FEASIBILITY OF A COOPERATIVE WINERY

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Background

In the past decade, the number of wineries in America has more than doubled with approximately 2,700 now in operation. Wineries can be found in all fifty states. The majority are small operations, producing less than 25,000 cases annually. Like many states, Oklahoma at the time of statehood was home to many vineyards and wineries. However, state and federal prohibition laws reduced the commercial wine industry to nonexistent when prohibition, in the form of the 18th Amendment to the Constitution of the United States, became effective on January 16, 1919 and was in effect until December 5, 1933.

Oklahoma and many other states saw little change or growth in the winemaking industry after prohibition was repealed due to a complex system of state regulations regarding the sale and distribution of wine and spirits which limited winemakers to marketing their products solely to wholesalers and distributors. However, the industry began to experience dramatic growth as state legislation was updated to expand the rights of winemakers to include the rights to serve winery samples on site or at festivals and trade shows and to sell directly to customers, retail outlets, and restaurants. Since 1992 when state legislation began to trend towards promoting winemaking in Oklahoma, the numbers of wineries has grown from three to more than 35.

While recent years have proven to be a very exciting time of industry change and growth, there are many challenges facing winery entrepreneurs. The historical lack of commercial winemaking in many states has created a void in technical expertise. A base of experienced winemakers does not exist, and education in enology must be sought in areas with more developed industries. In addition, the companion industry of grape growing is experiencing similar needs for greater viticultural expertise and appropriately trained laborers.

Entrepreneurs considering entering the wine manufacturing business are interested in projecting the feasibility of wine operation. A winery is a very capital-intensive enterprise. With the high initial investment and the lagged cash flow associated with the time between the purchase of grapes and initial wine sales, many winery owners are forced to seek outside sources of capital. In non-traditional winemaking areas such as Oklahoma, interested parties may face difficulty in acquiring debt and/or outside equity capital because lenders and investors are unfamiliar with the wine industry. A feasibility assessment and business plan are often a prerequisite for acquiring capital (Kenkel and Holcomb).

The Winery Feasibility Template

The scope of the study is limited to an economic assessment of a "typical" small Oklahoma winery using different structures of cooperative ownership. However, the model used to assess the feasibility of a winery is very flexible and could be adapted to consider other sizes, geographic locations or business structures. Another advantage of the feasibility template, relative to a narrative study, is that the end-user can quickly examine the impact of different capital scenarios, capacity, equipment, wine selections, product prices and other factors on the feasibility of the venture.

A Microsoft Excel workbook was utilized to develop a feasibility template for analyzing the financial potential of a small winery. The workbook consists of ten worksheets and an introduction to the template. Five of the worksheets require the user to input information about the winery. This information includes input capital structure, winery size and capacity, equipment scheme, business and personnel expenses, raw goods data, and wine product(s) selection. Assumptions of the model and the user-supplied information are then used in financial calculations. Market and expense projections, loan amortization, operations summary, and

return on investments are calculated over a ten-year production horizon. Each of these worksheet is described in more detail.

Input Capital Structure Information

Most of the basic financing and business structure information are entered on the "Inputs" worksheet. This information includes the percentage of debt financing, long term and short term interest rates, corporate income tax rates, anticipated inflation rates for sales and for expenses, property tax rates and maintenance costs as a percentage of plant and equipment value and other general information. The costs for the various wine business licenses and fees are also entered on the "Input" worksheet. The variable costs excluding the grape cost are also entered on the "Input" sheet. These include excise taxes and the materials (bottles, corks, labels, and capsules) used in bottling wine

The "Input" worksheet also contains entries relating to the structure, profit distribution and equity system unique to cooperative businesses. Users specify the percentage of earnings retained as unallocated reserves, and distributed as cash patronage, qualified stock patronage and non-qualified stock patronage. The percentage of member business is also selected. The template user can also specify the cooperative structure (open or closed). An equity revolving period must be specified if the open membership structure is selected.

