On-Farm Milk Processing Costs

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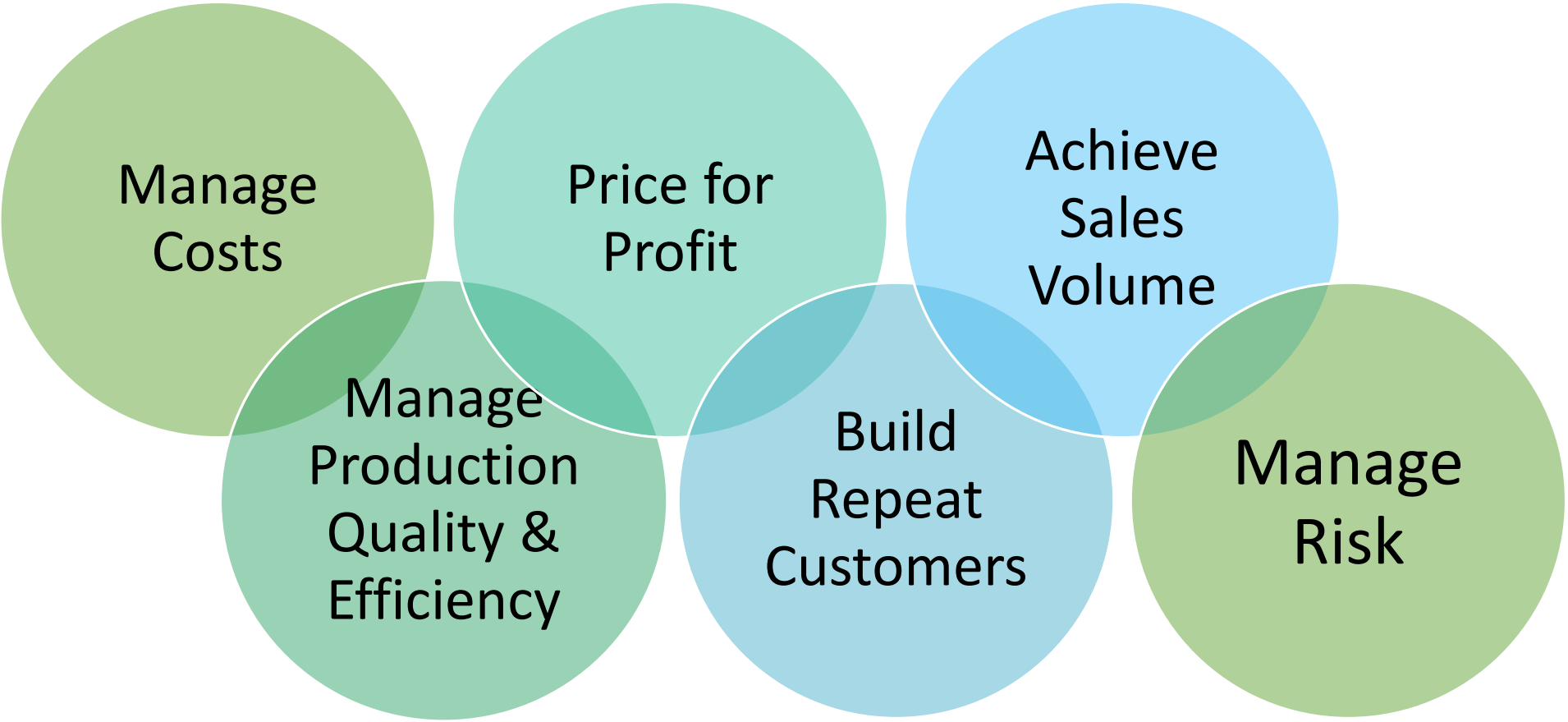
UTEXTENSION INSTITUTE OF AGRICULTURE
A UNIVERSITY OF TENNESSEE - FARM BUREAU PARTNERSHIP

Farm Bureau Tennessee

Taking A Closer Look at Value-Added Dairy Opportunities Workshop – December 19, 2019

