

Secrets of the wine industry #1 --- Quality, Quantity, and Labor

The relationship between quality of wine, labor, and volume is a little more than happenstance. There are specific reasons why higher end wine usually costs more than your average store-bought brand. .

Before we start, it's best to determine what actually constitutes a 'quality' wine. For instance, your particular favorite may in fact be a quality wine or at least it's *perceived* as being so. Typically, quality wines are from fairly known regions around the world, have good winemakers and are made from good-quality grapes (a good quality grape is another story in itself). It's a premise to assume that region alone can impact wine and wine quality; but for the purposes of this short article, we'll make a blanket statement that there is a specific formula for making good wine.

Here is the generic formula for a good wine:

- Good grapes
- Good winemaking
- Good Oak Barrels
- Good aging
- Good brand
- *Low number of cases produced*

Each part of this formula is a topic by itself. For now, we'll focus on "Good Oak Barrels" and "low cases produced." When I state Good Oak Barrels, I don't necessarily mean the oak or the type of oak the wine is aged in (although Oak can have a tremendous impact on the outcome of the wine); rather, focus on the way the oak is delivered to the wine.

Another definition: "Delivering Oak" to a wine is the process of exposing the wine to the surface area of Oak components; besides flavor components, Oak is often used to soften the acid of wine as well as other things.

Understanding the Oak process in winemaking is difficult and takes a fair amount of time. Different oaks delivered in different ways have different impacts. But here are the three primary delivery methods; (1) Oak Barrels, (2) Oak chips, and (3) Oak dust. Oak barrels are usually associated with quality wine, Oak chips are used in large batches of wine (or bulk wine), and Oak dust is usually put in with the crusher, crushing the grapes before fermentation (again, bulk wine, allows the winery to bypass the chips).

Now that we have that out of the way --- let's examine the cost structures relative to surface area. For the most part, each barrel of wine contains 59 Gallons (standard size). When wine is placed into a barrel, only the "outer" surface area of the wine actually comes in contact with the barrel. This surface area has mobility, but only when the barrels are moved, or the wine is racked off (think agitation of the wine). The actual surface area of the oak is finite and has a limit. It is the smallest surface area to volume ratio in the mix.

Oak chips, when placed into tanks contain a much larger surface area than the generic barrels. However, for the most part, they are only used in large tanks of several thousand gallons. Also, they are significantly cheaper than the barrels.

Oak dust is effectively infinite surface area (it's not really, but with billions of little dust particles it adds up to a significant amount of surface area) and effectively stays in the wine even into the bottle. It's the cheapest solution and sometimes allows for bulk wine to have an "Oak flavor" component to it without having to use the chips.

Costs:

Oak barrels run between \$300 and \$1000 new; Bags of Oak chips run between \$50 and \$150 a bag; and Oak dust is the same.

Let's put some gallons to each of these categories: Oak barrels can hold 59 gallons of wine; a ratio of one bag of Oak chips per 300 gallons of wine is the norm; and one bag of Oak dust usually goes in with about 14 tons of fruit (or about approx 1800 gallons of wine). Now keep in mind, these are estimates. All wineries are different and have different methodologies. These numbers are just averages.

Now let's add some labor costs to this: One worker can safely manage 5 barrels of wine at a time, or can manage a 7000 gallon tank; The worker can do more than that (including 15,000 gallon tanks or higher) but I think 7000 is good number.

Our worker earns \$15 / hour and we will assume that he can do his task in 1 hour for all jobs. Therefore, if we do some dimensional analysis, we come to the following labor cost per gallon of wine for each of the Oak delivery methods.

Oak methods	Total Gallons	Cost per unit	Oak cost per Gallon	Cost per bottle (5 bottles to the gallon)
Barrels (1 barrel)	59	\$300 each	$\$300/59 = \5	$\$5/5 = \1
Chips (1 bag)	300	\$50 each	$\$50/\$300 = \$0.16$	$\$0.16/5 \sim \0.03
Dust (1 bag)	1800	\$50 each	$\$50/1800 = \0.02	$\$0.02 / 5 \sim \0.004

Now for the labor component;

Our one worker can manage each of the following in a one hour block (at \$15 / hour)

Oak method	Total units (max or min available to worker to manage)	Total Gallons available to the worker to manage per hour	Cost per Gal per hour for one worker	Total labor cost per gal per vintage (assume units are 'touched' once a week for one hour for 45 weeks)	Average Labor cost per bottle per 45-week vintage cycle
Barrels	5 barrels	295 Gal	$\$15/295 = \0.05 per gal per hour	$\$0.05 * 45 = \2.25	$\$2.25/5 = \0.45 per bottle
Chips	1 tank (maximum)	7000 Gal	$\$15/7000 = \0.002 per gal	$\$0.002*45 = \0.09	$\$0.09/5 = \0.018

			per hour		
Dust	14 tons (at a minimum)	1800 Gal	$\$15/1800 = \0.008 per gal per hour	$\$0.008*45 = \0.36	$\$0.36/5 = \0.07