Wine Products

The Winery Feasibility template allows the user to select up to 8 wines on the "Wine Products" worksheet. The initial sales volume, sales price, and amount of volume used for samples are specified for each wine. The price of grapes or wine concentrates and the blend used for each product are entered on the "Wine and Grape" worksheet. Information on the cost and useful life of plant and equipment are entered on the "Deprecation" sheet. Personnel information

including a list of positions, salaries or wage rates for each position and anticipated overtime rates are entered on the “Personnel Expenses” sheet.

Intermediate Calculations

The inputted data provides the basis for four worksheets containing intermediate calculations relating to sales margins, depreciation expenses, personnel expenses and loan interest and principle payments. The “Market Projection” worksheet creates a 10 year forecast of sales, variable cost of production and gross margins for the four products identified on the input sheet. The sales and gross margin forecast reflect the sales growth rates that are included in the “Wine Product” sheet.

The “Depreciation” worksheet calculates annual depreciation expenses for four categories of buildings and equipment. Buildings are depreciated on a straight line basis using a 39 year life and the designated salvage value. Special purpose buildings are depreciated over a 10 year life. Equipment and heavy rolling stock are depreciated over 7 years using MACRS (modified accelerated cost recovery system) while light trucks and vehicles are depreciated over 5 years using MACRS.

The “Personnel Expense” worksheet allows the user to enter salary, benefit and overtime information for four categories of employees. The sheet can easily be expanded by disabling the protection feature and adding additional listings. The total personnel wage and salary costs, benefit costs and overtime cost flow to the “Operation Summary” worksheet.

The “Loan Amortization” worksheet calculates annual interest and principle payments for a term loan using the interest rate, loan length and leverage percentage specified in the “Input Values” worksheet. Annual interest costs on working capital are also calculated using the working capital level and short term interest rate specified. The annual total interest expenses

flow to the "Expense Projection" worksheet. Loan principle payments also flow to the "Operation Summary" where they are used in calculating annual cash flow from operations.

Projected Income and Expense Statements

The template provides a simple 10 year income and expense statement for the project (on the "Operations Summary" worksheet). The statement summarizes gross sales, variable and fixed expenses, before tax profits, taxes and after tax profits. A simple projection of cash flows from operations is also created by adjusting the annual after tax profits for the cash flow impacts of depreciation expenses (a non-cash expense) and loan principle payments (a cash flow requirement not reflected as an expense).

Owners Equity

The "Owner's Equity" work sheets tracks the initial equity, and the additional qualified and non-qualified equity created through patronage stock dividends and equity revolvements. Information on the revolvement of non-qualified stock fed back to the *profit and loss* worksheet where it impacted the cooperative's taxable income.

Return on Investment and Feasibility Measures

The "Return on Investment" worksheet summarizes the feasibility of the winery cooperative. The basic feasibility template includes four common feasibility measures: *benefit/cost ratio, internal rate or return, the net present value,* and the *payback period*. While calculations in the "Return on Investment" worksheet are based on the after tax cash flows for the cooperative firm, the "Owners Return" worksheet are based on after tax cash flows received by the cooperative member. For example, the owner's cash flow from a qualified patronage stock dividend would occur in the year the stock was redeemed while the tax effect would be reflected in the year the stock was issued. If the user selected a closed membership cooperative

the owner's cash flow in the final year of projections (year 10) includes an inflow from the sale of the stock at an estimated market value of five times the average earnings before interest and taxes.

Sensitivity Analysis

Another key step in feasibility assessment is determining how the projected profits will be affected by changes in internal and external factors. The feasibility template allows users to analyze the impact of sales volume, sales price, interest rates, raw material costs, energy and utility costs and other assumptions on the profitability of their project.

Baseline Assumptions

The basic financing assumption for the model is a loan for fifty percent of the total cost of the plant, property, and equipment acquired at an interest rate of eight percent for the term of ten years. Working capital was estimated at 10% of annual sales with a short term interest rate of 6%. Property taxes were estimated at 6% of the value of the winery property plant and equipment. Annual maintenance expenses were estimated at 2% of equipment costs. The cooperative's income tax rate was assumed to be thirty percent. An annual inflation rate of one percent was assumed for all expenses including utilities, maintenance, and insurance expenses. A 9% discount rate was used for net present value calculations. Annual business fees were estimated at slightly under $1,500 while the cost of initial licenses was estimated at $250.