How to achieve profitability?
Profit/Loss = Income – Expenses



Challenges to Value-Added

Production

- Input Selection and Purchase
- Soil Fertility
- Disease Control
- Weed/Insect/Wildlife Control
- Fertilization
- Irrigation
- Planting
- Cultivating
- Harvesting
- Field Sanitation
- Labor
- Records Keeping
- Farm Inspection/Certification
- Marketing

Challenges to Value-Added

Value-added enterprises add another dimension to management and operations

<u>Direct Marketing/Value-Added</u>

- All Production Issues
- Processing
- Packaging
- Storage
- Regulations
- Marketing
- Distribution
- Customer Service
- Additional labor

Why Businesses Fail (The 3 Ms)

Money

Capital & Cash Flow

Management

Skills & Experience

Marketing

Knowing & Accessing Customer

Why Businesses Fail (The 4th M)

Magic

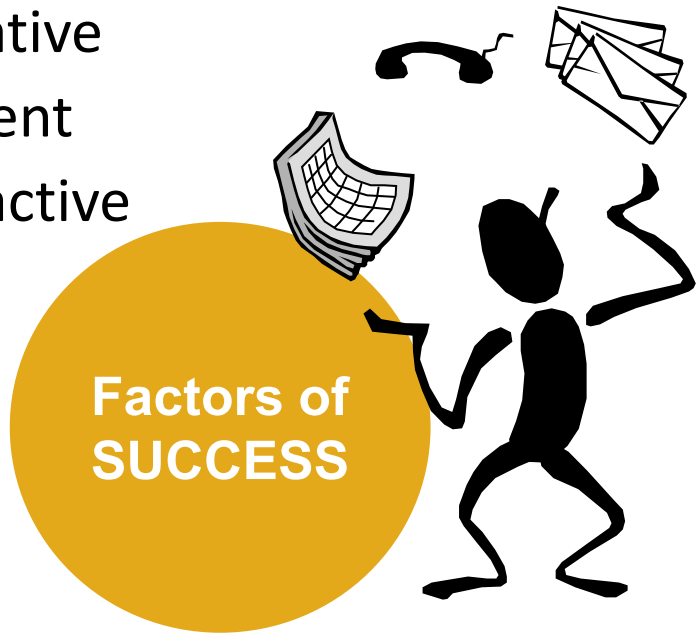
Passion, Energy, Drive

Personal Assessment

Do you have what it takes?

- Self-starter
- Responsible
- Leader
- Hard worker
- Effective communicator
- Adapt well to change
- Accepts risk
- Decision-maker
- Family support
- Healthy

