	7000.25	277	433.25	10	14174.00	388	
21	3562.50	111	3128.85	89	3496.10	37	7280.00	130	570.20	13	18037.65	380	
22	2145.50	60	170.10	4	3229.70	33			351.10	13	5896.40	110	
23			147.15	4	1365.75	18					1512.90	22	
24			200.70	5	2238.55	22					2439.25	27	
25	4236.50	106	5156.75	176	2262.25	27			472.45	10	12127.95	319	
26	6647.50	167	3368.16	121	3155.25	35	673.75	27	982.30	26	14896.66	377	
27	2475.55	73	287.55	9	4596.60	45			620.62	27	7980.32	154	
28	2523.50	67	1789.90	51	2711.75	29			60.50	1	7085.65	148	
29	1721.95	48	927.00	27	2361.00	21					5009.95	96	
30			63.00	2	1988.00	20					2051.00	22	
31			248.85	6	3855.00	38					4103.85	44	
Bookings MTD:	\$76,191	2010	\$79,862	2685	\$115,903	1198	\$16,516	471	\$8,516	225	\$297,214	6593	
% of Bookings:	25.6%	30.5%	26.9%	40.7%	39.0%	18.2%	5.6%	7.1%	2.9%	3.4%			
Average \$/unit:	\$37.91		\$29.74		\$96.75		\$35.06		\$37.85		\$45.08		
Daily Average:	\$3,628	96	\$3,803	128	\$5,519	57	\$786	22	\$406	11	\$14,153	314	
Run Rate:	\$76,191	2010	\$79,862	2685	\$115,903	1198	\$16,516	471	\$8,516	225	\$297,214	6593	
Bookings Forecast:	\$92,570	2630	\$57,414	1792	\$132,300	1395	\$32,444	777	\$19,220	465	\$333,948	7059	
Business days this month:	21		Business days this year:		252								
Remaining business days:	0		Remaining business days:		188								
% of month complete:	100.0%		% of year complete:		25.4%								

Table 2: Timbuk2 Income Statement as of March 2002.

TIMBUK2 DESIGNS, INC.

Income Statement

	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	12 month total
TOTAL SALES	\$317,416	\$308,610	\$287,170	\$329,231	\$377,782	\$429,574	\$372,350	\$368,518	\$348,576	\$347,014	\$309,690	\$275,916	\$4,071,846
Cost of Goods Sold	<u>218,917</u>	<u>228,726</u>	<u>230,021</u>	<u>172,296</u>	<u>230,209</u>	<u>266,680</u>	<u>193,000</u>	<u>221,248</u>	<u>221,165</u>	<u>161,324</u>	<u>197,357</u>	<u>178,043</u>	<u>2,518,986</u>
GROSS PROFIT	\$ 98,499	\$ 79,884	\$ 57,149	\$ 156,935	\$ 147,573	\$ 162,894	\$ 179,350	\$ 147,270	\$ 127,411	\$ 185,689	\$ 112,333	\$ 97,873	\$ 1,552,860
<i>Gross Margin</i>	<i>31.0%</i>	<i>25.9%</i>	<i>19.9%</i>	<i>47.7%</i>	<i>39.1%</i>	<i>37.9%</i>	<i>48.2%</i>	<i>40.0%</i>	<i>36.6%</i>	<i>53.5%</i>	<i>36.3%</i>	<i>35.5%</i>	<i>38.1%</i>
Sales & Marketing	58,279	67,168	21,076	48,632	50,154	53,390	43,891	30,328	34,562	23,252	34,769	28,823	494,325
R&D / Technology	23,473	28,190	23,580	26,070	32,741	32,004	31,683	31,244	32,022	32,677	42,995	22,450	359,129
G&A	56,508	53,569	44,910	46,628	54,981	49,679	65,612	50,895	54,801	76,101	60,708	45,704	660,093
OPERATING PROFIT	\$ (39,760)	\$ (69,043)	\$ (32,417)	\$ 35,605	\$ 9,697	\$ 27,822	\$ 38,164	\$ 34,803	\$ 6,026	\$ 53,659	\$ (26,139)	\$ 896	\$ 39,314
Interest Expense	4,900	9,770	5,193	14,601	9,407	3,876	4,578	3,559	3,499	2,704	4,336	4,842	71,266
Other Expense	5,246	7,966	6,588	12,933	10,723	10,054	10,022	9,498	8,887	5,764	9,388	7,081	104,149
Other Income	(2,408)	(3,309)	(2,009)	(4,312)	(10,579)	(2,199)	(25,907)	(2,059)	(1,721)	(1,561)	(1,002)	(1,077)	(58,144)
EARNINGS BEFORE TAX	\$ (47,498)	\$ (83,469)	\$ (42,188)	\$ 12,383	\$ 146	\$ 16,091	\$ 49,472	\$ 23,805	\$ (4,639)	\$ 46,752	\$ (38,861)	\$ (9,950)	\$ (77,957)
Income Taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income	\$ (47,498)	\$ (83,469)	\$ (42,188)	\$ 12,383	\$ 146	\$ 16,091	\$ 49,472	\$ 23,805	\$ (4,639)	\$ 46,752	\$ (38,861)	\$ (9,950)	\$ (77,957)
EBITDA	\$ (22,786)	\$ (52,069)	\$ (15,443)	\$ 52,625	\$ 9,697	\$ 44,888	\$ 55,230	\$ 51,869	\$ 23,092	\$ 70,725	\$ (10,597)	\$ 16,438	\$ 223,671
	(7.2%)	(16.9%)	(5.4%)	16.0%	2.6%	10.4%	14.8%	14.1%	6.6%	20.4%	(3.4%)	6.0%	58.0%
<u>Ratios</u>													
Sales Growth (over prior year)	1.1%	(11.4%)	(14.1%)	10.3%	17.6%	33.0%	35.1%	28.3%	21.3%	(5.4%)	3.9%	(7.4%)	
Sales & Marketing Expense	18.4%	21.8%	7.3%	14.8%	13.3%	12.4%	11.8%	8.2%	9.9%	6.7%	11.2%	10.4%	12.1%
R&D / Technology Expense	7.4%	9.1%	8.2%	7.9%	8.7%	7.5%	8.5%	8.5%	9.2%	9.4%	13.9%	8.1%	8.8%
G&A Expense	17.8%	17.4%	15.6%	14.2%	14.6%	11.6%	17.6%	13.8%	15.7%	21.9%	19.6%	16.6%	16.2%
<u>Sales Detail</u>													
Domestic	\$146,486	\$123,993	\$127,386	\$128,239	136,037	\$155,965	\$131,471	\$117,128	\$71,322	\$67,081	\$99,257	\$81,455	\$1,385,820
Corporate	7,630	54,145	17,927	34,681	24,445	39,941	63,380	31,611	38,041	53,269	16,693	34,610	416,372
International	87,566	33,235	30,728	41,748	91,823	34,134	32,388	82,048	95,081	57,443	52,631	31,211	670,036
E-Commerce	75,734	97,237	111,129	124,563	125,477	199,533	145,111	137,730	144,132	169,221	141,110	128,640	1,599,618
	\$317,416	\$308,610	\$287,170	\$329,231	\$377,782	\$429,574	\$372,350	\$368,518	\$348,576	\$347,014	\$309,690	\$275,916	\$4,071,846