It is assumed that all wine was packaged in 750 ml glass bottles. This model used an estimate of $0.60 per bottle, which is based on price quotes for bottles purchased from an Oklahoma City-based supplier and delivered to a winery in central Oklahoma. Both synthetic and natural corks are used in wineries in Oklahoma. Depending on the quality grade, a review of

regional suppliers indicate a typical range of $0.10 to $0.30 per cork for corks of either material purchased in bulk. The $0.18 used in the model represents the cost of a natural cork of the first grade.

Label cost was estimated at $.10/bottle. The cost of self-adhesive labels can vary greatly depending on size, design, and the number of colors used. Capsules come in two styles: PVC shrink wraps and Aluminum foil. Upright/table- mounted versions of the applicators for either style are similarly priced at approximately $1,100. However, more inexpensive hand-held shrink wrap applicators can be purchased for less than $200. PVC shrink wraps can be purchased for approximately $0.05 cents, but Aluminum foil capsules cost twice as much.

The Oklahoma excise tax on wine is $0.72 per gallon; therefore, there is a $0.1425 excise tax per 750 ml bottle. The federal excise tax on table wine is $1.07 per gallon. However, small producers receive a credit of $0.90 which yields an effective federal excise tax rate of $0.17 per gallon, or approximately $0.0337 per bottle.

Production Equipment

To maintain a certain level of quality in the production process and to ensure adherence to food and beverage processing regulations, stainless steel products should be used when possible. Unless a vintner is purchasing fruit which has already been crushed and destemmed, equipment associated with these activities will be required. A stainless steel crusher/destemmer with a must pump and the capacity of 3.5 tons per hour was included in this model at the price of $1,735 (St. Patrick's of Texas). Presses come in an array of styles, but small wineries can utilize bladder presses (Dillon et al.). These are vertical basket presses with an internal bladder, which is inflated with water to press the grapes against the basket. Metz suggests small wineries using two presses, allowing the winery to operate one while emptying and refilling the other. This

baseline estimates reflected an eighty-five gallon bladder press with a wooden basket at the price of $2,695 (St. Patrick's of Texas).

Any winery will have to have the ability to pump both wine and must, and it is assumed in this model that two different pumps will be utilized. Both pumps are positive displacement pumps and have hydraulic transmissions for variable speed control. The primary difference between the two pumps is the size of the outlets and accompanying accessories of 1.5 inches and 2.5 inches for the wine/juice and must pump, respectively. These pumps respectively cost $1,725 and $2,625.

For a winery of this size, Vine suggests a plate-and-frame filter may be the best choice and Dillion et al. states small wineries can use the less expensive cartridge filters. A plate-and-frame filter with twenty-by-twenty centimeter plates was chosen for this model. The price for this filter was also taken from St. Patrick's of Texas, along with $200 for miscellaneous filter accessories. Additionally, the cost of fifty feet of hose of both pump outlet sizes was included (St. Patrick's of Texas). The production equipment used in the baseline assumption are summarized in Table 1.

Table 1 Production Equipment Costs

Equipment	Value
Stainless Steel, 3.5 ton/hr Crusher/Destemmer	$1,735.00
85 Gal Wooden Basket Bladder Press	$2,695.00
Various-speed, Hydraulic Must Pump with 2.5" Outlet	$2,625.00
Various-speed, Hydraulic Must Pump with 1.5" Outlet	$1,725.00
20*20 Plate and Frame Filter	$1,375.00
Various Filter Accessories	$200.00
50 ft of 2.5" and 1.5" Hose	$625.00
Total	$10,980.00

Storage Equipment

A 5,000 gallon winery could use an almost innumerable combination of varying styles and sizes of tanks to attain its capacity goal. Planning is especially critical in this step of the winery design and a winery operator must consider what kinds of wine to make, how much of each to produce, and what other storage containers will be utilized.

Containers made of several kinds of materials are employed in making wine. Wood, plastic, cement, glass, and steel containers are all options; however, stainless steel is becoming a more predominant choice for wine making as it is easy to clean and maintain, and does not directly influence the flavor of the wine.