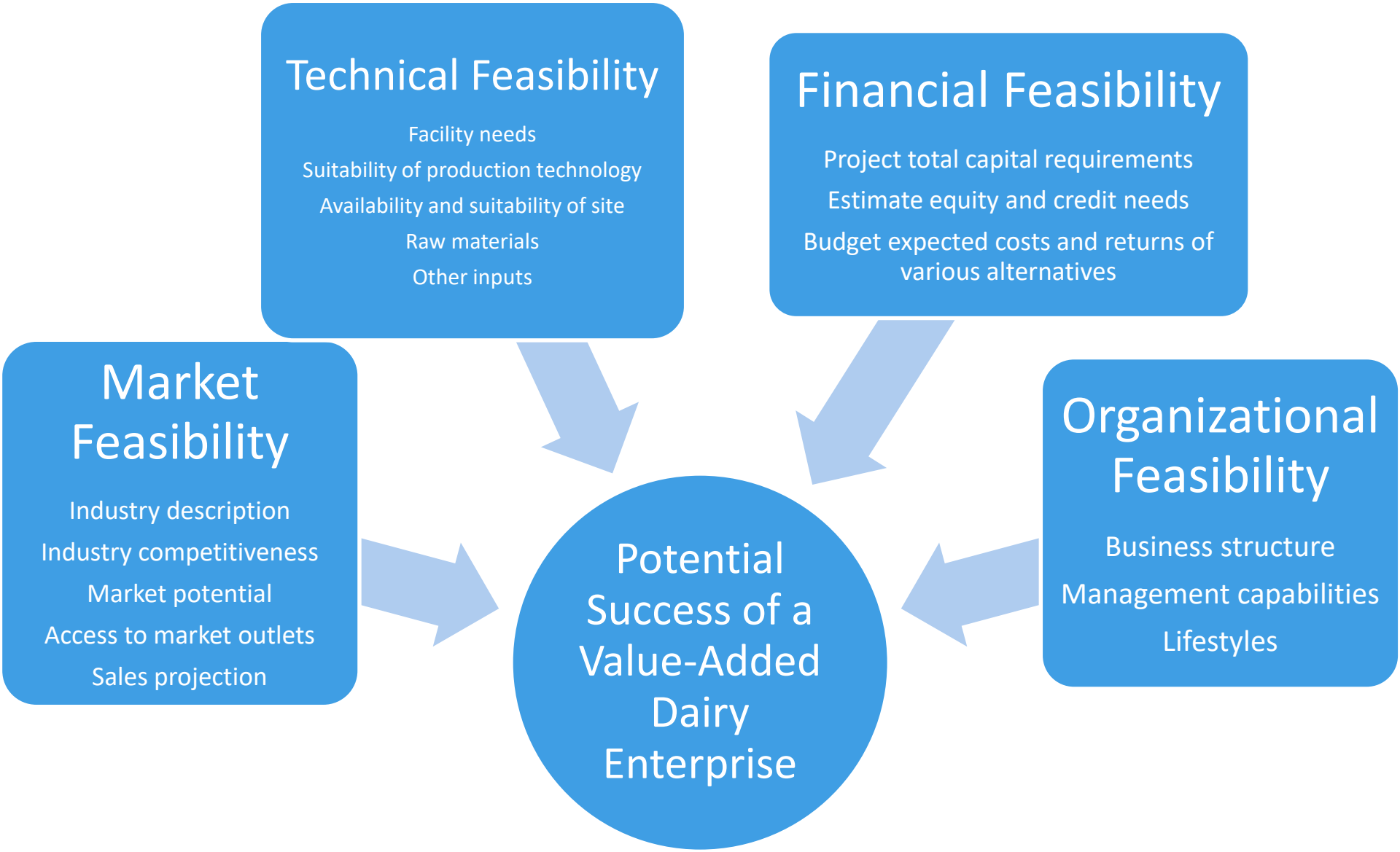
- Ambitious
- Competitive
- Lifetime learner
- Goal-oriented
- Creative
- Patient
- Proactive




Management Skills Labor Costs Organizational
Produce Quality Products Consistently
Strong Financial Position
Factors of SUCCESS
People & Customer Service Skills
Long-term Commitment
Regulatory Acumen
Marketing Savvy – Connect with Customers

Where to Start

Assess Feasibility



Value-Added Considerations

- Require significant capital outlays
- Many additional regulations
- Extra management effort required
- Additional marketing costs
- Additional start-up and year-to-year costs

Costs Associated with On-Farm Milk Processing

- Start-up Costs
  - Land (cost not included in budget projections).
  - Buildings.
  - Equipment.

  Consider the necessity of having money on hand to cover operating expenses, salaries and wages, and loan payments.

  One of the leading causes of business failure is insufficient start-up capital.

Costs Associated with On-Farm Milk Processing

- Start-up Costs--Buildings
  - Cow Milk Dairy 14,400 sq ft processing facility with room to expand ($1.5 million estimated).
  - Goat Milk & Cheese Dairy 3,000 sq ft processing facility $315,000 estimated)
  - Milk receiving bay, raw milk storage, raw milk blending, mixing and separation.
  - Pasteurized processing area.
  - Chemical storage.
  - Mechanical room.
  - Finished product storage cooler.
  - Casing area, empty jug storage, dry storage, loading docks, lab, locker rooms, break room, offices.
  - Sales room with public restrooms.