Let's review this before we move to the final component, volume / cost ratios. Basically, in a single vintage year, one worker can manage every group of 5 barrels at a cost of about \$0.05 cents per gallon per hour. On the other hand, the same worker can manage a single tank of 7000 gallons at a default cost per gallon of 2/10 of one cent per hour. Same is true for the Oak dust. In other words, labor is stunningly cheap on a per gallon basis provided you have a LOT of wine for the workers to manage.

Finally, it's time to put this into the volume vs cost ratio and to put some perspective around this and how it relates to quality. How many bottles of wine in a gallon? Five. How many bottles to the case? Twelve. Time to calculate:

Oak Method	Total Gallons available	Number of bottles	Number of cases produced
Oak Barrels (5 barrels)	295	$295*5 = 1475$	$1475/12 = 123$ cases
Oak Chips (1 tank)	7000	$7000*5 = 35,000$	$35,000/12 = 2917$ cases
Oak Dust (per 14 tons grape)	1800	$1800*5 = 9,000$	$9,000/12 = 750$ cases

Most perceived (and truly) high quality wines are made with under 1000 cases per vintage. Why? Take a look at this:

	Cases required	Convert to gallons	Barrels required	Cost per bottle to produce (include labor and barrel rates above)**
Hypothetical high quality winery	1000 cases *12 = 12,000 bottles	12,000 bottles / 5 = 2,400 gallons	$2,400/59 = 41$ barrels	$41/5*\$1*\$0.45 = \$3.69$ per bottle
Bulk Winery 7000 gallon – using only barrels	2917 cases (from above)	7000 gallons	$7,000 / 59 = 119$ barrels	$119/5*\$1*\$0.45 = \$10.71$ per bottle
Bulk Winery 7000 gallon – using just the tank with the chips	2917 cases (from above)	7000 gallons	N/A – oak chips are the substitute for barrels	$7000*\$0.03*\$0.018 = \$3.78$ per bottle
Bulk Winery 1800 gallon	750 cases (from above)	1800 gallons	N/A – dust is substitute for barrels	$1800*\$0.004*\$0.07 = \$0.50$ per bottle!!

** remember that our labor rates are based on 5-barrel units (from the other charts);

So let's put this into perspective; first, you can see that it's cheapest to make wine in bulk and to bypass Oak barrels and chips and just use the dust for oak flavoring. Second, the volume ratio is 7:1 for tank versus barrel at virtually equal costs per bottle. ***That is, I can make seven times the amount of wine and keep my unit costs the same if I switch from barrels to oak chips.*** Hence, my margins will be much

higher if I use the tanks. Finally, and this one is REAL important --- the more wine I make and keep it in barrels will cost me proportionately more per bottle (which means, I have to add that cost to the bottle cost).

NOW, unless the winery is charging a LOT for the bottle of wine, it's not economically feasible to add almost \$11 to each bottle of wine made. Also I want you to think about the space requirements for all those barrels (at 7000 gallons). Barrels take up a lot of space and most wineries do not have the space required. Additionally, and I can tell you from experience, you will need many workers to manipulate all those barrels and again, most wineries have a small staff ... not loads and loads of people with forklifts to push and pull those barrels around. Therefore and typically, a winery may have the number of barrels required to push 3000 cases out the door ... BUT, the barrels will not receive the same amount of attention that 40 barrels will receive and therefore, ***quality is diminished at the larger scale.***

Quality is also diminished by using tanks instead of barrels. Therefore, any wine on a store shelf had probably 10,000 plus cases of it made and have to have been made in big tanks. Not that it's bad, but you will almost never see the same quality of wine from a bulk corporate brand versus a small, family owned brand, just due to sheer volume considerations.

So, there you have it. Let me summarize in a few bullets ---

- Higher amounts of wine are cheaper to make and produce more margin; *sometimes**.
- Higher amounts of wine are much more expensive to make and harder to manipulate if in barrels.
- Higher quality of wine is made when case levels and lot production is low.
- Higher quality of wine is much harder to achieve in bulk amounts.

Remember, there are many additional factors affecting the outcomes of wine and there are several wineries that have broken this bohemim model. However, this is true for the rest of them.

*Margin relationships are complex and are the topic for next time; just know that even though a winery can make 20,000 cases or more, the margins actually drop significantly once you bypass a certain level – 8).

Hope you enjoyed the read.

Matt