For purposes of simplicity, this model assumes ten stainless steel tanks, 530 gallons each, are utilized. Sloped-bottom, variable capacity tanks, mounted on legs and encased in cooling jackets, were chosen due to their flexibility of use and suitability for fermenting, processing, storing, and blending wine. The sloped bottom allows for ease of cleaning, and the cooling jackets eliminate the need to house the tanks in a refrigeration unit. Mounting tanks on legs, instead of concrete bases, allow a new winery to modify the layout as changes or growth in production necessitate. (Vine)

Estimates for the prices of tanks with these parameters were based on a quote from St. Patrick's of Texas, a winery supplier located in Austin, Texas. Ten stainless steel drums were also included for additional storage, at a price of fifty-five dollars each (Cowie Wine Cellars). Wooden cooperage is historically tied to wine making and still holds romantic significance to wine makers and consumers. However, it should be noted that wood is more complicated to use, requiring additional knowledge and skill to properly care for barrels or kegs and attain the desired effect upon the wine.

Plastic containers certainly have appeal as a storage choice due to their availability and inexpensive cost. However, plastics can affect wine in a negative way by allowing light and/or oxygen to pass into the container, as well as directly adding 'off' flavors of the plastic itself (Boulton). Due to these reasons, both Vine and Boulton suggest only using plastic containers for short-term storage. The model assumes several food grade plastic drums, at a price of $10.00 each, will be used for processing and short-term storage (Cowie Wine Cellars).

Due to the ease of cleaning and maintenance and lack of direct effects on flavoring, one might also consider glass containers for storage. Again, flexibility and ease in handling is important to small wineries which will not have the space or equipment for handling very large storage containers. Vine suggests five-gallon glass carboys for small wineries as a filled carboy of this size would weigh approximately fifty pounds. (Vine) This model includes five three-gallon and ten five-gallon glass carboys, with prices of $15.50 and $19.50 each (Cowie Wine Cellars).

Table 2: Storage Equipment

Container	Value of Each	Quantity	Value
530 Gal Stainless Steel Tanks	$4,995.00	10	$49,950.00
3 Gal Glass Carboy	$15.50	5	$77.50
5 Gal Glass Carboy	$19.50	10	$195.00
55 Gal Stainless Steel Drums	$55.00	10	$550.00
55 Gal Plastic Drums	$10.00	15	$150.00
		Total	$50,923.00

Bottling and Packaging Equipment

As the winemaker prepares to bottle the finished wine, the bottles are prepared for use with a thorough cleaning and rinsing. Bottle washing accessories and bottle trees for drying are included in the miscellaneous supplies of the winery. Vine and Price et al (1993) both state stainless steel manual fillers are adequate for a winery of this size. A manual bench model four-

spout stainless steel filler with the capacity to fill four hundred to six hundred bottles per hour is included in the model at the cost of $1,150 (St. Patrick's of Texas). This model assumes bottles will be sealed with corks instead of screw caps; therefore, a corker is needed in the bottling process. Depending on size, expected growth, and labor resources, a winery may choose to use a manual or semiautomatic corker. Semiautomatic corkers can cost several thousand dollars, and manual corkers cost significantly less. The model includes a manual Portuguese floor corker at a cost of $69.50.

Wineries may choose to apply self-adhesive labels manually to eliminate the need for a labeling machine. However, to insure a uniform and professional application of labels, a semiautomatic labeler was included in this model. A labeler costing $3,395 can apply both front and back labels on up to six hundred bottles per hour (St. Patrick's of Texas). To complete the packaging process, a capsule is typically placed over the mouth of the bottle. The two major categories of capsules are foil and PVC shrink wrap. PVC shrink wrap capsules were chosen for this model because ease of application and the lower cost of shrink wrap capsules may be appealing to small wineries. An upright table-mounted heat shrink applicator can be purchased for $995 (St. Patrick's of Texas).