Table 3: Timbuk2's Balance Sheet

ASSETS	Jan-02	Feb-02	Mar-02
CURRENT ASSETS			
Cash	\$ (16,488)	\$ (36,056)	\$ 13,053
Accounts Receivable & Other	208,891	198,269	222,120
Inventory	204,292	176,034	196,274
Prepaid Expenses	3,738	1,281	1,281
TOTAL CURRENT ASSETS	400,433	339,528	432,729
PROPERTY & EQUIPMENT			
Fixed Assets	1,320,887	1,320,887	1,320,887
Accumulated Depreciation	(623,031)	(638,573)	(654,116)
TOTAL PROPERTY & EQUIPMENT	697,856	682,314	666,771
OTHER ASSETS	154,334	155,075	153,597
TOTAL ASSETS	<u>\$ 1,252,623</u>	<u>\$ 1,176,917</u>	<u>\$ 1,253,097</u>
LIABILITIES & EQUITY			
CURRENT LIABILITIES			
Accounts Payable	\$ 371,339	\$ 306,149	\$ 399,639
Prepaid Deposits	5,185	4,785	4,488
Payroll Payable	68,874	59,429	56,450
Taxes Payable	2,485	4,819	0
Notes Payable	94,833	89,624	84,370
Other Accrued Liabilities	(20,452)	4,939	3,918
TOTAL CURRENT LIABILITIES	522,264	469,744	548,865
LONGTERM LIABILITIES			
Capital Lease Obligations	318,670	305,434	292,040
Long Term Debt	0	0	0
Other Long Term Liabilities	0	0	0
TOTAL LONG TERM LIABILITIES	318,670	305,434	292,040
TOTAL LIABILITIES	840,934	775,178	840,904
EQUITY			
Common Stock	183,774	183,774	183,774
Preferred Stock	660,000	660,000	660,000
Retained Earnings	(432,084)	(442,034)	(431,581)
TOTAL EQUITY	411,690	401,740	412,193
TOTAL LIABILITIES & EQUITY	<u>\$ 1,252,623</u>	<u>\$ 1,176,918</u>	<u>\$ 1,253,097</u>

Table 4: Revenue, Variable Production and Shipment Costs per Bag by Production Location

	San Francisco	China	Comments
Revenue	\$45	\$45	From Table 1
Hourly Wage	\$12.50	\$1.25	Includes benefits
Direct Labor Content	35 minutes	45 minutes	
Manufacturing Overhead	40% of Direct Labor	40% of Direct Labor	Primarily indirect labor
Materials	\$13	\$13	
Other Manufacturing Expenses	\$1.5	\$0.75	Includes items like insurance, equipment maintenance, and warranty expenses.
Shipment to San Francisco	\$0	\$0.10	By ocean carrier. Air freight is \$15 per bag.
Shipment from San Francisco to customers	\$3	\$3	

Appendix

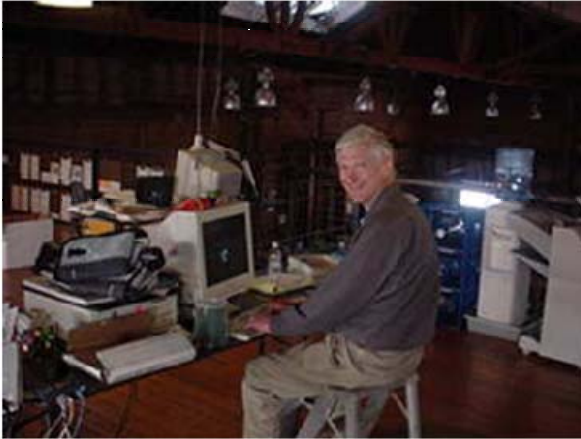


Figure 3. Order Entry



Figure 4. Raw Materials



Figure 5. Production



Figure 6. Finished Goods Inventory