Costs Associated with On-Farm Milk Processing

- Start-up Costs--Buildings
  - Meet with local utility system to see how much power is in location of plant.
  - Plant will need 3 phase power and either 220 or 440 voltage.
  - 440 voltage is recommended so you will not be limited to only certain equipment.
  - Commercial hot water heater and boiler to generate steam that is used as a heating medium when heating the product are recommended .
  - Plant will need a chiller to cool the product as quickly as possible.

Costs Associated with On-Farm Milk Processing

- Start-up Costs--Buildings
  - Refer to the Pasteurized Milk Ordinance (PMO) and be aware of Good Manufacturing Practices (GMPs).
  - Dairy processing requires very specific valves.
  - The building process is detailed and must pass inspections.
  - Changes cost money (specialized welding @ $35-45/hr).
  - Consider hiring an engineering firm with experience in dairy processing plants to put your plant together. Some charge $100/hr for CAD drawing or $10,000 to put a plant together.

Costs Associated with On-Farm Milk Processing

- Start-up Costs--Equipment
  - Cow Milk Dairy ($1,004,400 estimated)
  - Goat Milk & Cheese Dairy ($463,900 estimated)
  - 3A Sanitary Standards may be a plus.
  - New or used?
  - Match the proper equipment to the process.
  - Get the appropriate size of equipment for the amount of material to be processed over given period of processing time.
  - Make purchases subject to governing authority's approval upon inspection.

Costs Associated with On-Farm Milk Processing

- Consider the cost of capital and cash flow requirements needed to cover operating expenses, salaries and wages, and loan payments.
- The following estimated cash flow requirements were derived from the handout "Table 2—Value-Added (Cow) Milk Production Estimated Costs and Returns."

	Value-Added (Cow) Milk Production
Variable Expenses	$ 979,033
Repairs-Equipment	30,914
Labor	148,720
Loan Payments for Start-Up Costs	187,260
Total Year One Cash Flow Requirements	$1,345,927

Estimated Revenue from Value-Added (Cow) Milk Production

Item	Description	Unit	Quantity	Price	Total
Milk Sales	1 Year	Quart	255,813	$2.25	$575,579
Milk Sales	1 Year	½ Gallon	127,906	2.75	351,742
Milk Sales	1 Year	Gallon	63,953	3.75	239,824
Butter Sales	1 Year	Pound	36,094	4.25	153,400
Total Estimated Revenue					$1,320,544

Estimated Costs and Returns from Value-Added (Cow) Milk Production

Revenue	$ 1,320, 544
Variable Expenses	(979,033)
Depreciation & Repairs	(129,494)
Interest	(75,132)
Labor	(148,720)
Return to Land, Management & Risk	$ (11,835)

To break even, you must either reduce expenses by $11,835 (1.0% of total expenses) or increase revenue by $11,835 (1.0% of total revenue).

Processing Considerations

- Considerations
  - Are you sure this is something you want to do?
  - Talk to other producers
    - Visit their facility
      - Would they change anything?
      - Keep in mind you may not be approved for the exact same facilities and equipment set up.
    - Commitment to the dairy
    - Advantages and disadvantages
    - How hard and competitive is marketing the product?
    - If they had to do over would they begin processing?
    - What does it cost to process a gallon/pound of product?

Prospects for Value-Added Dairy Products

- Adding on-farm processing should build upon the *strength of the dairy operation*, not serve as an attempt to overcome weaknesses within the farming operation.

Additional Resources

Penn State Resources

- https://extension.psu.edu/get-more-from-your-milk-increasing-profit-through-value-added-products
- https://extension.psu.edu/marketing-your-value-added-dairy-products
- https://extension.psu.edu/dairy-product-trends-fluid-milk
- https://extension.psu.edu/farmstead-and-artisan-cheesemaking

- https://dairy.ces.ncsu.edu/value-added-dairy-conference/ 2019 Value-Added Dairy Conference, Asheville, NC
- https://creamery.wsu.edu/educational-opportunities/cheesemaking-shortcourse/ Washington State Cheesemaking Shortcourse
- https://www.cdr.wisc.edu/shortcourses Wisconsin's Center for Dairy Research Shortcourses

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