Table 3: Bottling and Packaging Equipment

Equipment	Value
4 Spout Gravity-fed Manual Filler	$1,150.00
Manual Portuguese Floor Corker	$69.50
MEP Semiautomatic Labeler	$3,395.00
Upright Heat Shrink Applicator	$995.00
Total	$5,609.50

Tasting Room Equipment

Vine et al recommend the style and design of the tasting room should reflect the image and style of the winery. Wineries have a wide range of stemware styles from which to choose.

Vine et al recommends the use of tulip-shaped glass stemware for the sampling of table wines. On this basis, a 6.5 ounce wine glass was selected at a price of $141.84 per 36-piece case. It was assumed approximately one hundred glasses would provide enough stemware to meet the demand of a constant supply of clean glasses for tastings while not overburdening a small winery with excessive need for storage space.

A table mounted cork remover was included because this would allow tasting room personnel to open all bottles of wine in front of the customers with an easy and efficient manner. A computer and printer in the tasting room can serve both as a company tool to track sales and inventory and as the cash register. A quality printer can be used to print receipts and can additionally serve as the copier and fax machine for the winery. A desktop computer configured for a small business and an all-in-one printer were chosen at the approximate costs of $1,204 and $256, respectively.

A dishwasher is necessary to clean glasses and any other dishes, and a refrigerator is needed to keep chilled wines readily available. A winery might consider the needed capacity, style of the tasting room, size limitations, and noise reduction along with the price of the appliance. The prices a twenty-four inch stainless steel dishwasher and a wine refrigerator were taken from a local Sears® store. Again, there is an almost limitless choice for wineries, and the selections made here reflect basic models from a company available in many areas.

Table 4. Tasting Room Equipment

Equipment	Value
3 Cases (36 each) Glass Stemware	$425.00
Bench Model Cork Remover	$60.00
Workstation Configured for Small Business	$1,204.00
All-in-One Printer	$256.00
24" Dishwasher	$550.00
48-Bottle Wine Cellar Refrigerator	$330.00
Furnishings/Decorations	$1,000.00
Total	$3,825.00

Office Equipment

Office equipment was estimated at slightly under $2,000. . The prices for the chairs and file cabinets were obtained from a local Staples® store. Two leather office chairs are $70 each, and two twenty-five inch four-drawer letter-size file cabinets are $129 each. A desktop computer, identical to the one used in the tasting room, is $1,204. An executive style desk available from Wal-Mart® is $319.

Table5: Office Furniture and Equipment

Equipment	Value
Desk	$319.00
2 Chairs	$140.00
Computer and Software	$1,204.00
File Cabinets	$258.00
Total	$1,921.00

Plant, Property, Equipment, and Land

The total equipment cost of the winery and tasting room is $71,494.00, and this is the figure used for calculating depreciation. Installation costs can be estimated from a percentage of the equipment cost. In this case, the cost of installation is assumed to be one hundred percent of the equipment cost. The total equipment cost of $142,988.00 is incorporated into the total cost of plant, property, and equipment and is used in calculating capital investment and returns.

Table 6: Total Equipment Cost and Installation

Production Equipment	$10,980.00
Laboratory Equipment	$700.00
Storage Equipment	$50,923.00
Packaging/Bottling Equipment	$5,609.50
Tasting Room Equipment	$3,825.00
Office Furniture and Equipment	$1,921.00
Equipment Cost	$74,023.00
Installation	$74,023.00
Total Equipment Cost	$148,046.00

It is assumed two acres of land would be adequate for the winery and tasting room facilities and the accompanying parking area. Because land values vary greatly depending on location, a price of $1,000.00 per acre is assumed. Some wineries may have substantially more property if they operate their own vineyard, but this model is concerned only with the winery operations and does not include vineyard considerations.

If one travels to various Oklahoma wineries, very different styles of building are encountered. A winery entrepreneur may choose to construct a new building or modify an existing structure. Old barns, farmhouses, schools, and churches have all been converted into wineries in Oklahoma. Because the construction or remodeling cost of a winery can vary so greatly, this model relies on a previous work for an estimate of the cost of a winery/tasting room facility. Price et al (1993) estimated the cost of a five thousand gallon winery structure of 2,400 square feet to be $74,000. Adjusting this price for year and location using the 1999 RS Means indices for commercial construction, the cost of a small winery in Oklahoma is $35.92 per square foot. For the hypothetical winery of two thousand square feet, the cost of construction would be $71,844.66.

Table 7: Value of Plant, Property, Equipment and Land

Plant, Property, and Equipment		$222,987.00
Land		$2,000.00
	Total	$224,987.00

Results

The projected sales, expenses, profitability and cash flow of the winery operation under the baseline assumptions is provided in Table 8. The winery had projected sales of slightly over $317,00 with before patronage profits of $103,332. The wineries cash flow was projected at $35,693. The winery cooperative had a projected internal rate of return of over 46% (Table 9).

However the member's realized return under the baseline structure was 16.29%. The member's tax payments and the distribution of profits to unallocated equity and stock patronage accounted for the differences between the firm's and member's rate of return.

Table 8: Summary of Income and Expenses (Baseline Scenario- Average of 10 Years)

Gross Sales	$317,206
Variable Costs	$150,918
Fixed Costs	$ 54,445
Profit before Patronage	$103,332
Cash Patronage Refund	$ 25,042
Qualified Patronage Refund	$ 35,059
Non-Qualified Patronage Refund	$ 24,177
Tax	$ 13,376
After Tax Net Savings	$ 31,211
Cash flow from Operations	$ 75,724
Qualified stock redemption	$ 24,177
Non-qualified stock redemption	$ 24,177
Net Cash Flow	$ 35,693

Table 9: Return on Investment for Cooperative and Member

NPV	IRR (Cooperative)	IRR (Member)	Average Cash Flow (Cooperative)
$554,166	46.70%	16.29%	$32,128

The sensitivity of the winery profits to changes in variable production costs, grape prices and plant and equipment costs are summarized in Tables 10-12. The returns were not particularly sensitive to changes in production costs with each 10% change in costs impacting the internal rate of return by around 1%. Returns were more sensitive to wine prices with each 10% change in wine price impacting returns by over 10%. The projected returns were moderately sensitive to plant cost with each 10% change in plant and equipment costs impact the internal rate or return by around 3%.

Table 10: Impact of Changes in Variable Costs

Variable cost excluding grape cost	IRR (cooperative)	IRR (member)	Average Cash Flow
$1.09	46.70%	16.29%	$32,128
$1.19	45.68%	15.84%	$31,078
$1.30	44.66%	15.38%	$30,029
$1.41	43.63%	14.90%	$28,979
$1.52	42.61%	14.42%	$27,929
$1.63	41.57%	13.93%	$26,880
$2.17	36.37%	11.29%	$21,632

Table 11 : Impact of Changes in Wine Price

% of Baseline	Merlot	Cabernet Sauvignon	Chardonnay	IRR (cooperative)	IRR (member)
70%	9.29	9.93	8.40	8.79%	-10.07%
80%	10.62	11.35	9.60	22.81%	2.61%
90%	11.95	12.77	10.80	35.11%	10.61%
100%	13.28	14.19	12.00	46.70%	16.29%
110%	14.60	15.61	13.20	57.96%	20.90%
120%	15.93	17.03	14.40	69.06%	24.86%
130%	17.26	18.44	15.60	80.08%	28.40%

Table 12: Impact of Increase in Plant Cost

Equipment cost	IRR (cooperative)	IRR (member)	Average Cash Flow
$74,023 (100% Baseline)	46.70%	16.29%	$32,128
$81,425 110% Baseline	43.26%	14.48%	$30,248
$88,828 120% Baseline	40.16%	12.79%	$28,368
$96,230 130% Baseline	37.36%	11.20%	$26,488

The impact of the various profit allocation and equity structures on the cooperative's and member's return are summarized in Tables 13-16. Changes in the portion of income directed to unallocated reserves (Table 13) had only moderate impact on the cooperative's cash flow or on the member's return. Increasing the portion to unallocated reserves increased the member's projected internal rate of return. This impact was due to the proportionate decrease in the amount distributed as qualified stock. Because the member pays taxes on the amount of

qualified stock in the year of distribution but does not receive cash for the stock until it is revolved, higher proportions of qualified stock tends to decrease the member's realized return.

Table 13: Impact of Increases in Unallocated Reserves

Percentage to Unallocated Reserve	NPV (cooperative)	IRR (member)	Average Cash Flow
0.0%	$554,166	16.24%	$31,804
5.0%	$554,166	16.29%	$32,128
10.0%	$554,166	16.35%	$32,453
15.0%	$554,166	16.41%	$32,779
20.0%	$554,166	16.46%	$33,107

Cash patronage held constant at 25%, qualified and non-qualified stock reduced in proportion to increase in unallocated reserves

Increasing the portion of profits distributed as cash patronage had positive impacts on the member's return and negative impacts on the cooperative's cash flow (Table 14). Increasing the proportion of non-qualified stock distributions (Table 15) had a similar impact. When a cooperative distributes profits in the form of non-qualified stock, the cooperative does not deduct the distribution from taxable income until the stock is redeemed. This shifts the timing of the tax burden from the member to the cooperative. Decreasing the time period for revolving stock (redeeming for cash) also increased the member's return at the cost of reducing the cooperative's cash flow (Table 16).

Table 14: Impact of Increase in Cash Patronage

Percentage to Cash Patronage Refund	IRR (cooperative)	IRR (member)	Average Cash Flow
20.0%	46.70%	13.18%	$34,983
25.0%	46.70%	16.29%	$32,128
30.0%	46.70%	19.39%	$29,257
40.0%	46.70%	25.55%	$23,466
50.0%	46.70%	31.68%	$17,608
60.0%	46.70%	37.81%	$11,682
70.0%	46.70%	43.94%	$5,688
80.0%	46.70%	50.08%	($378)

Allocation to qualified and non-qualified stock refund reduced in proportion to increase in cash patronage

Table 15: Impact of Increase in Non-Qualified Stock Refund

Percentage to Non-Qualified Stock Patronage Refund	IRR (cooperative)	IRR (member)	Average Cash Flow
70.0%	46.70%	24.19%	$24,544
60.0%	46.70%	21.96%	$26,711
50.0%	46.70%	19.70%	$28,878
40.0%	46.70%	17.44%	$31,044
35.0%	46.70%	16.29%	$32,128
30.0%	46.70%	15.15%	$33,211
20.0%	46.70%	12.84%	$35,378
10.0%	46.70%	10.51%	$37,545
0.0%	46.70%	8.16%	$39,711

Cash patronage held constant at 25%, percentage of qualified stock patronage refunded reduced in proportion to increase in non-qualified stock refund

Table 16: Impact of Revolving Period for Qualified and Non-Qualified Stock

Revolving period	IRR	IRR	Average Cash Flow
1	46.70%	43.87%	($373)
2	46.70%	35.57%	$6,767
3	46.70%	29.89%	$13,292
4	46.70%	25.53%	$19,090
5	46.70%	21.89%	$24,437
6	46.70%	18.95%	$28,500
7	46.70%	16.29%	$32,128
8	46.70%	13.85%	$35,299
9	46.70%	11.69%	$37,794
10	46.70%	8.87%	$40,872

Conclusions

The winery feasibility template provides an excellent planning tool for entrepreneurs who are considering a wine production enterprise. The incorporation of drop down menus for selections of grapes and wine blends helped to provide a user friendly but robust tool. The feasibility projections indicated the winery to be an attractive business investment. The

profitability of the wine cooperative was indicated to be particularly sensitive to wine prices. This underscores the importance of market research in the business planning effort.

The analysis of the cooperative related choices provides some interesting insights. The differential between the internal rate of return for the wine cooperative and the realized return for the cooperative member highlights the implications of the traditional cooperative structure which minimizes upfront investment at the expense of delayed cash distributions. Cooperative businesses have a wide variety of choices in profit distribution, many of which are linked to equity instruments. The sensitivity analysis illustrated the trade off in terms of the the member's return and the cooperative's cash flow. The template provides a convenient method for groups contemplating a wine cooperative to understand the interaction between the profit distribution choices and to select the most attractive structure for their situation.

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